



# Re-Thinking Early Childhood Design:

*A study on Child Agency  
and Cognitive Psychology*

September 19, 2022

**LEGAT**ARCHITECTS





# AGENDA

- *Introductions*
- *Research*
- *Social Agency*
- *Physical Agency*
- *Intellectual Agency*
- *Questions and Answers*

# INTRODUCTIONS



**LOREN JOHNSON**  
Senior Educational Architect  
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**TYLER WADE**  
Educational Designer  
Illinois Association of Business Officials  
Member, Associate AIA



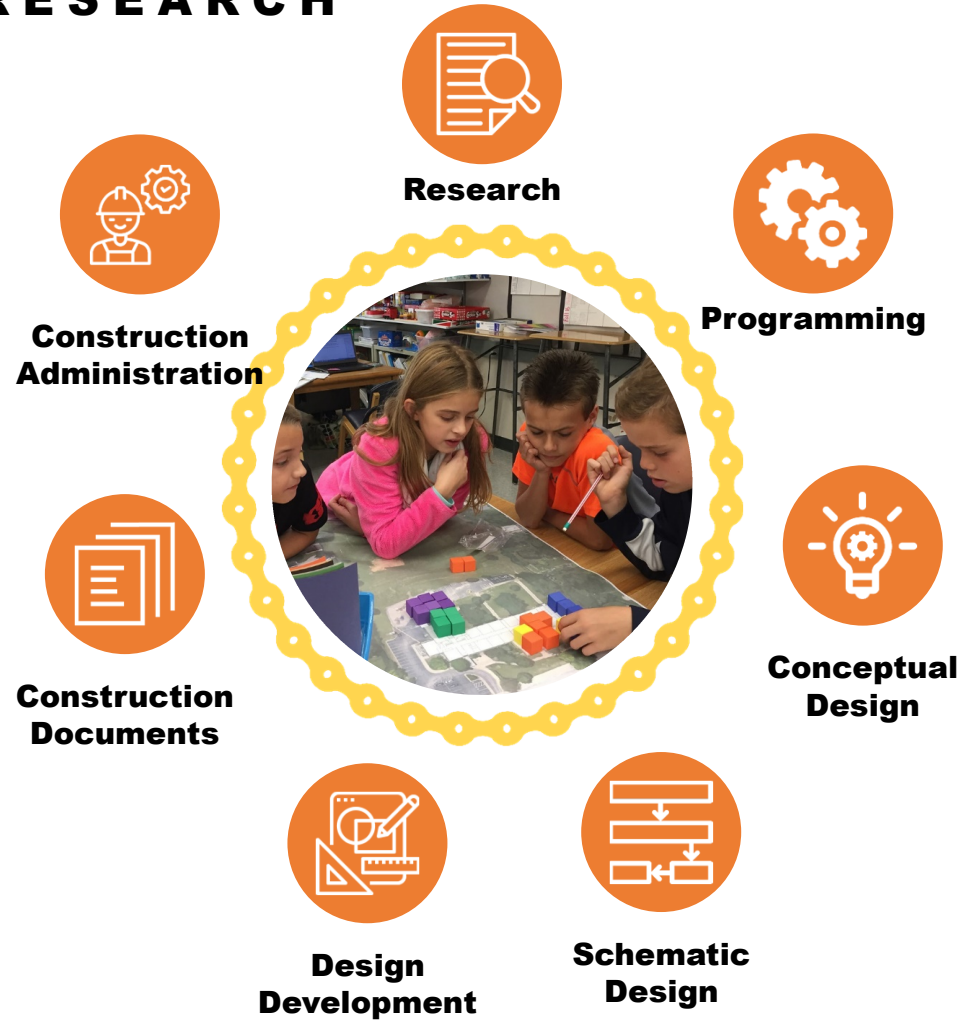
**KELSEY JORDAN**  
Educational Designer  
Association of Learning Environments  
Member, WELL AP, Fitwel, Associate AIA



***“Research is formalized curiosity.  
It is poking and prying with purpose.”***

- Zora Neale Hurston

# CULTURE OF RESEARCH







# AIA Strategic Plan 2021-2025

## **MISSION**

Inspire and empower architects to improve society and transform the world.

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## **VISION**

Drive positive change through the power of design and focused activism.

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## **CORE VALUES**

Impactful, transformative, visionary, equitable, inclusive, innovative

- GOALS** • Climate action for human and ecological health
- Advance racial, ethnic, and gender equity

## Strategies

### **MOBILIZE FOR IMPACT**

Focus and align programs, services, structures, and resources to develop innovative solutions to the world's most pressing challenges.

### **EDUCATE AND PREPARE**

Equip members for success: Transform architecture education, expand access to the profession, cultivate a learning culture, and develop leadership.

### **ADVANCE KNOWLEDGE**

Knowledge is our currency. Generate, curate, and disseminate knowledge required for success.

### **BROADEN THE TENT**

Collaborate with design, construction, and community stakeholders. Organize and activate grassroots advocates.

