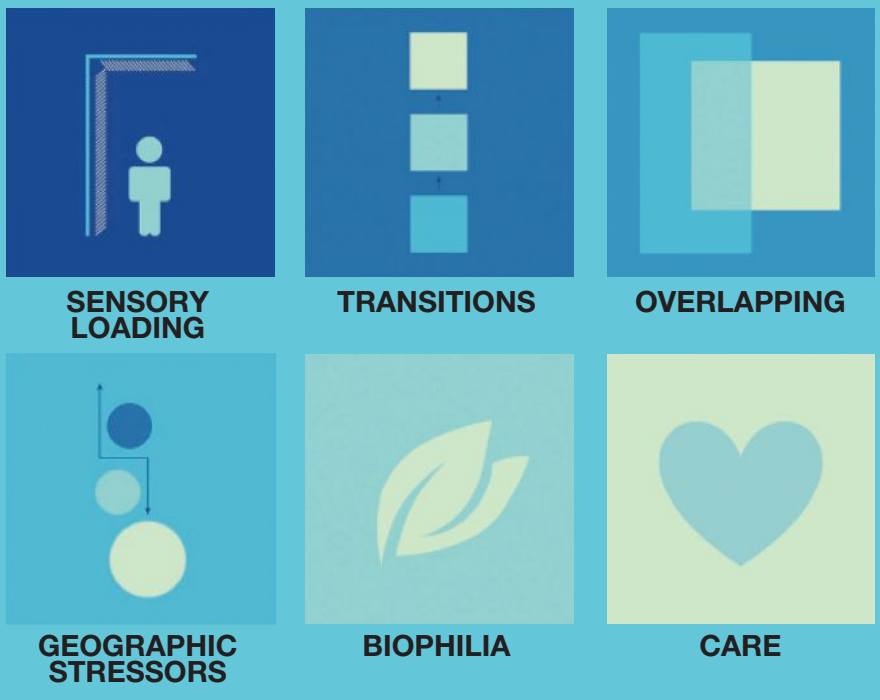
SIX Research-Based Design Guideposts for Therapeutic Learning Environments

By Robin Randall and Kelsey Jordan



Designers draw from the research-intensive A.E.R.O. Therapeutic Center, a special education school located in Burbank, Illinois to reveal design considerations that promote well-being for both neurodiverse and neurotypical educational settings.

When a child in a classroom gets distressed or overstimulated, where can teachers direct the student to regain their composure? Too often, the choices are limited.

Teachers at A.E.R.O. Therapeutic Center, however, have many options when such a scenario occurs: a quiet zone in each classroom, breakout areas between classrooms, doorless light rooms in each wing, and sensory classrooms on both levels.

Each classroom in A.E.R.O. Therapeutic Center offers a quiet zone where stressed students can collect themselves.

These multiple options for de-escalation demonstrate how this new facility—one of the largest of its kind in the Midwest—promotes the well-being of students and teachers. Though A.E.R.O. is a special education facility, many of its research-driven design strategies can be applied to environments that cater to neurotypical students.

Research Propels Therapeutic Design

A growing collection of studies shows the profound impact of educational settings on how students learn and behave. Therefore, therapeutic design that supports social-emotional health is critical for any school design. Whether the goal is self-regulation or self-reliance, the facility should be a haven where students can push other concerns aside to focus on learning. Getting there means extensive research to determine not only how to reduce stress and boost performance among students but also how to meet the needs of educators.

A.E.R.O. Therapeutic Center: Where Research Meets Care

A.E.R.O. Therapeutic Center, designed by Legat Architects, is more than a place where students with special needs go to learn. It is designed to nurture students, help teachers do their jobs better, and comfort parents with the knowledge that their children are getting the care they need.

