New Mexico School for the Blind and Visually Impaired – NMSBVI

By Julie Walleisa

In partnership with families, the blind community, local educational agencies and professional and community resources, NMSBVI is committed to preparing its students from birth through high school graduation to pursue their dreams through participation at their highest level of independence within their family, community and workplace.

Most public school projects navigate a clearly defined planning path: creating a building program based on state standards, securing funding and approval from a state agency, and refining the design based on precedents and input from a small committee. No such path existed for the planning and design of a new preschool building for the New Mexico School for the Blind and Visually Impaired (NMSBVI). With no state standards, atypical agency oversight, few precedents, and an inclusive planning process, the school and design team charted their own course to provide a building that would meet the needs of this special student population.

The mission of NMSBVI reads: “In partnership with families, the blind community, local educational agencies and professional and community resources, NMSBVI is committed to preparing its students from birth through high school graduation to pursue their dreams through participation at their highest level of independence within their family, community, and workplace.” The Early Childhood Program serves students that are 3 to 5 years old, and blind or visually impaired. Many students have multiple physical or cognitive impairments, which require them to use canes, wheelchairs, and assisted communication devices. The preschool programs focus on assessing each student’s capacity to process sensory information, and providing an environment that ensures brain development and maximizes the potential for future learning.

Project Oversight and Funding

In New Mexico, two agencies are involved in the oversight of K-12 school construction projects. The Public School Capital Outlay Council (PSCOC) manages the allocation of state funding, and the Public School Facilities Authority (PSFA) develops adequacy standards relating to both spaces and materials and assists with planning, construction, and maintenance. So, the planning of a new school would typically include a capital outlay from PSCOC, creation of a program in accordance with PSFA adequacy standards, and involvement of PSFA staff throughout design and
construction. However, PSFA’s adequacy standards do not address preschool facilities, or schools for the blind. Additionally, the School for the Blind, along with other specialized New Mexico schools, fell under the oversight of the Higher Education Department (HED) rather than PSFA.

This project was begun without the involvement of either PSFA or HED, because the initial intent was to fund the project privately. After public funding was pursued, PSFA helped shape the language of the RFP and A/E contract, but ultimately the project was directed through HED’s approval process. Although these transitions in agency involvement complicated the approval process, they helped the team develop clear arguments justifying the project, which helped the legislative process go smoothly.

NMSBVI secured funding for the preschool project through the state legislature. When early requests based on program needs had limited success, NMSBVI focused instead on safety concerns. Evidence of an inadequate building, in a neighborhood burdened by crime, persuaded the legislature to award full project funding through direct appropriations and General Obligation bonds. The amount of funding received was based on a programming and conceptual design study that established the project’s needs.

**Programming and Conceptual Design**

Programming and design efforts were driven by NMSBVI’s strong teaching model, which creat-
ed consensus amongst the staff and provided clear direction to the design team. While most schools create a small building committee to guide the design process, NMSBVI invited all staff to participate. Open meetings were held with administrators, teachers, educational assistants, therapists, and other staff members throughout the programming and design process.

Together, this group adopted the following goals for the new building:

• Be a building that teaches, that facilitates learning and allows the students to manipulate their own environment and see how things work
• Reflect the community of learners through multi-sensory design elements
• Support mobility, safety and independence
• Provide orientation to time and space
• Be sustainably designed and encourage learning about responsible operation
• Be flexible to the needs of differently abled children
• Become an integral part of the social and local fabric
• Incorporate appropriate and flexible technology
• Encourage a sense of the fun of learning

Goals for the building’s physical characteristics included:

• A one-story building with clear entries
• Connections to the outside through windows and exterior spaces
• Good acoustics
• A simple building with clear wayfinding and orientation
• Sensory landmarking

Many of these goals are driven by the age of the students. With older blind students, education focuses on providing skills for independence, so they can learn to live in a sighted world that does not accommodate their blindness. With very young children, an adapted building helps them learn to process information and take initiative, in order to start developing these independent skills.