**RESEARCH**



**PRACTICE**



**CLIENT**





**AGENCY**



**SOCIAL**



**PHYSICAL**



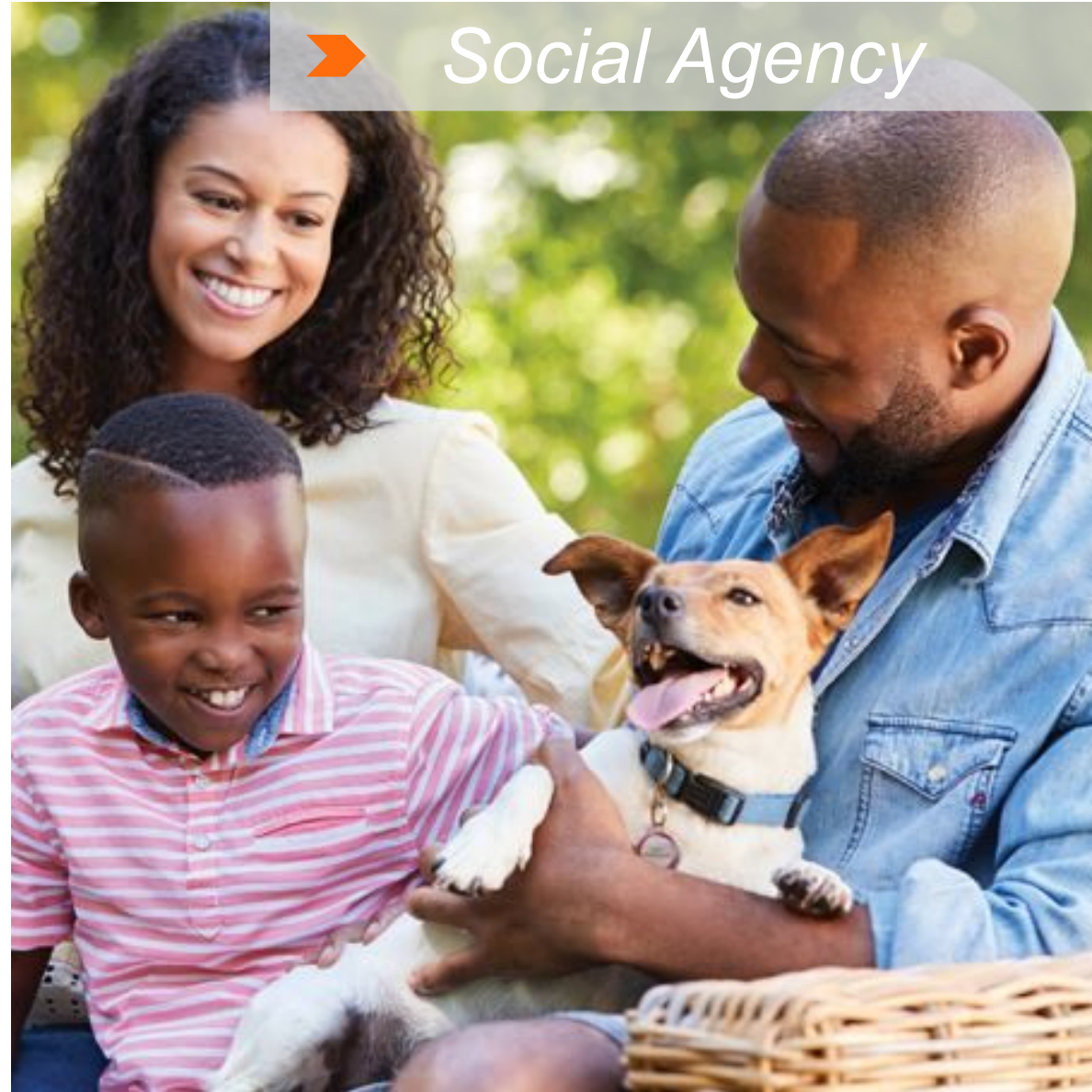
**INTELLECTUAL**

**Agency** is the capacity of individuals to have the power and resources to fulfill their potential.

**Social Agency** is at the community/family scale

### **Pathways to Agency**

- **Empowerment**
- **Self-Determination**
- **Impact of Choice**





***How can we transform our community and create spontaneous learning environments that support Social Agency?***



# *Social Agency*







# *Social Agency*







# *Social Agency*







# Social Agency







## Social Agency

***“Play is not where you build ‘soft skills’ or ‘21st-century skills. The skills gained through play are as relevant now as they have always been.”***

Dr. Jack Shonkoff

*Director at The Center on the Developing Child @ Harvard University*



➤ Social Agency



CHICAGO HOUSING AUTHORITY™



Fox Valley United Way





## *Social Agency*





## *Social Agency*







➔ Social Agency



Social Agency





*Social Agency*





**Agency** is the capacity of individuals to have the power and resources to fulfill their potential

**Physical Agency** happens at the building scale between the individual and the physical environment

### Pathways to Agency

- Empowerment
- Self-Determination
- Impact of Choice



***How does the physical environment  
empower students to learn?***





**Linguistic**



**Visual**



**Logical**



**Interpersonal**



**Musical**



**Body Kinesthetic**



**Intrapersonal**



**Naturalistic**



**Existential**

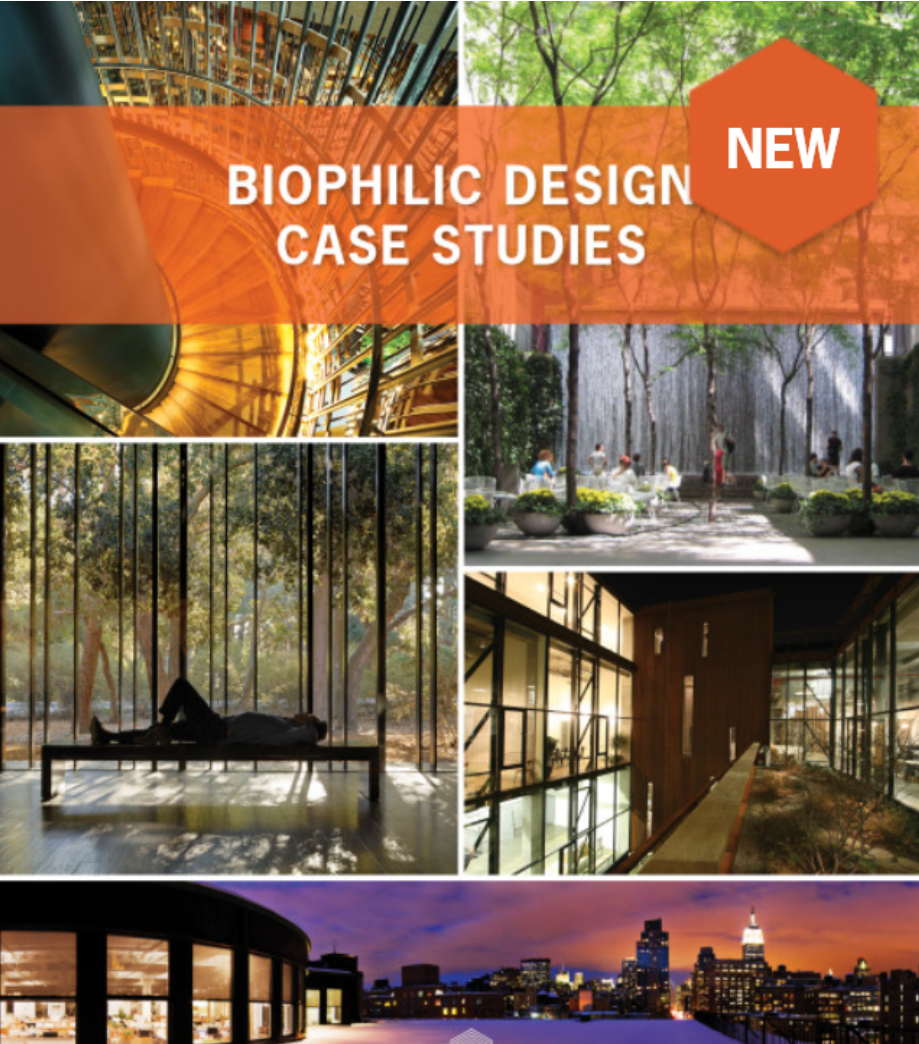
➤ *Physical Agency*



# LITERATURE REVIEW

## BIOPHILIC DESIGN CASE STUDIES

NEW



## ➤ *Physical Agency*

Green Health

# BUILDING SUSTAINABLE SCHOOLS FOR HEALTHY KIDS



A Workshop Co-sponsored by the National Collaborative for Childhood Obesity Research and the National Academy of Environmental Design