A.E.R.O. Design Vision Statement

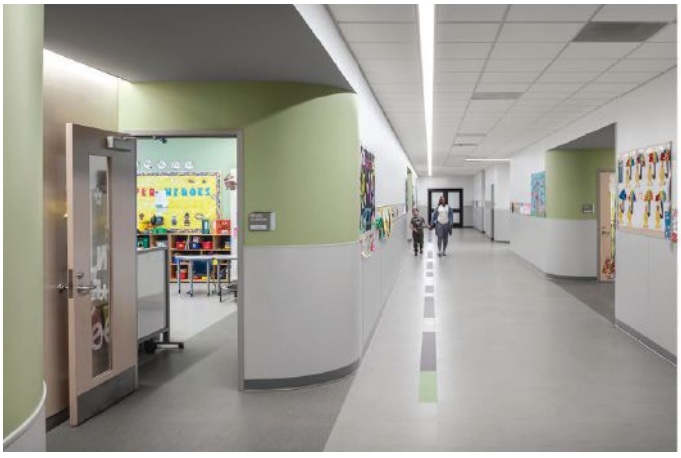
The A.E.R.O. Therapeutic Center will be:

A supportive, nurturing environment that celebrates students' achievements, large and small.

A warm, welcoming place that fosters independence and learning without boundaries.

An inclusive, resilient environment supporting neurodiversity, equity, and dignity.

A place to thrive for all who cross this threshold.



The corridors at A.E.R.O. Therapeutic Center illustrate sensory loading. Younger students start in the highly customized lower level, then "graduate" to the more traditional second level. Note the consistent linear lighting on only one side for students with sensitivities to light.

The 150,000-square-foot facility serves 11 public school districts in seven southwest Chicago suburban communities. It is designed to accommodate 400 staff members and 550 neurodiverse students (ages three to 22) including those with mild to profound physical and intellectual disabilities as well as those with emotional and behavioral disorders. Spaces range from multi-needs classrooms for profoundly disabled students to training rooms for employment and independent living.

Prior to the design of the facility, the team plunged into a three-month research exercise. It investigated the needs of all student types served by A.E.R.O. as well as how spaces could effectively respond to these needs. Team members, several of them parents of neurodiverse children, pored over studies about special needs students and visited regional special education facilities to analyze the spaces and interview staff. From the research, the team distilled the following six guideposts that drove the design of the facility.

Guidepost 1: Sensory Loading

Historically, schools have immersed neurodiverse students in standard school settings or even facilities that mimic real-world environments such as a street-like corridor. This tough love approach erroneously assumes those students will adapt to those environments. Unfortunately, the truth is that these settings place a great deal of unnecessary stress on students. Conversely, sensory loading involves a "graduated" approach wherein students start with highly adapted spaces and then progress to more typical spaces for gradual skill development. This is the more compassionate response to those hard-edged approaches.

The differences between first- and second-floor corridors and toilet rooms at A.E.R.O. Therapeutic Center exemplify this guidepost. Whereas lower-level corridors designed for younger students display many elements (e.g., subdued colors, rounded corners, perpendicular classroom doors) that diverge from the typical school

The first-floor plan illustrates the direct circulation patterns of A.E.R.O. Therapeutic Center.

1 Classroom
2 Pre K Classroom
3 Multi-Needs Classroom
4 Assistive Technology Office
5 Home Life Skills
6 Group Room
7 Staff Center & Work Room
8 Support Offices
9 Courtyard
10 Sensory Room
11 Gymnasium
12 Nurse
13 Administrative Offices
14 Program Classroom
15 Multi-Purpose Room
16 OT/PT
17 Diagnostics
18 Quiet Room
19 Conference Room
20 Exercise Room
21 Reception
22 Kitchen
23 Transitions Program
24 Storage

A pocket beneath the main stair in the A.E.R.O. Therapeutic Center atrium provides a safe space for students.

Translucent windows and a curving soffit and floor pattern embrace cafeterias on both levels of A.E.R.O. Therapeutic Center.

environment, the upper-level corridors designed for older students closely resemble what one would find in a traditional high school. Similarly, while first floor classrooms have shared bathrooms, the second floor offers standard public restrooms. Thus, students at A.E.R.O. graduate from adapted to more typical spaces.

Guidepost 2: Sequencing and Transitions

Students like routine; they find comfort in knowing where they're going. Thus, it's important that the layout of schools—especially for those designed for special needs students—have direct circulation patterns. The design must also create an ease of transition from one space to another so students know what comes next.

"We needed to be sensitive to the transitions that students undergo as they experience their day," said Legat's Rob Wroble, architectural project manager of A.E.R.O. Therapeutic Center. "That meant minimizing the intimidation factor for students as they enter the building and navigate its corridors." A one-way circulation pattern reduces backtracking and avoids complex navigation. It encourages students to "map" their schedules and return to central circulation nodes where they are not exposed to unnecessary distractions.