In the absence of standards, the design team established the space program by analyzing the existing facility, the few precedent projects that exist, and the classroom use patterns of several different types of current NMSBVI preschool classes. These results were used to justify the need for a much higher amount of square footage per student than
typical. Although there are schools for the blind located throughout the United States, very few relevant precedents were found (see box at left). Many states do not provide any on-site education for preschoolers, or are housed in facilities that were not designed for this population. Three schools that had recently completed a construction project or had one underway contributed information. These confirmed the trends and desires emerging from the programming process, such as large classrooms for small numbers of children, breakout rooms in addition to classrooms, sensory gardens, multi-sensory features, and specialized playgrounds.

Through classroom observation and discussions, an understanding emerged of NMSBVI’s students and learning methods. Learning is exploratory and founded in play, which requires ample space for movement and multi-sensory exploration. The learning environment is fluid, with students moving through different activities and concepts and interacting with multiple people over the course of the day. Incidental and visual learning must be deliberately replaced with structured, direct instruction. In addition to added personnel (teachers, assistants, therapists and nurses) in each room; each student may require several pieces of mobility equipment to sit, stand, and walk throughout the course of the day.

Students are grouped into small classes with 6 to 10 students per class and a high ratio of adults to students. Students are grouped according to their capabilities and what they are focusing on learning. Examples of class groups include:

- Children who need high levels of sensory input through movement
- Children with severe mobility impairments who have good cognitive abilities and will need to use augmented communication
- Academic pre-k and kindergarten students
- Children with multiple impairments including deaf/blindness and motor impairment

Since class groupings change each year, programming focused on identifying a single classroom size that could meet varied needs. Each type of existing class grouping was analyzed to identify space uses and classroom layout with bubble diagrams, and map these uses to scale based on characteristics such as typical shelf lengths, required swing radius, and floor mat sizes. This exercise demonstrated that the basic functions of each class type could be
accommodated in an 800sf classroom, with accessory spaces for eating and one-on-one activities.

The final program called for 12 classrooms, each with an attached 150sf focus room for Braille or computer instruction or light box therapy. Every two classrooms share a changing room/student restroom, storage room, and common room with kitchenette. Other spaces include a therapy room, adult classrooms for Braille instruction and general training, music, activity and resource rooms, and administrative spaces. Outdoor spaces included a bus loop, parking, a playground, sandbox, bike riding track, sensory garden, and staff picnic area.

With the program established, diagrams were developed to determine beneficial adjacencies and potential conflicts between spaces. These relationships then guided the locations of spaces as initial design schemes were developed. Since the classroom cluster module forms the core of the building layout, multiple variations of classroom clusters were evaluated. It was decided that the cluster works best when it can be mirrored to create two adjacent common rooms, which can be separated or combined as needed for maximum flexibility.

At the same time, options for building layout concepts and site placement were studied. These included 5 options for building organization such as linear, axial, and courtyard schemes. These were evaluated based on simplicity, ease of expansion, access to playground, cost, and maintenance. The selected linear scheme provides a separate bus loop and bus entry, a public sensory garden, a sheltered playground, and room for future expansion. Circulation is simple enough for ease of use, yet allows for route-planning in coordination with orientation and mobility training. The conceptual design resulted in a 37,000sf building that would support student mobility, safety, and independence through a highly functional and flexible design that provides a rich sensory environment for students.

**Architectural Design**

The linear scheme addresses NMSBVI’s teaching, therapy, and wayfinding goals in several ways. The classroom clusters provide a home base where students can learn to confidently navigate their own environment. Unlike a typical double loaded corridor, which can be confusing to visually impaired students, the cluster plan makes it easy for students to differentiate between classrooms and administrative areas.

The main corridor is used for therapy, mobility training, and wayfinding exercises. The floor surface consists of vinyl composite tile (VCT), with simple color patterns to avoid visual confusion. Walls and ceilings provide tactile, acoustic, and visual cues. At the exterior doors leading to the playground, the exterior concrete masonry walls extend inside as a tactile cue. Sidelighting is provided by the storefront glazing at the entries, and the vaulted gypsum ceiling focuses sound. At the entry to each classroom cluster, the tall volume open to the roof deck above provides acoustic cues. Toplighting is provided by clerestory windows, and the walls and soffits at each cluster are painted a vibrant color that relates to the theme of the cluster. Dimensional panels at the common room doors provide additional tactile cues.
Corridor areas that fall between classroom clusters and exterior doors have acoustics which are deadened by a low acoustic ceiling, and muted colors. Ceiling harness tracks support students during therapy exercises, and a recessed art track in the adjacent wall supports puzzles and artwork to encourage students to continue along the wall. Child-height motion detectors allow therapy staff to set up motion-triggered music players, lights, or other devices as a reward or “finish line” for walking therapy.