In partnership with the U.S. Green Building Council Center for Green Schools





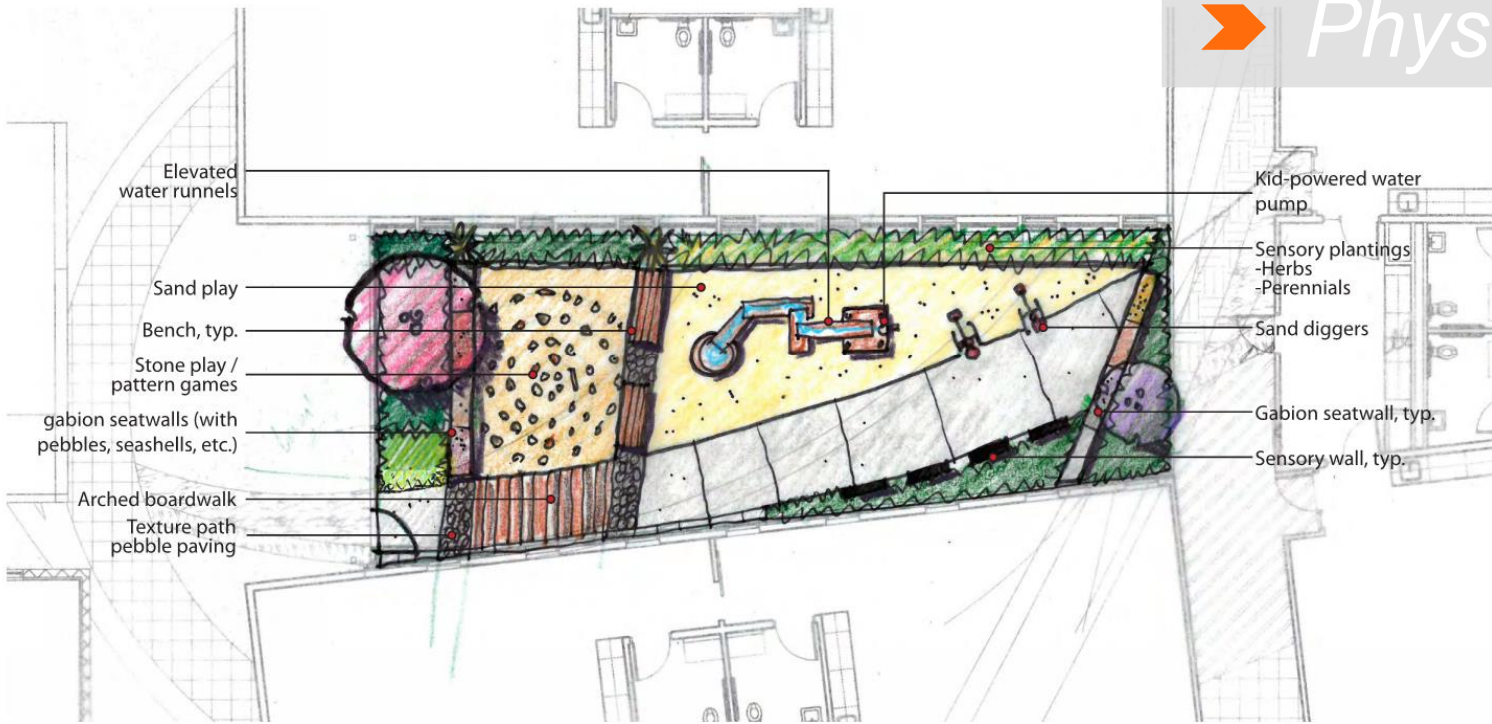


➤ *Physical Agency*





# Physical Agency



Elevated water runnels



Kid-powered water pump



Arched boardwalk



Gabion seatwalls



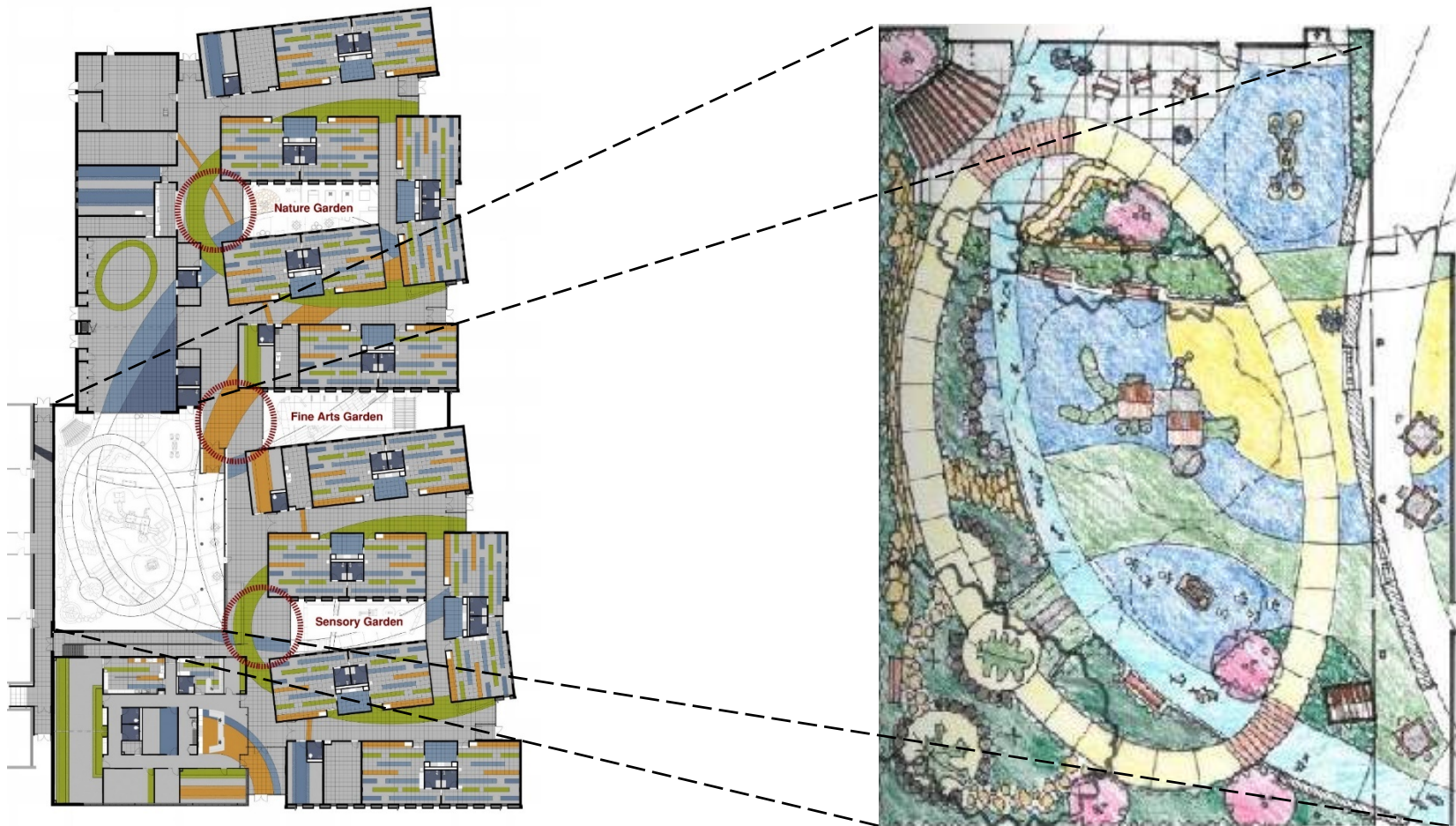
Stone play / pattern games



Sensory wall



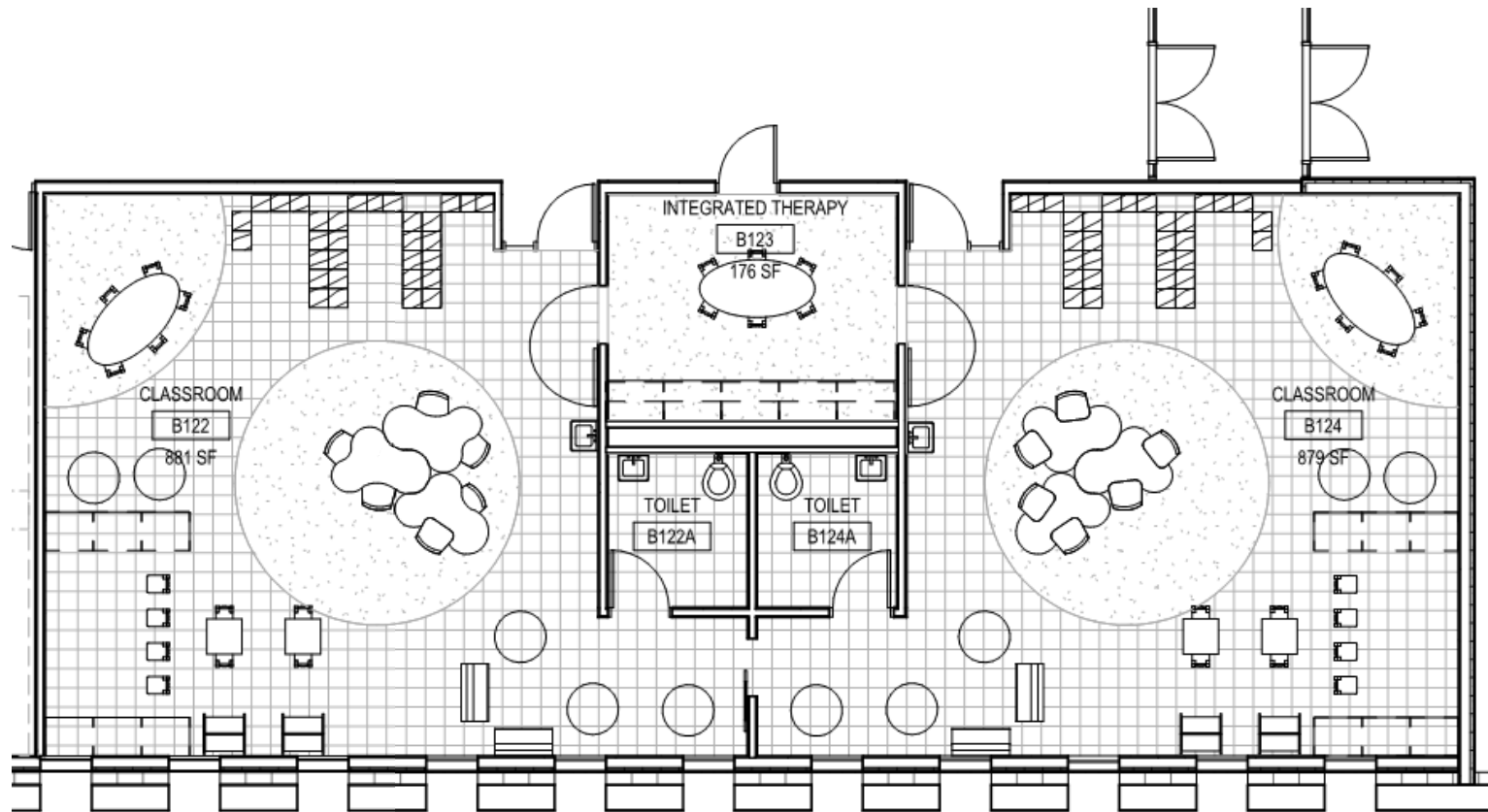
➤ *Physical Agency*







➤ *Physical Agency*



➤ *Physical Agency*





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"...there is no bad weather, just bad clothing..."



