SENSORY WELLBEING HUB

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LEARNING OBJECTIVES

• Illustrate the unique needs of students with developmental disabilities

• Describe the construction and interactive elements of the Sensory Wellbeing Hub and how each element addresses a particular student need.

• Explain how key design principles can improve students’ wellbeing.

• Explain three key findings from the research study presented about the Sensory Wellbeing Hub.
SENSORY WELLBEING HUB
(click for video)
“Developmental disabilities”

... are a group of conditions due to an impairment in physical, learning, language, or behavior areas. About one in six children in the U.S. have one or more developmental disabilities or other developmental delays.

- CDC (Center of Disease Control)
Today, the CDC estimates that 1 in 59 children in the U.S. has an autism spectrum disorder.

* In the 1970s and 1980s, about one out of every 2,000 children had autism.
Lane Tech

College Prep high school with over 4,000 students including 219 diverse learners
Students

56 students enrolled in the special education program
- Ages 14 – 21.
- Various developmental disabilities including autism spectrum disorders (ASD), cerebral palsy, intellectual disabilities.
- Some students have multiple developmental disabilities.
A Day in the Life

Of a typical student - chaotic.
Of a disabled student - chaotic, environment fighting against them.
Sensory Wellbeing Hub

What is it and how did you design it?
The design approach for the Hub oscillated between research and design through an iterative prototyping process. We gained insights from experts informing design decision throughout and evaluated engagement to understand the impact of the implemented design.
Solve the problem - Version 1 design solution

Sensory Room
Solve the problem - **Version 1** design solution

**Sensory Room**

Use Sensory Room as a tool.
Provide sensory stimulation for hypo-stimulated kids, provide respite space for hyper-stimulated kids.

**Separate but accessible.**
Keep it close but separate from the classroom. Target usage time of room is about 20 min.

**Make it affordable.**
This is a public school, funding will be very limited.
Due to common practice of typical construction in the area providing a separate space using traditional methods was too costly for the school.
Solve the problem - **Version 2** design solution

**Sensory Hub w/Cocoon**
Solve the problem - **Version 2** design solution

**Sensory Hub w/Cocoon**

- **Make it scale-able.**
  Do a little or do a lot. Future installations may also have limited funding and space.

- **Make solutions non-proprietary.**
  Allow solutions to be easily obtainable.

- **Make it intuitive.**
  Leverage technology to create a curated sensory experience.
Guiding Principles

Quality and Safety
   “Do no harm”

Separate but Accessible
Affordable
Versatile
Modifiable
Scalable
Non-Proprietary
Intuitive
Durable
Tunable Environment
Hub Zones

**Active Zone**
Maximum Engagement

**Respite Zone**
Minimum Engagement

**Cocoon Zone**
Sensory Separation

**Tactile Transition**
Immersive Sensation

**Open Transition**
Unobstructed Access

Plan + Zones
Hub Design

Hub Axon
Fiberglass Acoustic Panels
Xorel Acoustic Panels
Modular Wall System
T-Slot Aluminum Framing
Structure and Surface
Hub Axon
Pin Wall

Texture Wall

Active Artifacts

Sound Wall

Rolling Pins

Hub Axon
Hub Axon

Media Wall

Cocoon

Cocoon + Media Wall

Hub Axon
Cocoon Design

A Tunable Micro-Environment
Cocoon Design

Wall Framing (Freestanding MiniTec sys.)

Wall Module (3-wall unit w/ movable panels)

Iso Overview (Isolation Tent pulled up to wall)
Cocoon Design

- Enclosure
- Textile “Web”
- 3D Printed Nodes
- Aluminum Framing
How did you study that?
<table>
<thead>
<tr>
<th>Metric</th>
<th>Method</th>
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<tbody>
<tr>
<td><strong>Surveys</strong></td>
<td>Student sensory profile</td>
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<tr>
<td></td>
<td>Student wellbeing</td>
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<tr>
<td></td>
<td>Parent/Staff/ Teacher wellbeing</td>
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<td></td>
<td>Staff job satisfaction</td>
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<td><strong>Focus groups</strong></td>
<td>Student</td>
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<td></td>
<td>Staff &amp; Teachers</td>
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<td><strong>Field observations</strong></td>
<td>Shadowing</td>
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<td>Observation (emotion)</td>
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<td><strong>Archival data</strong></td>
<td>Log-in sheets</td>
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<td></td>
<td>Environmental sensors (temperature, humidity, sound, light, occupancy)</td>
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<td>Kinect camera at media wall</td>
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<td>Smart flooring</td>
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<td>Student records</td>
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Sensor Systems

Environmental Effects
1. Sound (dba)
2. Light
3. Temperature
4. Humidity
5. Motion
6. Local Weather

Floor Sensors
1. Dwell Time
2. Occupancy Pattern
3. In/Out
4. Artifact Usage

Cocoon Interaction
1. Happiness
2. Motion
3. Face Angle
4. Duration
5. Position

Artifact Zone
• Environmental Sensor Location
○ Floor Sensors
| Kinect Sensor |
Research Report Will Be Available in Early 2019
What can make the hub better?
“What Can Make the Hub Better?"

- **Modular system**
  - Schools can replace such under-utilized or damaged artifacts with new ones.

- **De-constructable & Re-constructable**
  - Artifacts can be dismantled or destroyed by students.

- **Minimal sharp edges and small grooves**
  - Some students may be obsessed with edges or put fingers into small grooves.

- **The cocoon**
  - Greater mobility. Potentially two pieces with a lock.
  - Suggestions from paraprofessionals include music to buffer sound from outside, a fan inside, some light above the fabric.
“What Can Make the Hub Better?”

• **Adjustable lighting**
  – High illumination levels can make students with developmental disabilities restless. Dimmable lights and curtains when appropriate are recommended.

• **Proximity to yet separation from classrooms**

• **Visual and tactile interventions**
  – Bright colors.
  – Touchscreen, Squeezy things.

• **Thoughtful considerations of various disabilities**
  – Communication tools for non-verbal or language-impaired students.
  – Sufficient space and no barriers for mobility-impaired students.
  – Considerations for visual- or motor-impaired students include larger fonts and interface.
Sensory Wellbeing Hub
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