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THERE IS NO GOOD BRAIN: A TOOLBOX FOR SENSORY RESPONSIVE DESIGN

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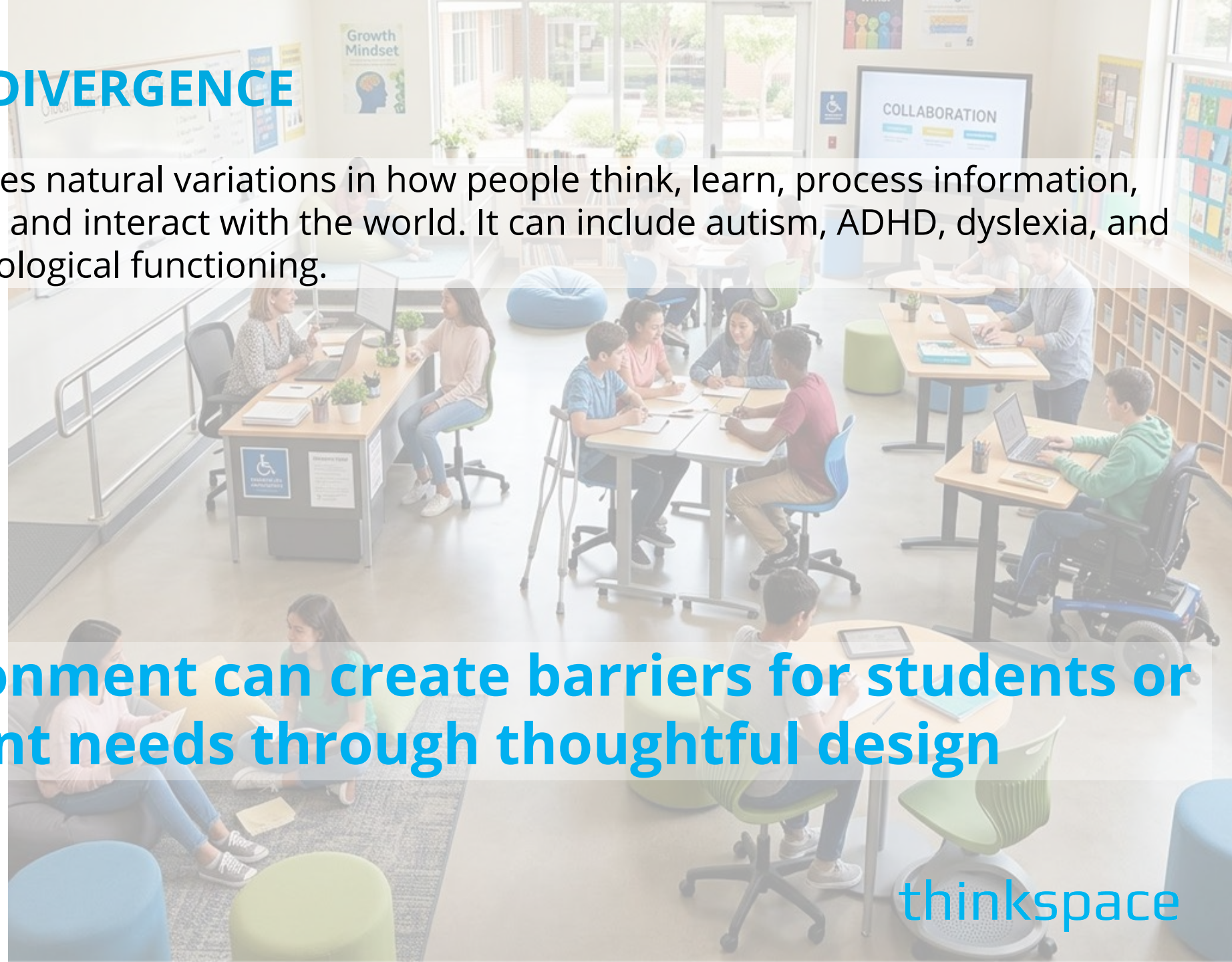
WHAT IS NEURODIVERGENCE

Neurodivergence describes natural variations in how people think, learn, process information, experience sensory input and interact with the world. It can include autism, ADHD, dyslexia, and other differences in neurological functioning.