➤ *Physical Agency*





➤ *Physical Agency*





➤ *Physical Agency*

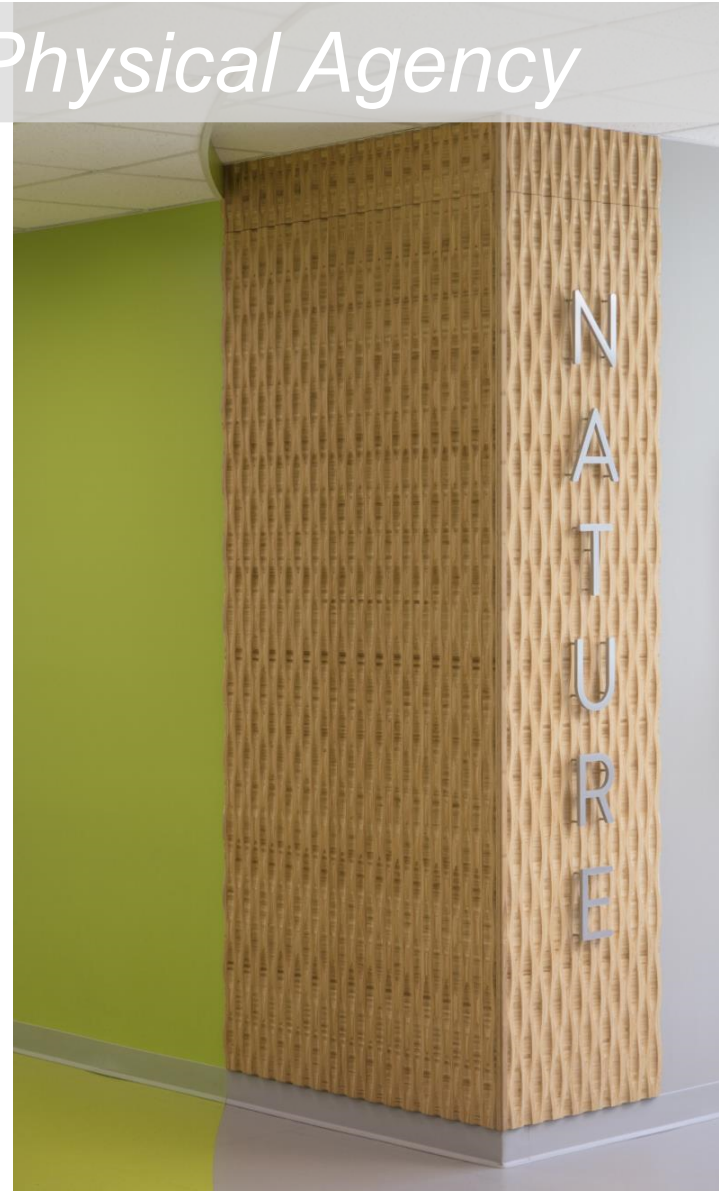
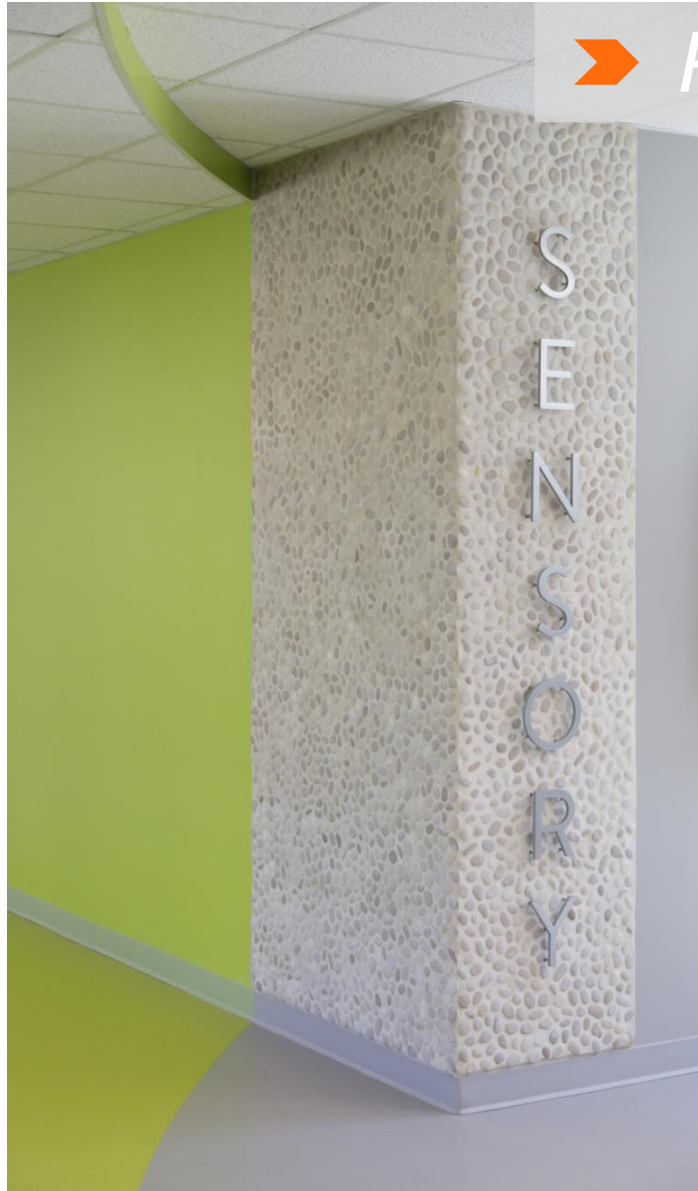




➤ *Physical Agency*







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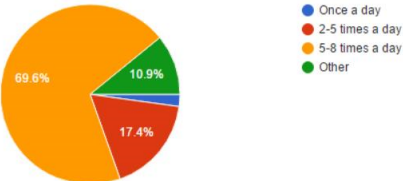


➤ *Physical Agency*





How often do you see the large outdoor play space being used? (46 responses)



If you are an educator, do you prepare lesson plans, projects, experiments, or other activities with the outdoor play area or other outdoor classroom spaces in mind? If so, what? If not, why? (24 responses)

- Yes, we have developed lessons around the nature and sensory gardens.
- Yes! I love the sensory aspects of this building throughout the seasons.
- Sometimes
- Although I do not use the Nature Garden often, we planted pumpkin seeds in it in the spring, and picked and carved the pumpkins there in the fall.
- No- I more often find myself adapting a lesson to fit into an outdoor space.
- I do sometimes prepare lessons with kids I service. I usually push into the spaces they are already accessing.
- Yes, it is nice to have experiences in different places.
- We have used the garden for planting.
- The play areas are not as structured as some of the places in my room and not appropriate for my students always. We go out to the outdoor garden areas for free time/a break.
- During nice weather, I host some of my Play N Learn sessions in the Fine Arts Garden.
- Yes, I have made scavenger hunts to practice shapes and colors around the school building and outside in the playground and gardens. I have also made lessons where they have to use the televisions outside of the classrooms to search for letters and numbers. In addition, I have organized a science lesson after talking about pumpkins, students go to the nature garden with magnifying lenses and observe the plants. Then afterwards, they use paper and markers to record their findings.
- When it's nice out, we do plan activities outside.
- I have but not as often as I thought I would. My outdoor lessons have included noticing and identifying environment changes, use of a variety of containers to weigh sand/compare and contrast, comparing wet/dry sand, picking weeds and preparing the garden for planting, planting and observing growth. Having to provide my own materials for these areas has limited my planning for these areas.





# Go Outside to Learn:

BY LOREN JOHNSON  
AND ROBIN RANDALL

## The Value of Outdoor Learning Environments

Take them outside to learn! There is ample data that show just stepping outside activates our senses. The human animal evolved in the outdoor environment so it follows our bodies would be biophysically reactive to patterns and signals that the outdoor environment provides. We naturally, unconsciously, react, absorb and relax.

### Benefits of Outdoor Learning

The outdoors open up endless possibilities. Every place and space we experience offers an opportunity to learn. Every person has the capacity to learn in multiple ways; however, some grow stronger than others due to their experiences, opportunities (or lack of opportunities) and environment. What if our learning environments truly were the third teacher and stimulated learning in diverse methods? What would that look like?

series of numbers. In *The Economics of Biophilia*, Terrapin Bright Green documents the impact of life stress among children was significantly less in children with high levels of nature nearby.

Nature supplies social support for children as they interact with others in shared natural spaces. When children become engaged in nature, their neural mechanisms are allowed to rest and recover. Attentional restoration is critical; without it, children will increasingly respond to distracting stimuli, experience

more affective patterns by shifting the educational focus from secondary to primary sources. Traditional classroom teaching uses textbooks, lectures, video and internet as instructional tools. The outdoor classroom exposes students through direct experience and fosters active, hands-on, inquiry-based learning; experimental teaching methods can engage students in the process as well as the outcomes. Nurturing all intelligences, the outdoor environment inspires learning and connects with those that may not thrive in a traditional classroom including students with learning disabilities.

Immersion in the outdoors makes learning a multi-sensory experience. By engaging the senses of touch, smell, hearing, taste, seeing, students retain an intimate physical memory of activities that are long lasting and synergistic. E.O. Wilson's Biophilia Hypothesis reminds us that the human species, having evolved in the natural world, has deeply-rooted need to associate and connect with nature. As a mini-ecosystem, the "outdoor classroom" fosters the use of systems thinking and emphasizes the interconnectedness of all things. Through exposure to the intricate web of life, students come to understand that complex natural and societal systems often require holistic rather than linear solutions. In seeking a holistic understanding, outdoor learning lends itself to interdisciplinary studies employing multiple academic disciplines.