Additionally, the floor plan locates the gymnasium at the heart of the school. The gym divides into quadrants, each of which can be accessed from a different wing so certain student populations never encounter each other. Because all wings are equidistant to the gym, which doubles as a tornado shelter, teachers can quickly guide students there during an emergency. Each second-floor wing also has a separate stair that leads to the gym.

Guidepost 3: Overlapping Approaches

Overlapping approaches involve designing multifunctional spaces that allow anxious students to find safety and security. This happens when smaller, more intimate areas occupy the same area (or overlap) larger group spaces. Factors that designers can tweak to support this guidepost range from acoustic treatments and escape spaces to transition zones and safety considerations such as avoiding sharp edges and choosing the right furniture.

The quiet zones in A.E.R.O. Therapeutic Center classrooms illustrate this concept, as does the recess beneath the staircase within the main atrium. Both these spaces enable distraught students to temporarily escape the larger, more collective areas in which they are located while still being a part of their communities.

Guidepost 4: Geographic Stressors

Student stress tends to spike at certain locations both outside of and within the building. Understanding where these geographic stressors are helps designers reduce their negative impact.

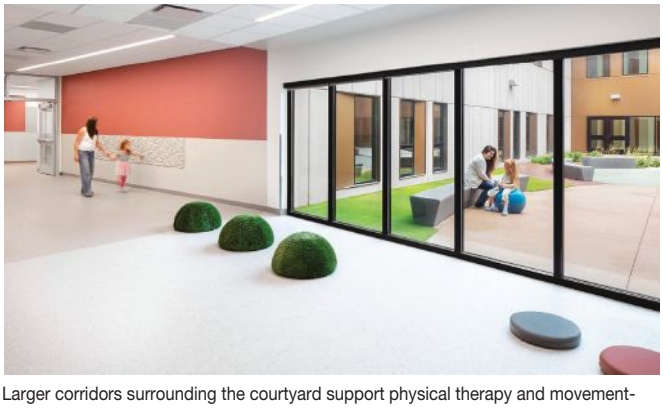
The school entrance, for instance, can be especially intimidating. Designers of special education facilities must resist the temptation to design the "monumental" entrances often seen at facilities for neurotypical students.

Six entries help quickly deliver students to their destinations. Metal canopies reduce the scale and minimize the intimidation factor as students enter the building.

Two central courtyards encourage outdoor time for students and staff, put nature on display, and bring daylight into classrooms and movement spaces.

A.E.R.O. offers six separate entrances identified by light-colored metal canopies. This strategy reduces the number of students flowing into any one entry at the same time and delivers them straight to their destination. "The canopies not only protect students from weather but also reduce the scale for kids who have issues with being in a voluminous space," said A.E.R.O. design team member Jessica Carlson.

Internally, dining rooms and other large, loud spaces can lead to sensory overloading. A small cafeteria on each floor of A.E.R.O. Therapeutic Center features a translucent window so the students within can still see corridor activity without being overly distracted.



Larger corridors surrounding the courtyard support physical therapy and movement-related activities.

Guidepost 5: Biophilia

Providing students with access to nature helps reduce stress and enhance performance; studies show that time spent in natural environments lowers cortisol levels, improves mood, and boosts cognitive function. Research also indicates that natural settings promote recovery from mental fatigue and increase overall well-being. As such, design for therapeutic environments should embrace biophilia, or the innate human desire to connect with nature.

Biophilic principles drove design of A.E.R.O. Therapeutic Center, which surrounds two courtyards where students can access fresh air and sunlight. The layout brings natural light and outdoor views to the classrooms and to movement/OTPT spaces that surround the courtyard. It also illuminates the first-floor corridor art walls on either side of the gymnasium.

Designers can use natural forms, patterns, and materials to integrate biophilic themes. Examples in the A.E.R.O. facility range from the atrium's understated birch tree wall graphic and conference room's grass-patterned flooring to the corridors' earthy colors and textured wall panels.

Guidepost 6: Staff Care

When educators feel appreciated and heard, they perform better. Thus, the designer of therapeutic environments must also consider the well-being of teachers and other staff members. Ideally, the facility will offer easily accessible

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A restrained atrium with a soothing birch tree wall feature greets A.E.R.O. Therapeutic Center's neuroatypical students as they enter.