The built environment can create barriers for students or support different needs through thoughtful design

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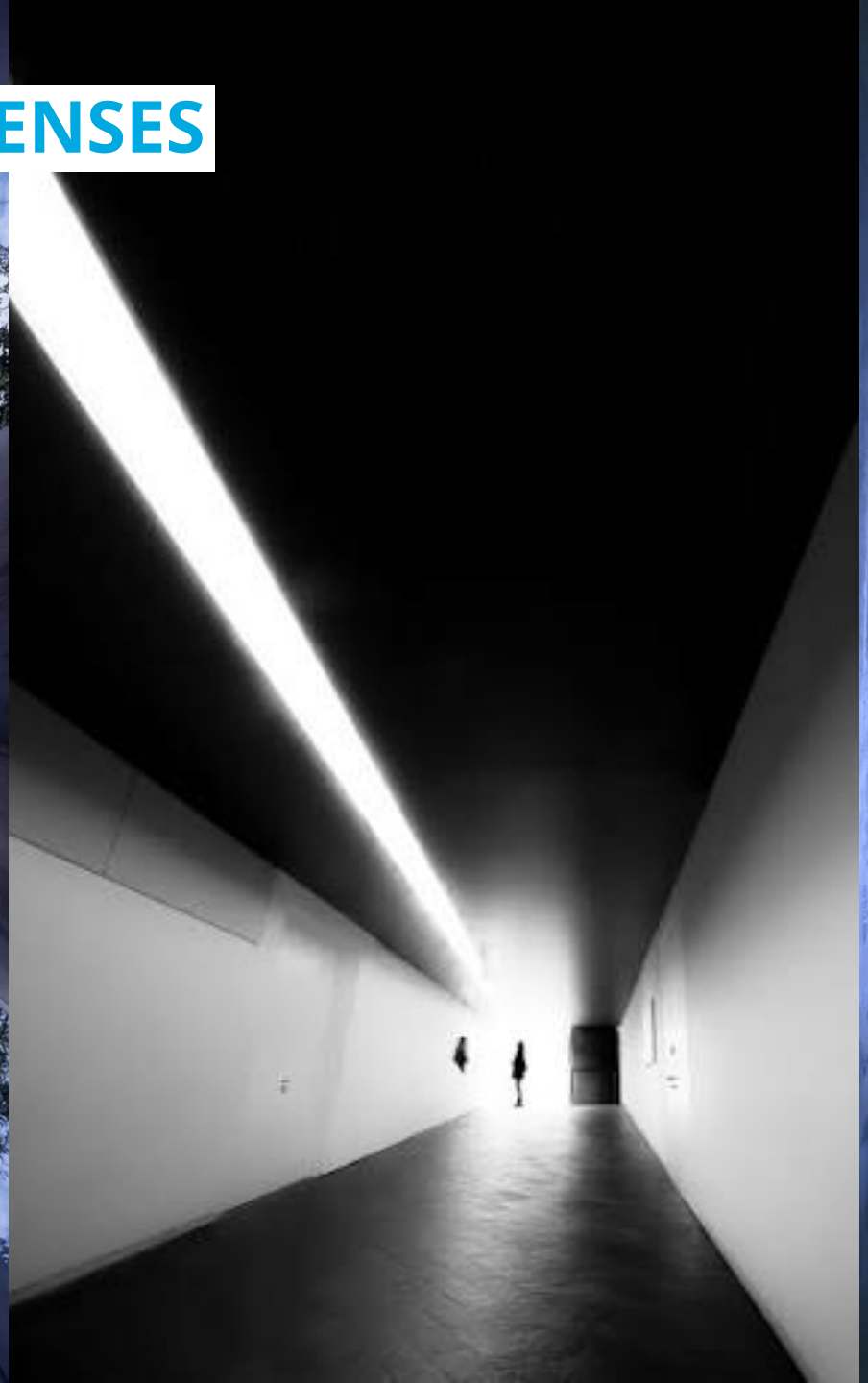
SPACE AND THE SENSES