Global environmental issues are reflected in microcosm and often lead to service learning projects that emphasize social involvement and responsibility. Effectively impacting the educational culture by leading through example, the "outdoor classroom" projects a positive message to the community regarding the value of education. This amenity enhances neighborhoods and blurs the boundaries between academic learning and creative curiosity. Integrating use of outdoor learning into curriculum begins to balance digital learning and starts to cure nature deficit disorder.

and spontaneous opportunities. Intrapersonal learners may prefer individual reflection or small group learning, while interpersonal social learners need the discussion and feedback of a larger group.

### Sense of Enclosure

Protection from the elements, quality of natural light, framing a view or vista, and create a sense of enclosure that can encourage learning. Designing places intentionally which delight in shape and orientation inspire inquiry.

### Music of Nature

Listening to surroundings, fully using our senses improves our cognitive capacity. Designing space with attention to acoustical stimuli broadens our palette to include water features and bird habitats and human laughter. Providing places to sit and listen to the symphony of natural sounds can help clear and focus the mind.

### Linguistic Reflection

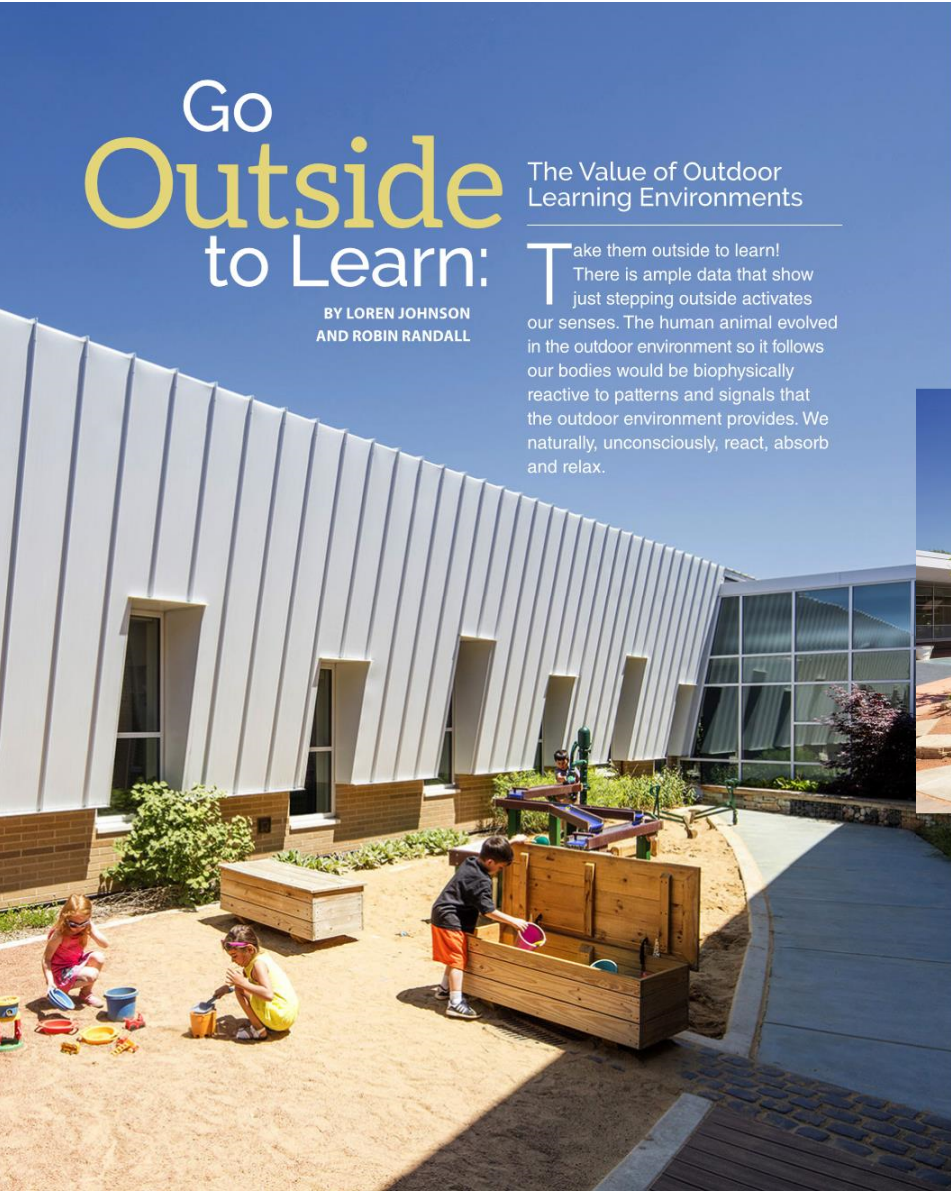
Didactic landscapes provide literal educational opportunities through reading the labels of specimens or narrative descriptions. Poetry, quotes and dedications inspire reflection and contemplation. A quiet place to sit and read can nurture the naturalistic linguistic learners in our midst.

### Change in Elevation

Movement through the landscape, changing levels forces a different perspective on learning. Stairs, ramps, bridges, tree houses, and site walls change our point of view. Challenge a transition to become a teaching device and motivate the body kinesthetic and natural intelligences.

### Edible Landscape

"People think of the mind as being located in the head, but the latest findings in physiology suggest that the mind doesn't really dwell in the brain but travels the whole body on caravans of enzyme, busily making sense of the



The data is clear. Outdoor learning increases attention span, enhances memory, reduces stress, improves mood and opens the mind to greater creativity. A 2008 study by University of Michigan psychologists found that walking outside or even just looking at pictures of natural settings improves directed attention and the ability to concentrate on a task. Put another way: Nature restores our ability to focus. The same study supported previous experiments showing that being in nature improves memory — by 20 percent when it came to recalling a

greater loss of focus and have difficulty managing tasks. In a pilot study March 2011, psychologists found that students in an Outward Bound course showed a 40 percent boost in frontal-lobe activity, which is linked to creativity, after four days in the backcountry. Enhancing daily routines to support the interface of nature and the outdoors strengthens our awareness.

### Curriculum Application

The "outdoor classroom" venue offers applications for curriculum in



## Where Learning is Fun

Many parents and school district leaders have toured the CCSD59 ELC. Some notice the exterior's dancing window patterns, while others comment on the playful brick arrangements. Still others take note of the daylight streaming through classroom clerestories, or the metal walls that slope within the learning gardens. All these observations support the same reality—that this is an environment designed with early learners' needs in mind.

"This space was a game-changer for us," said Fessler. "It truly gets students passionate about wanting to be at school. If kids have the right mindset early on about school, their chances of being successful significantly increase."

Tony Rossi, CCSD59's director of facilities, offers an engaging anecdote to explain the difference the ELC has made: "Before we had this facility, our early learners often had separation anxiety and

cried during drop-off out front," he said. "After the first month the ELC was open, we noticed the reverse—several students were upset that they had to leave the facility! We appreciate that this environment helps the students feel comfortable to explore and makes learning fun."

