Regulate to Educate

muzo | patcraft® for education | EXHIBIT® CONCEPTS

Creating and contemplating
neurodiverse learning environments.

We live in a beautifully neurodiverse world.

Our brains all work differently, and our minds process sensory input, emotions, and actions in a wide range of ways.

The unique neurological profiles that we each have can easily become overstimulated and understimulated due to high or low sensitivity to sensory stimuli like light, sound, temperature and texture.

When we're over or under stimulated, we find ourselves in a dysregulated state, which makes learning more difficult.

Designing learning environments for neurodiversity means creating spaces that help learners regulate their emotions and reduce sensory overwhelm.

We all move through different states.
What if our learning environments could move with us?

Neuro-inclusive design doesn't ask a learner to become somebody else. It changes what the environment asks of them, and how easily they can participate within it.

The same classroom.
A different experience.

A chair scraping across the floor. Bright lights. Thirty conversations blending into one. A crowded wall covered in information. A desk that requires you to keep your body still. A room with nowhere to be alone.

Many of us barely notice these things, yet for somebody else it's inducing anxiety, overwhelm, panic and irritation.

Neurodivergent learners may experience differences in sensory processing, attention, energy, social interaction, planning and organization. We have identified sensory overwhelm, difficulty focusing, fatigue and organizational challenges among the barriers conventional learning environments can present.

A decibel meter might say: 65 dB. But it cannot tell us what 65 dB is like for this person right now. A color specification can tell us the wavelength or reflectance of a surface but can't tell us what that room feels like to inhabit.

Two people can occupy exactly the same objectively measured environment and experience substantially different worlds.



Water can exist in different states: freezing, flowing, fizzing and boiling. We too can find ourselves reflecting these conditions when we move through different mental, emotional and physical states. This shared metaphor helps learners and adults understand what support might be needed, without judgement.

None of these states are ‘bad’. They are signals from the nervous system about what kind of support may be needed, and help provide an environment that encourages a healthy acknowledgment of our inner world.

Instead of “you are frozen”, it becomes “you are freezing.” Something is happening, and because it is happening rather than simply being what you are, it can change. A state is something we're moving through, not something we are.

Four states of regulation

Freezing State
When our nervous systems are understimulated, we can feel lethargic, bored, or withdrawn.

Flowing State
Students feel engaged, focused, calm, and ready to learn when their nervous system is regulated.

Fizzing State
When learners are slightly overstimulated, they may become restless, silly, or anxious.

Boiling State
When highly overstimulated, rational thinking is replaced with a fight/flight/freeze/flop response.

Freezing State

In a state of understimulation, tired, sad, lethargic and disengaged learners can be re-energized to a regulated Flowing State with the help of these items.

Activate with invitation

1. Build + manipulate
   The modular elements can turn sitting, stacking, carrying and building into physical routes toward engagement.

2. Stand + move
   Height-adjustable/mobile workstations offer an alternative to beginning in a conventional seated position.

3. Accessible resources
   Open, highly organized storage makes materials visible and easier to access independently which reduces the number of steps between interest and action.

4. Make + display
   The wall-mounted display area can make ideas visible, celebrate work in progress and create prompts for investigation.

5. Curiosity + interaction
   An experiential or interactive element gives the learner something tangible to approach, investigate and respond to.

6. Calm visual foundation
   The relatively continuous flooring provides a quieter background beneath the stronger colors and more active learning elements.

7. Natural light + connection
   Daylight and views outside provide visual connection beyond the immediate activity of the classroom.

8. Multiple starting points
   The environment doesn't communicate "sit here and begin." It offers standing, making, building, exploring, gathering resources and conventional working as legitimate points of entry.

Flowing State

These options provide an ideal environment to help learners stay in this regulated neurological state.

Enable the learning

1. Choice of learning position
   Chair, table and floor-level options allow participation without prescribing one posture.

2. Collaboration at different scales
   Large and small table configurations support whole-group, small-group and more independent activity.

3. Reconfigurability
   Mobile tables and presentation surfaces allow the classroom to change as the learning changes.

4. Flooring as wayfinding
   Contrasting floor treatments create intuitive zones and pathways without adding walls or barriers.

5. Accessible organization
   Visible, structured storage helps resources remain predictable and independently accessible.

6. Multiple points of focus
   Fixed and mobile presentation surfaces allow learning to happen in different parts of the room rather than reinforcing a single fixed "front."