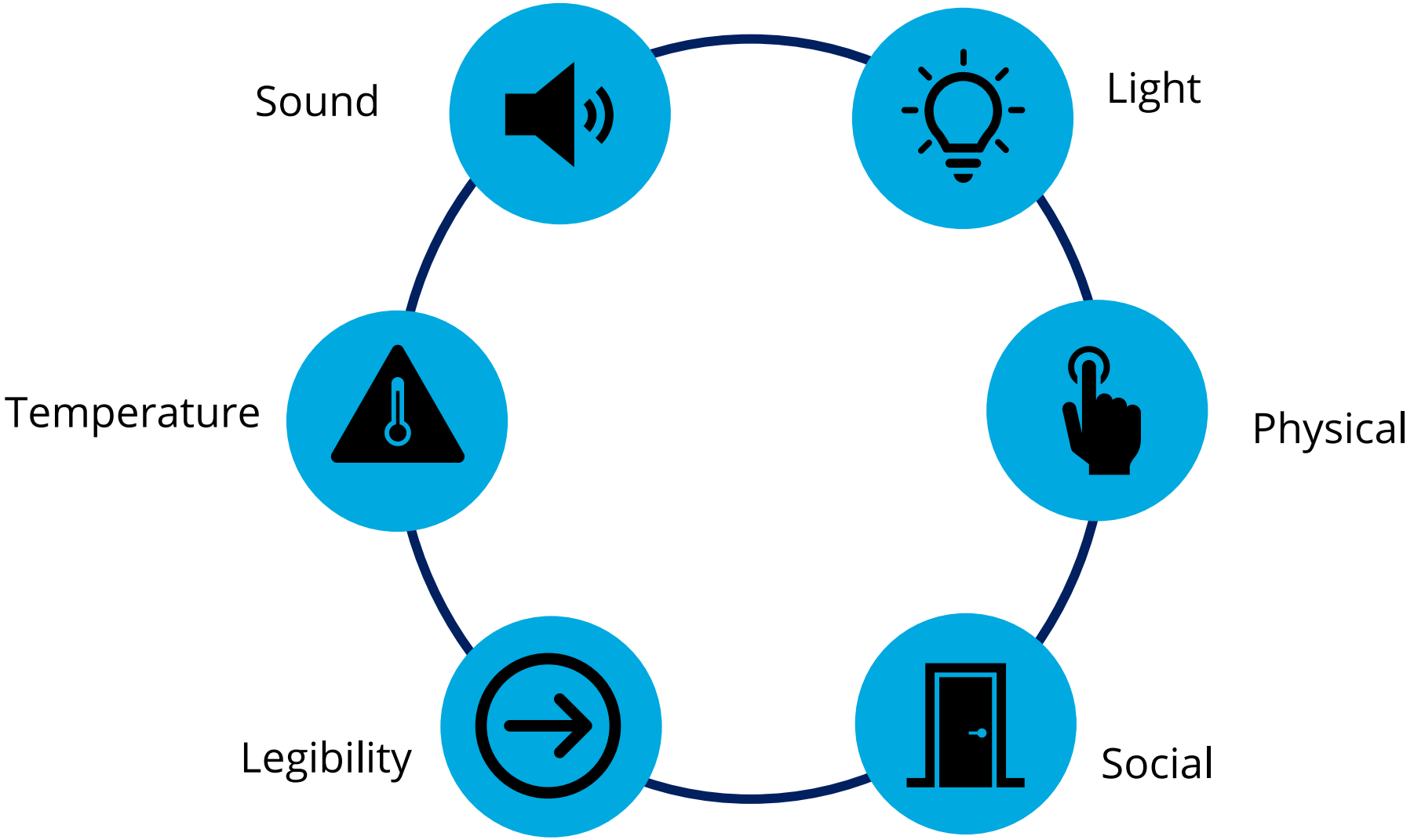
NEURODIVERGENCE AND THE SENSES

There is no single way to experience a learning environment.

What supports one student may create a barrier for another.

Our responsibility as designers is not to predict every response, but to create environments that offer choice, flexibility and different ways to engage.

SPACE AND THE SENSES



In the built environment, the largest design challenges are sensory.

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TOOLBOX FRAMEWORK

1 **UNDERSTAND** - Why does it matter?

2 **IDENTIFY** - What should we consider?

3 **DESIGN** - How can architecture respond?

4 **TEST** - Questions to ask

5 **APPLY** - What should be documented and how?



WHY DOES THIS MATTER?

- Choice
- Flexibility
- Safety
- Limiting stress
- Belonging
- Empowerment
- Improved learning



WHAT SHOULD BE CONSIDERED?