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areas where staff can retreat and recharge. Spaces should also support communication among staff members.

A.E.R.O. Therapeutic Center's outdoor spaces help fulfill this objective. Staff can find solace in the courtyards or a teacher's area next to the playgrounds at the back of the facility. Additionally, unlike the typical school, each wing in the facility has a core zone with a work room, storage areas, and offices for nurses, therapists, and other support staff. If a teacher has a classroom emergency, help is right next door … rather than in a different part of the building. Settings that show respect for staff boost morale and encourage longevity.

Why So Blue?

In many ways, architecture school has taught designers to make decisions based on instinct. They might choose blue, for instance, because they ***think*** blue looks good.

But when it comes to the design of therapeutic environments, neuroscience tells us to take a different approach … an approach with research at the foundation. Instead of choosing blue on a whim, designers should delve into research to determine what color (or any design choice) best meets the needs of a student population. Maybe it is blue. Maybe not.

While the research-fueled guideposts above were developed for a special education facility, many of them can be applied to neurotypical schools or any environment for that matter. School designers are not artists painting pictures—rather, we are architects designing environments that people spend a significant portion of their lives in. A facility can be kind. A facility can be nurturing.

Embrace the research and make the right choices–blue or otherwise–to shape the spaces that shape lives. **LBD**

A.E.R.O. Therapeutic Center exemplifies a research-driven approach to design.

Robin Randall, FAIA, ALEP, LEED AP BD+C is Director of Learning at Legat Architects. For more than 30 years, she has designed and planned educational facilities ranging from early learning centers to high schools. She frequently serves as a university guest juror and shares her research via conferences and industry publications. In 2022, the American Institute of Architects elevated her to its College of Fellows for her notable contributions to the advancement of the profession of architecture. Robin holds a Bachelor of Environmental Design and a Bachelor of Architecture from Ball State University.

Kelsey Jordan, AIA, WELL AP, FITWEL, a member of Legat's Learning team, is a leading young voice for diversity in educational architecture. She founded the AIA St. Louis Community Action Committee and co-founded the AIA St. Louis J.E.D.I. (Justice, Equity, Diversity, and Inclusion) Committee. She's spoken at conferences, written published articles, and become one of the first 10 people in Missouri to earn her WELL certification. She holds master's and bachelor's degrees in architecture from Southern Illinois University.

Photos: AJ Brown Imaging

Opening graphic icons and floor plan: Courtesy of Legat Architects

SPECIAL EDUCATION FACILITY (AGES 3 TO 22) |
NEW CONSTRUCTION | ENTIRE BUILDING

A.E.R.O. Therapeutic Center

Burbank, IL

A.E.R.O. Therapeutic Center is designed for students with special needs and for the teachers who help them thrive. The new campus provides a safe, nurturing environment with connections to daylight and nature for students with cognitive/physical disabilities and behavior/emotional diversities. The 150,000-square-foot facility, one of the largest of its kind in the Midwest, serves 11 member school districts.

The design responds to the challenges these students face and encourages them to become active members of the classroom. Six separate building entrances facilitate efficient movement of a large and neurodiverse student population. The building surrounds two internal courtyards, each designed to support the therapeutic needs of students in an enclosed outdoor environment.

A variety of features are intended to reduce stressful transitions. Examples include human-scaled canopies, rounded corners to follow along, strategically placed lighting, and a calming color palette. Spaces such as in-classroom quiet areas, sensory rooms, and stair pockets allow students to safely separate from their peers.

The classrooms, at nearly twice the size of previous A.E.R.O. classrooms, not only offer much more instructional space but also provide more room for the specialized equipment needed by many of the students.

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GRAEF, Structural Engineer

OWNER/CLIENT
A.E.R.O. Special Education Cooperative
Burbank, IL
Dr. Bill Roseland, Executive Director

KEY STATS
Population Served: Students with disabilities (ages 3 to 22)
Capacity of Students/Occupants: 550
Size of Site: 13 acres
Gross Area of Bldg./Space: 150,000 gsf
Space per Student: 273 sq. ft.
Cost per Student: $99,272
Square Foot Cost: $364
Project Cost: $54,600,000
Occupation Date: 9/5/2023

PHOTOGRAPHY: AJ BROWN IMAGING