7. Informal learning
   The lower table and floor cushions provide another legitimate way to participate without it being an overflow space or reward.

Fizzing State

Learning can be difficult when our mind is slightly overstimulated. These solutions can help provide a regulating environment.

Channel the energy

1. Movement + active seating
   Active seating such as Xbrick provides an alternative to conventional static seating.

2. Choice of position
   Traditional chairs, individual positions and more active options mean the learner isn't being asked to regulate in one prescribed posture.

3. Accessible organization
   The mobile tray storage makes resources visible, structured and close to the point of learning.

4. Visual foundation
   The relatively restrained flooring provides continuity beneath more colorful furniture and environmental elements.

5. Natural connection
   The planting/window zone introduces a softer visual element within the classroom.

6. Environmental landmark
   The large-scale purple wall treatment creates a recognizable visual destination/identity without requiring every surface to carry information.

7. Mobile teaching/learning point
   The mobile writable/display surface allows the focus of the room to move rather than requiring every learner to orient toward one fixed front.



Boiling State

When emotions bubble over and we feel like steam is coming out of our ears, a safe, controlled environment helps to reduce anxiety and regulate our overstimulated minds and bodies.

Reduce the demand

1. Degrees of retreat
   Different seating and enclosure options allow the learner to choose how much separation they need.

2. Soft landing
   Upholstered seating provides a contrasting physical experience to conventional classroom furniture and creates places where the body can settle.

3. Lower the level
   Floor-level and low seating positions offer a different relationship with the room, potentially reducing the sense of being exposed within a busy classroom.

4. A retreat within the room
   The Xden creates a defined destination with greater enclosure while maintaining a visual relationship with the wider space.

5. Interaction without obligation
   The tactile activity panel offers something predictable and self-directed to engage with. It is available rather than imposed.

6. Familiar resources
   Open cubbies and simple organization make objects visible and their locations predictable.

7. Calm sensory foundation
   A restrained flooring treatment gives the room continuity and allows other elements to remain visually distinct without excessive contrast.

8. Choice remains available
   Perhaps most importantly, Boiling doesn't become a "calm-down room" with only one prescribed way to regulate. There are multiple places, positions and degrees of engagement available.

Our neurodiversity concept is a lens upon the person, not a definition of the person.

Language about nervous systems, sensory processing, circuitry, regulation, inputs and outputs can illuminate real dimensions of human experience and can help people understand needs that have previously gone unseen. But these are models and metaphors directed toward particular aspects of embodied life. They should not silently become a complete account of what a human being is. A person exceeds every neurological, psychological or diagnostic description we can give of them.

The nervous system belongs to the person, and yet the person is not reducible to the nervous system. We don't intend for these labels to be used to consume a person, and instead should be used to illuminate their experiences so that we can offer the right help at the appropriate time.

- Boiling
- Fizzing
- Flowing
- Freezing

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Space that can respond

For generations, classrooms have largely prescribed how learning should look. Sit here. Face forward. Stay still. Work this way. But learners aren't static. Sometimes we concentrate better while moving. Sometimes we want to collaborate. Sometimes we need independence. Sometimes we need to withdraw from activity without withdrawing from learning. The environment can give us those choices.

Muzo's approach combines fixed, flexible and mobile elements so spaces can change around different activities, and different states of regulation.

Kite® tables, for example, facilitate collaboration without imposing direct eye contact and can fold and nest when space is needed. Xbrick can become seating, active seating or a creative building system. Clear, accessible storage can make resources easier to locate independently. JuiceBot® introduces engaging educative audio to any space.

The opportunity isn't simply flexible furniture. It's learner agency.



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Design from the floor up

Before furniture is placed, the environment has already begun communicating. Color, texture, pattern and material can help define zones, signal transitions, support wayfinding and influence the overall sensory character of a learning environment. Patcraft's own research argues that color should be selected according to the intended purpose of a space, rather than purely for aesthetics or trends. Rather than asking "What color looks good?" we ask “What is the purpose and meaning of a space, and how can the flooring support this?”

Patcraft's States of Water collection explores water through three modular carpet styles: Glacial Ice, Tidal and Vaporous. The collection moves through colors with names including Flow, Dew, Laguna, Deep, Frost, Cloud, Fog, Ink, Haze, Ebb and Mist. The designs can serve as a reminder that water can change dramatically while remaining water, and people can move through very different states without it becoming a permanent fixture.