SOUND

- Acoustical adjustment
- Sound dampening
- Reverberation
- Noise transfer

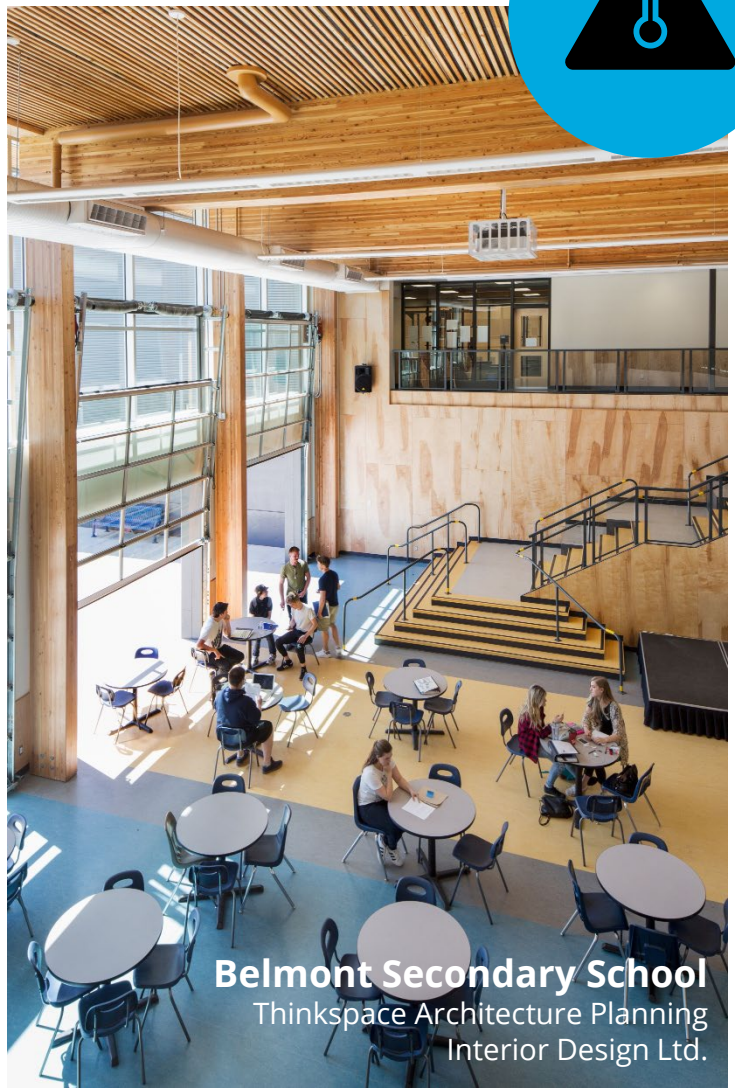


Creating a quiet space is not the only goal. The goal is to provide a range of acoustic experiences simultaneously.

WHAT SHOULD BE CONSIDERED?

TEMPERATURE

- Fresh air
- Temperature control
- Natural ventilation
- Radiant comfort
- Occupancy density



WHAT SHOULD BE CONSIDERED?

LIGHT

- Lighting control
- Daylighting
- Visual comfort



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WHAT SHOULD BE CONSIDERED?

SOCIAL

- Proximity to others
- Crowd control
- Seating options
- Physical barriers
- Balance proximity and separation


SĆIȺNEW_STEŁITKEŁ Elementary School
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WHAT SHOULD BE CONSIDERED?

PHYSICAL

- Movement
- Ergonomics
- Tactile
- Material consideration



Douglas Elementary School
Thinkspace Architecture Planning Interior Design Ltd.

WHAT SHOULD BE CONSIDERED?