Each classroom cluster has a theme – water, earth, and plants – relating to the exploration of the natural world. Clerestory windows in the common rooms allow daylight to penetrate these interior spaces, while the movable partition between adjacent common rooms allows multiple classrooms to gather. Kitchenettes are used for breakfast, lunch and cooking activities.

Each classroom has a special feature. Classrooms located along the corridor side of the cluster have a “fun wall.” On this wall, the masonry structure is exposed, and the stud wall is shaped to relate to the theme of the cluster. A layer of acoustic wall panel adds to the tactile composition. Classrooms located along the playground have a bay window that allows students to occupy a smaller-scaled space, with views to the playground for children with usable vision.

Focus rooms attached to each classroom enable a variety of functions. Each room has direct access from the common room and a window into the classroom, to allow observation of classroom activities without causing disruption. The rooms are equipped with multiple outlets to allow use of computers and vision devices. Rooms can be darkened to serve as light rooms, or can be used for individual sensory play or quiet time.

**Site and Exterior Design**

The exterior of the building provides a welcoming atmosphere for students and families. Exposed masonry in a variety of colors and textures provides a durable, low-maintenance surface with visual and tactile interest. Entries are designated with colored stucco and roof canopies. Classrooms have storefront glazing that extends to the floor to ensure that even the smallest children or those in wheelchairs have access to views and operable windows.

Site design focuses on balancing safety with multi-sensory exploration and play. The front of the school has a small public sensory garden with serpentine paths and seating walls, which also serves as a sensory landmark for students as they approach the entrance. The back of the site has a central axis to create an easy, safe route, surrounded by circular paths that provide additional opportunities for exploration and mobility training. Sidewalk intersections are marked with exposed aggregate concrete to help guide navigation. A lawn area for playing in the unique texture of grass is adjacent to a small berm that gives students a chance to roll downhill and navigate slopes.

The back sensory garden is the gateway into the play area. It was designed to educate and stimulate students and allow hands-on exploration of sounds, aromas and textures from a variety of plant materials. The plants were planted at various levels so that all the students could enjoy the garden. Raised planters give the students a chance to plant their own selections and feel the texture of soil and track the progress of their plants.

The playground includes soft surfacing, special equipment for children with mobility limitations, and a bicycle track to teach safety skills. The soft surfacing has special tiles with raised bumps and a contrasting color to separate play structures. The playground includes a balance/mobility structure, climbing structure, swings, a music center, a water play area, and a wheelchair-accessible sand box.

**Occupancy**

The success of this project depended on NMSBVI’s clear instructional vision, the design team’s ability to embrace NMSBVI’s philosophy, and the strong trust and rapport established between NMSBVI and the design team. NMSBVI moved into the new preschool in January 2009, and the impact of the
new building is already evident. NMSBVI Superintendent Linda Lyle recalls “The first student I walked down the long hall to her classroom on the opening day of school was 2 ½ years old. She chattered non-stop, suddenly stopped and said, ‘It sounds like you built me a really big school!’”

The greatest compliment came from the adult blind community. At the open house, a gentlemen standing in front of one of the gypsum panels, asked who designed the building. When told, he responded, “They really get it. It’s the first time I have been in an unfamiliar building and known that I would be able to find my way around without being oriented to it.” Parents have also responded well to the new building. Louise Winquist said “We
are 100% at peace with our decision to put him in your school and are hugely impressed with the attitudes of the staff... Let alone the physical school which is a wonderful building with fabulous equipment.”

Every student deserves a building that meets their specific needs and supports the way they learn about the world. NMSBVI will continue to grow into the new preschool building, and use it as a teaching tool to encourage student growth and independence. In the words of Shawn, a preschool student, “I am going to touch this place every day!”

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