EXHIBIT® CONCEPTS

Make the environment part of the lesson

Learning environments can communicate through scale, imagery, form, interaction, storytelling and sensory experience. Exhibit Concepts brings experience design into education by turning environments into places to discover, investigate and participate. Their educational work spans immersive environments and hands-on experiential learning, and their Exploration Zones offering covers permanent, convertible, mobile and destination environments that allow children to investigate concepts through hands-on experiences.

Experiential learning environments turn the physical space into another tool for teaching by creating context, purpose and opportunities for learners to interact directly with ideas. Immersive learning doesn't have to mean expensive technology or an environment filled with stimulation. It can be as simple as visual landmarks that make a space easier to understand, predictable journeys through a room, an immersive but carefully controlled sensory experience that inspires imagination without overwhelm.

Educative Audio Design
Sound designed to support the way different learners learn.

Muzo designs original, adaptive audio experiences that can support attention, movement, transitions, motivation, communication, and calm in the classroom.

Sound with a purpose
The right sound can give learners something predictable to organize around. Rhythm, musical cues, gentle soundscapes, and familiar character voices can create an auditory scaffold around classroom activities without replacing the teacher or the instruction.

Different learners and different sounds
There is no single perfect sound for ADHD or neurodiverse learners. One student may focus with a gentle beat, another with nature sounds, another may need energetic rhythm, and another may need silence. Choice (not prescription) is at the heart of Muzo.

The Muzo vision
Create better sound experiences that make learning environments more engaging, accessible, expressive, and enjoyable for all children.



Meet JuiceBot®
Educative Audio Design in a classrooom character.

JuiceBot can welcome students, signal transitions, invite movement, lead rhythm games, create calming moments, and celebrate accomplishments.

JuiceBot for neurodiversity
Engaging audio tools that support neurodiverse learners with focus, regulation and everyday classroom routines.

A character that captures attention
JuiceBot's friendly character and voice help capture attention and keep learners engaged.



Sensory Circuits
JuiceBot's Sensory Circuits use energetic music and movement to increase alertness, build listening and coordination through movement activities, and promote calm through breathing, mindfulness or gentle soundscapes.

Supporting autonomy
For children with PDA, everyday requests can feel overwhelming. JuiceBot's neutral voice offers a low-pressure way to communicate instructions.

Making transitions easier
JuiceBot can provide clear, consistent reminders for routines such as tidying up, washing hands and lining up.

The ‘Look & Feel’ Design Checklist

You probably know what your classroom or school looks like. But have you paid attention to what it feels like? Below are some helpful pointers, which aim to give us a way of seeing the classroom rather than merely looking at it. Sometimes inclusion starts by seeing what everybody else has learned to ignore.

- ◯ **Sound**
  What hums, buzzes, scrapes, echoes or competes for attention? Can you introduce sound with intention?

- ◯ **Sight**
  How much information is visible at once? Are stored items easy to find?

- ◯ **Movement**
  Can learners move without being considered disruptive?

- ◯ **Touch**
  What textures and physical sensations does the environment create?

- ◯ **Orientation**
  Is it obvious where to go and where things belong?

- ◯ **Predictability**
  Does the environment help communicate what happens next?

- ◯ **Retreat**
  Where can somebody go when they need less?

- ◯ **Agency**
  What can learners control for themselves?



We all move through different states. What if our learning environments could move with us?

Designing for neurodiversity isn't one product decision. It's many environmental decisions working together. These inform how we move, where we gather, where we retreat, what is beneath us, how we relate to what surrounds us, and how seen we feel as a person.

Muzo, Patcraft and Exhibit Concepts have brought together furniture, surface and experience to create learning environments that can help both teachers and students attain the internal and environmental conditions in which they are able to learn, participate and flourish.

We believe the outcome of designing neuroinclusive spaces should be the growth of the child's agency and thereby an increase in their freedom.

Three perspectives. One shared ambition for better learning environments.

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Flexible furniture designed to give learners greater choice, movement and control over how they use their space.

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Thoughtful flooring that uses color, pattern and material to help shape calmer, clearer and more intuitive learning environments.

EXHIBIT® CONCEPTS

Experiential environments that turn space into part of the learning, creating meaningful opportunities to discover, interact and engage.

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