LEGIBILITY

- Familiarity
- Wayfinding
- Predictability
- Landmarks
- Sightlines
- Visual connections



Camosun College Wilna Thomas Student Hub
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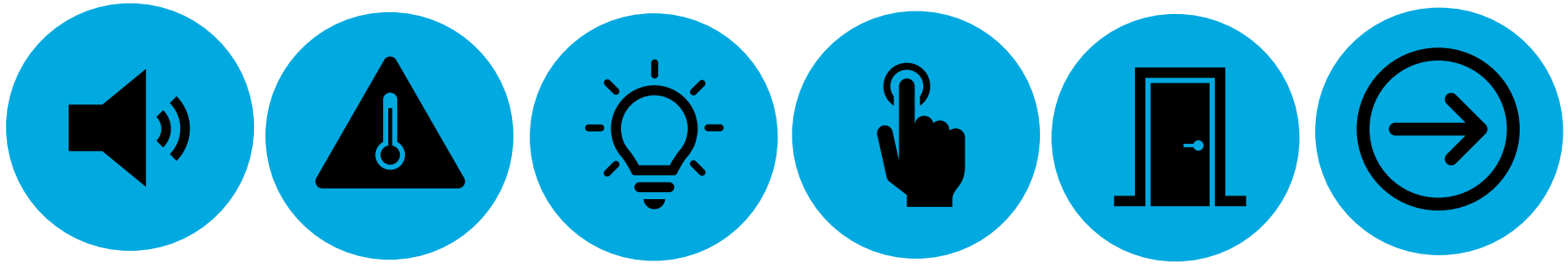
ARCHITECTURAL RESPONSE

Applied solutions



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ARCHITECTURAL RESPONSE

SOUND

- Acoustic ceilings, wall panels and soft materials to reduce excessive echo
- STC of 50 between learning spaces and STC of 60 where mechanical equipment is present or near loud spaces
- Sound masking if open environments
- Acoustical consultant to review reverberation and sound transfer
- Infrastructure for headphones or other noise-canceling devices



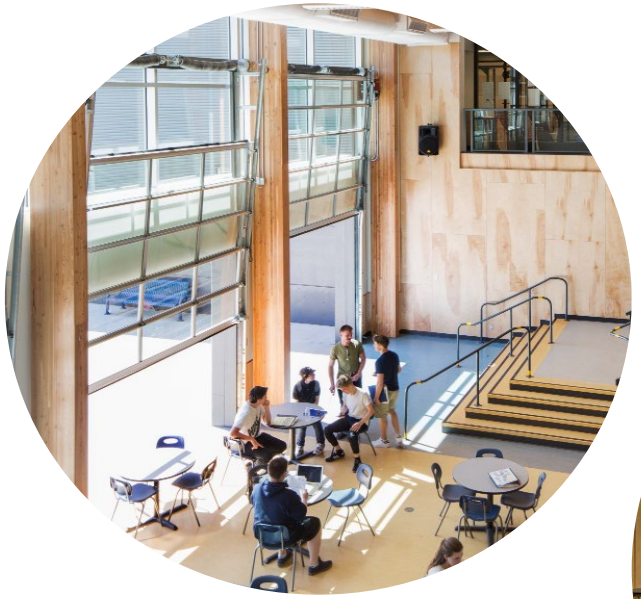




ARCHITECTURAL RESPONSE

TEMPERATURE

- Operable windows
- Room-specific thermostats
- Building orientation
- Airtightness testing
- Triple-pane windows in cold climates
- Shading devices in hot climates





ARCHITECTURAL RESPONSE

LIGHT

- Lighting control with color index options
- Blinds
- Skylights
- Indirect solar/lighting
- Shading devices







ARCHITECTURAL RESPONSE

SOCIAL

- Single seating
- Group seating
- Open concept washrooms
- Remove corners
- Enclosed and semi enclosed spaces







ARCHITECTURAL RESPONSE

PHYSICAL

- Sit-stand desks or wobble chairs
- Movable furniture
- Natural materials
- Soft materials
- Consistent materials and color







ARCHITECTURAL RESPONSE

LEGIBILITY

- Direct views to exits
- Open concept washrooms
- Color or patterns to denote areas
- Intuitive wayfinding
- Floor patterning
- Predictable, repeatable floor plans







PUT IT TO THE TEST



What questions should we ask?

If possible, try incorporating this phase into public engagement sessions with parents, students, staff and other members of the community.

Norma Rose Point Elementary / Middle School
Thinkspace Architecture Planning Interior Design Ltd.

PUT IT TO THE TEST

SOUND

- Are there quiet zones and louder zones?
- Are there ways to mask noise?
- Can students and staff control noise levels?
- Has noise from adjacent spaces been considered?



Ta'talu Elementary School
Thinkspace Architecture Planning Interior Design Ltd.