The CCSD59 ELC demonstrates that an innovative curriculum coupled with an architecture that embodies the educator's mission transforms a district's purpose into place.



■ Classroom bars along the east façade feature playful brick patterns and metal roofs that slope down to become walls.

## CONTACT

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## Early Learning Center 3 Years Later

Post-occupancy survey reveals CCSD59 Early Learning Center design capitalizes on outdoor learning and the power of play to change attitudes



■ In the fine arts garden, children can explore the creative process through singing, acting, and dancing.



■ A child-sized blue door welcomes students to the CCSD59 ELC.

Giorgia Spentzos Dravilas's son felt anxiety each time he stepped out of the car and approached his preschool. Then came the time for him to walk into his new school: Community Consolidated School District's (CCSD59) Early Learning Center (ELC) in Mount Prospect, Illinois.

"There's this little blue door in the front," said Dravilas. "It's small and it's perfect for three-, four-, and five-year-olds. That really helped."

And the blue door was just the beginning. The CCSD59 ELC greeted the young man with playful shapes, vibrant colors, intriguing materials, and lots of natural light. Large windows displayed safe outdoor learning areas where his peers tended small gardens and experimented with sand and water.

Many students like Dravilas's son have had a similar experience—no matter where they are in the facility, students are surrounded by the spirit of play, community, safety, and exploration.

"The outdoor courtyard, the indoor play area, and the learning gardens have enhanced our ability to use fun and play in combination with learning," said Dr. Art Fessler, CCSD59 superintendent. "The attitudes of not only our students and staff, but also our parents, have changed incredibly."

The CCSD59 ELC, completed in August, 2015, united the district's early learning students and teachers (previously dispersed at facilities throughout the district) in one 57,000-square-foot building. It was designed by Legat Architects and built by Nicholas & Associates.

Eighteen months later, Legat (architect of record) and Hitchcock Design Group (landscape architect) led a post-occupancy evaluation. The survey and workshop gathered observations of nearly 50 faculty and staff members, who shared their opinions on everything from how often classes use each space to the air and light quality within the building.

Though some respondents offered suggestions for minor improvements, the majority of comments support Fessler's assertion: "I think we've designed what I believe to be one of the best early learning facilities in the country."

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## ➤ *Intellectual Agency*

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**Intellectual Agency** is at the classroom scale