Have we designed an environment that gives students the best possible opportunity to listen, communicate, concentrate, and learn, regardless of their individual sensory needs?

PUT IT TO THE TEST

TEMPERATURE

- Are all windows in regularly occupied spaces operable?
- Does each room include temperature control?
- Are there other personal items to support students such as blankets, pillows or other warm places within a larger space?
- Can students and staff manage temperature control in their own spaces?



SĆIȺNEW̱SṮEŁIṮḴEŁ Elementary School
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PUT IT TO THE TEST

LIGHT

- Has the team accounted for:
  - lighting control, dimmers and lighting color index?
  - Blinds and sunshades?
  - Interior spaces which have been oriented to maximum daylighting?
- Where exterior windows are not possible, have skylights been considered?



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PUT IT TO THE TEST

SOCIAL

- Have the spaces allowed for different group sizes?
- Are there areas that can be considered more private and more public?
- Have you incorporated quiet nooks?
- Are there any corners or hidden areas that can be dangerous?



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PUT IT TO THE TEST

PHYSICAL

- Is the door hardware easy and simple to use?
- Are there various furniture types in classrooms giving students the option to sit, stand or move?



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PUT IT TO THE TEST

LEGIBILITY

- Can I see the exit from all locations?
- Do different space types have familiar characteristics such as colors or patterns?
- Is wayfinding intuitive without the need for words?
- Is the use of patterns simple and natural in appearance?



Belmont Secondary School
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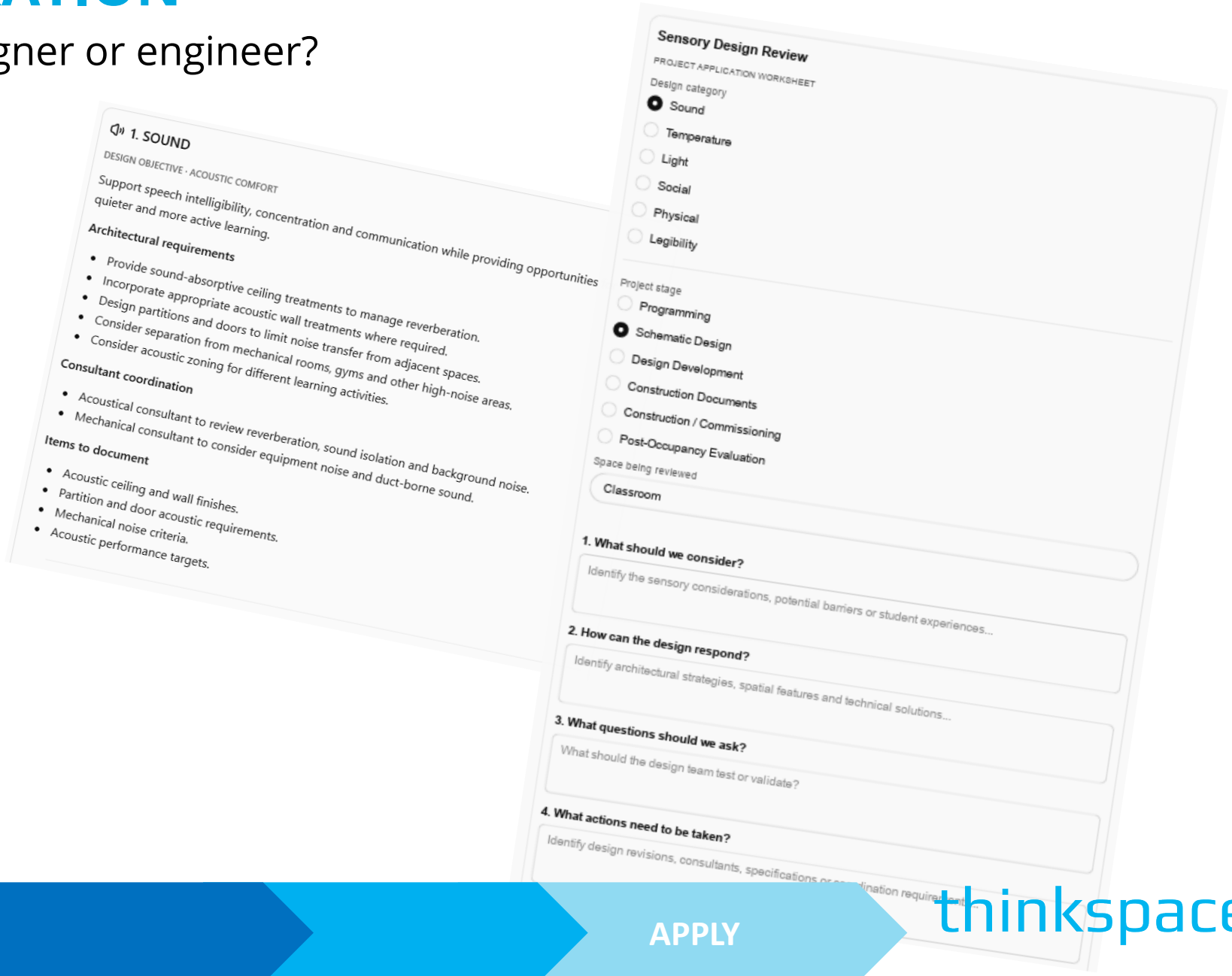
PROJECT INCORPORATION

As an architect, interior designer or engineer?

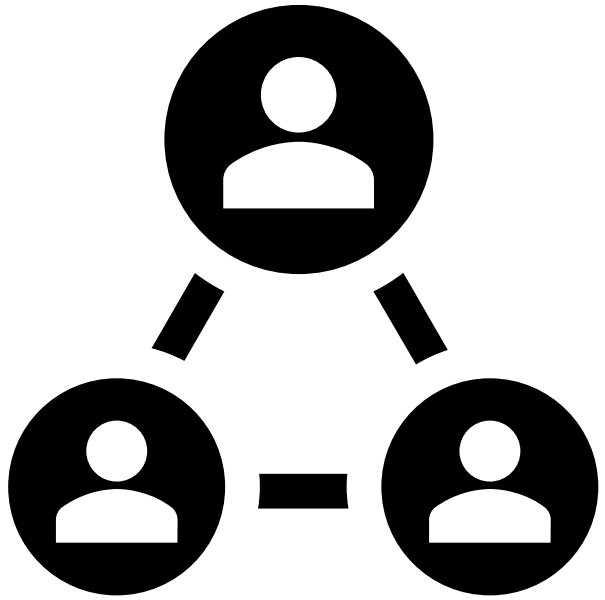
- Room data sheets
- Surveys
- Firm templates
- Engagement
- Specifications
- Holistic understanding



PROJECT INCORPORATION

As an educator or school district project manager?

- RFP
- Educational specifications
- District specifications



PROJECT INCORPORATION

Aligning the Toolbox with the project schedule

- Start early
- Think beyond a single room
- Carry intent through to construction

UNDERSTAND | IDENTIFY | DESIGN | TEST | APPLY

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Sensory-Responsive Design Toolbox

A SIMPLE PROCESS.
A LASTING IMPACT.



	Programming UNDERSTAND	Schematic Design IDENTIFY	Design Development DESIGN	Construction Documents TEST	Construction APPLY & VERIFY
Sound	Identify noise sources (e.g. traffic, gym)	Plan acoustic zoning and separation	Select acoustic finishes and details	Specify performance criteria	Verify installation
Temperature	Consider orientation, occupancy and HVAC	Plan HVAC zoning and solar control	Coordinate systems and controls	Detail requirements	Confirm functionality
Light	Assess daylight and view opportunities	Manage glare and light distribution	Integrate lighting controls	Specify shading and controls	Review performance
Social	Define collaboration, privacy and group sizes	Plan a mix of spaces	Provide flexible layouts and furniture	Document adjacencies and sightlines	Ensure planned variety of settings
Physical	Support active and restorative options	Plan for movement and choice	Specify ergonomic and tactile materials	Confirm furniture and clearances	Check final installation
Legibility	Simplify wayfinding and organization	Create clear and predictable layout	Include visual cues and landmarks	Document signage and contrasts	Validate intuitive navigation

The Result: Choice | Control | Flexibility | Wellbeing | Belonging | Empowerment





Sensory-responsive school design is not about creating one special sensory room or predicting how every student will feel. It is about designing an entire learning environment that offers choice, control, predictability, and different ways to engage and experience space.

THANK YOU

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