### **Pathways to Agency**

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- **Impact of Choice**





***What are the key ingredients for an adaptable classroom?***

➤ *Intellectual Agency*





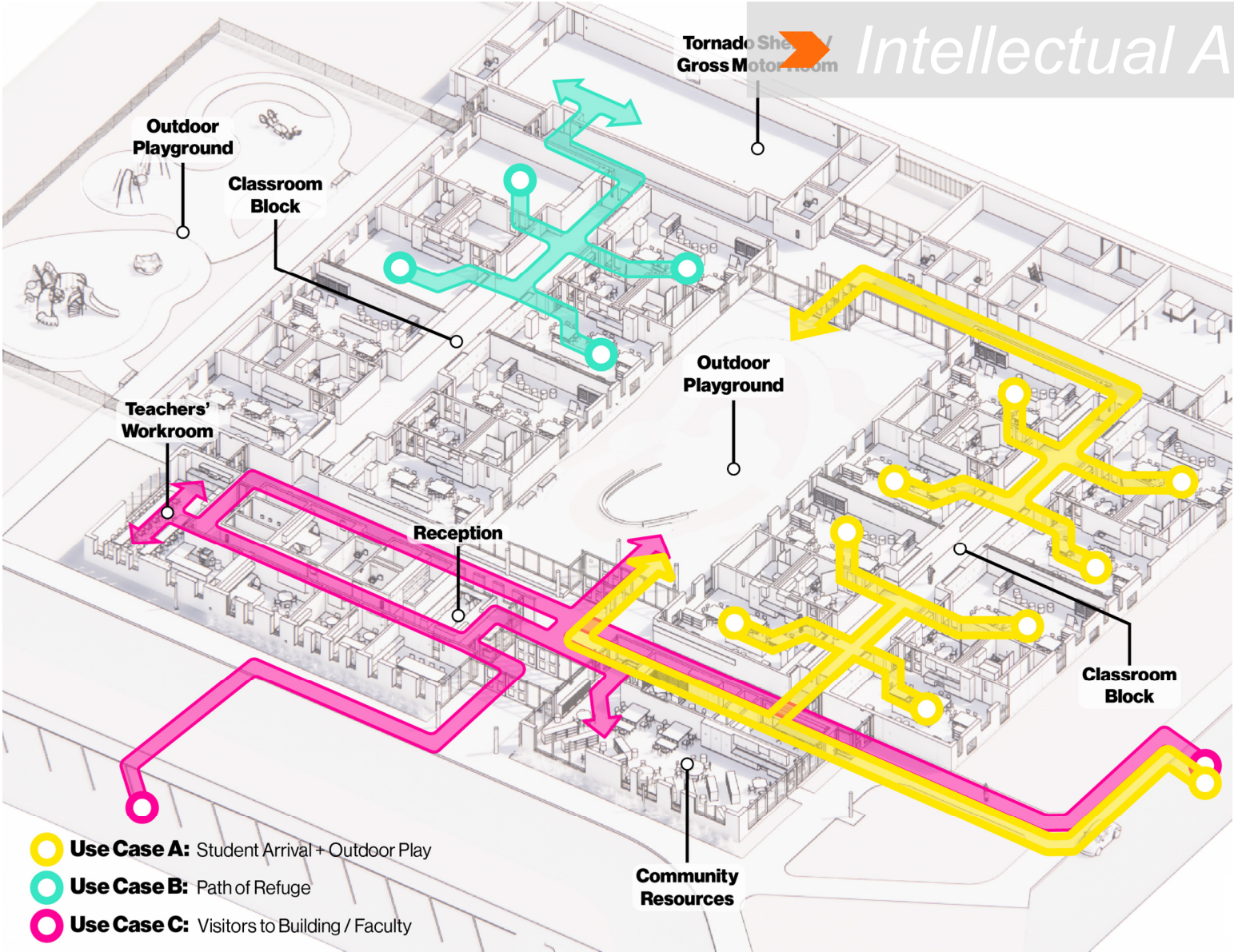






Tornado Shelter /  
Gross Motor Room

# Intellectual Agency



Outdoor  
Playground

Classroom  
Block




Teachers'  
Workroom

Reception

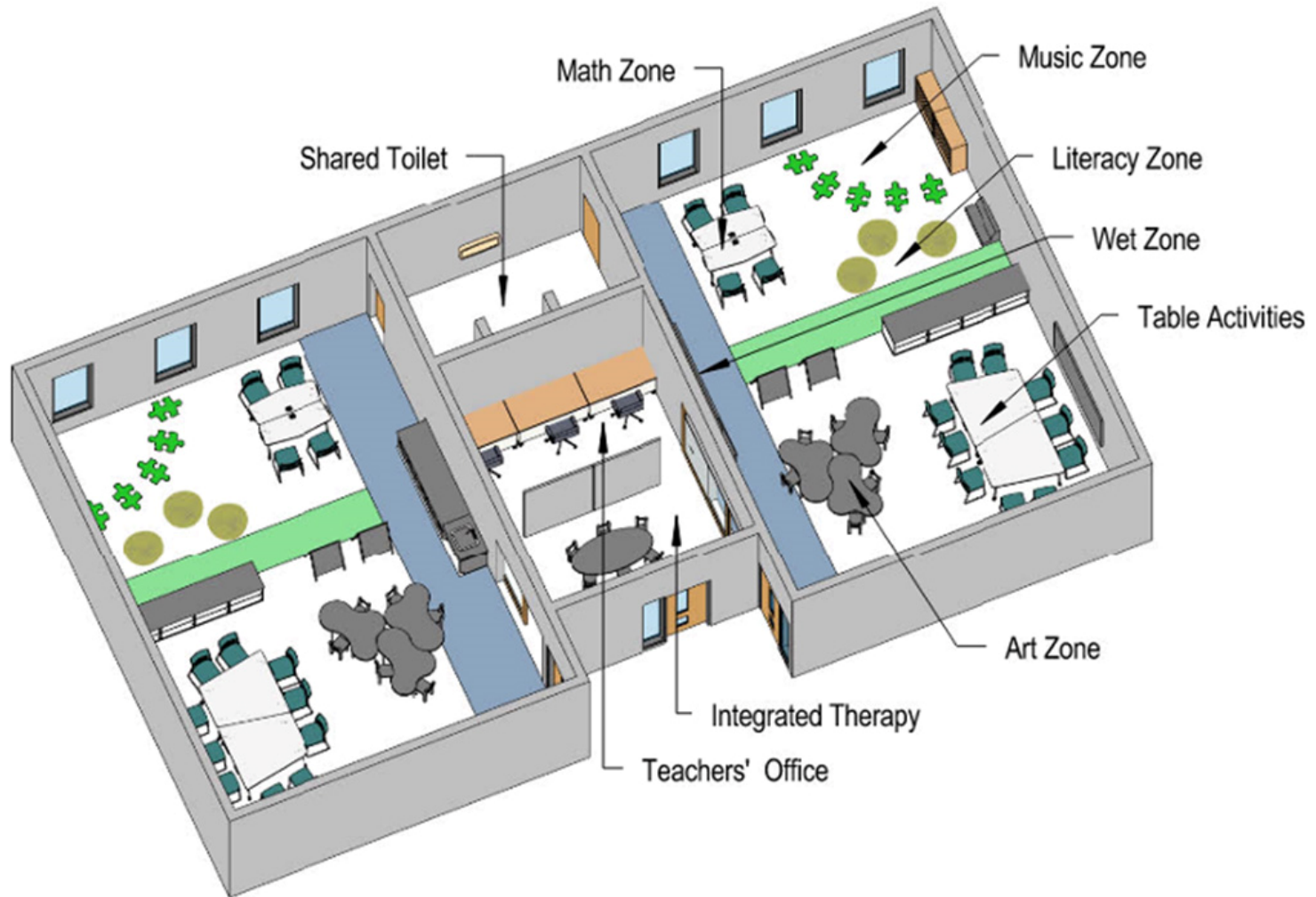
Outdoor  
Playground

Classroom  
Block

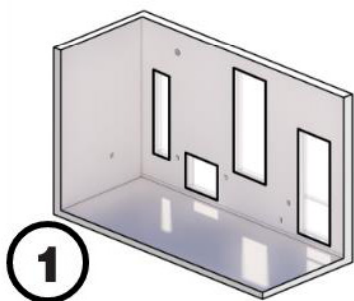
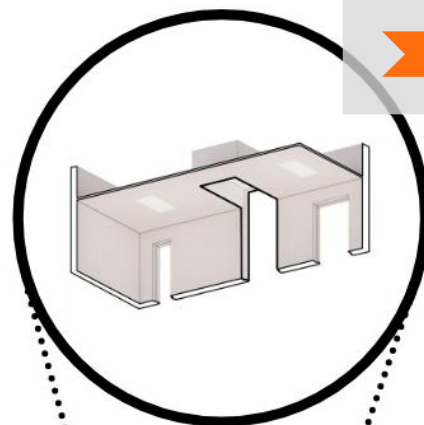
Community  
Resources

-  **Use Case A:** Student Arrival + Outdoor Play
-  **Use Case B:** Path of Refuge
-  **Use Case C:** Visitors to Building / Faculty

➤ *Intellectual Agency*

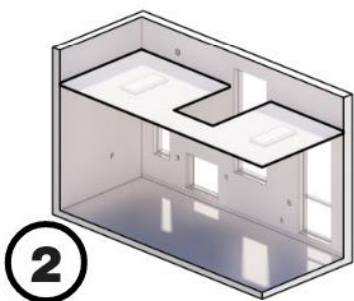






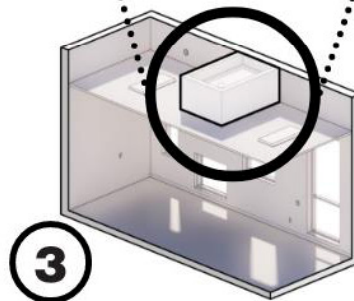
**Multi-Faceted Windows**

Each classroom features 4x windows at varying heights to allow learners of all ages to experience the outdoors at their own comfort level. Windows are set deep into the wall so as to limit the amount of direct sun and glare in the room.



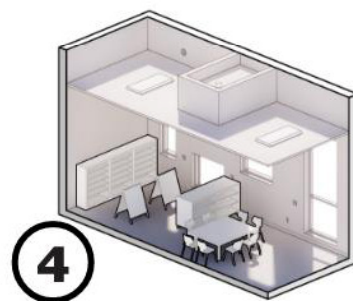
**Absorbent Ceiling**

Within classrooms, ceilings are set at 12'-0" above the floor and are slanted towards the windows to allow for the maximum amount of natural daylight spread in the room. Daylight is bolstered by high-efficiency LED light fixtures.



**Skybox Clerestory**

To accentuate the ceilings, each classroom features a skybox clerestory that allows for taller windows and even more natural daylight to enter the space. This skybox created a natural light cove that deepens the spread of light in the room.



**Age-Specific Furniture**

Finally, each classroom is equipped with age-appropriate furniture selections that maximize teacher sight lines to both students and the outdoors. Chairs are set to window height or above so children can see out the window from any seat.

➤ Intellectual Agency





➤ *Intellectual Agency*





➤ *Intellectual Agency*





➤ *Intellectual Agency*





 *Intellectual Agency*





➤ Intellectual Agency





**Agency** is the capacity of individuals to have the power and resources to fulfill their potential

**Social Agency** is at the community/family scale

**Physical Agency** happens at the building scale between the individual and the physical environment

**Intellectual Agency** is at the classroom scale

#### **Pathways to Agency**

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***What examples will you share of environments that support child agency?***



# QUESTIONS AND ANSWERS