

Embodied Cognition

Creating a Positive Environment for Developing Brains

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What is Embodied Cognition?

Embodied cognition means:

- The brain is shaped by **movement**
- Learning is influenced by **sensory input**
- Cognition is connected to **posture, balance, space, and safety**

Key point:

A child cannot think well if their nervous system feels unsafe.

Not just neurodivergent students, *all* developing brains rely on body-brain integration.

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The Nervous System First

Before behaviour... there is regulation.

Children move between:

- Regulated (ready to learn)
- Dysregulated (anxious, distracted)
- Overwhelmed (fight, flight, freeze)

Common school triggers:

- Fluorescent lighting
- Chaotic noise
- Visual clutter
- Rigid sitting expectations
- No sensory breaks

If we design environments without understanding this

.... we create stress.

Sensory-Supportive Environments

- Harsh fluorescent lighting increases stress
- Use warm bulbs where possible
- Maximise natural light
- Allow hats, visors, seating choice away from glare

Small changes = large nervous system impact.





Sound

Noise is cognitive load

Some brains filter automatically, others don't.

Practical tools:

Noise-cancelling headphones

Soft furnishings to absorb sound

Clear signal transitions (instead of shouting)

Quiet corners

Remember:

Noise fatigue looks like “bad behaviour.”



Colour & Visual Load

Highly saturated walls increase cognitive demand.

Visual clutter increases anxiety.

Recommendation:

Calm base palette

Designated display zones

Clear visual structure

Not sterile, intentional.





Movement is Not a Distraction

The brain develops through:

Vestibular input (balance)

Proprioception (body awareness)

Bilateral coordination

Rigid sitting:

Increases stress

Reduces focus

Suppresses regulation

Options:

Standing desks

Wobble stools

Stretch bands on chairs

2-minute movement resets every 20–30 minutes

Ask:

Is the child fidgeting... or regulating?



Movement Break



Bounce Up and Down (touch the sky)



Mountain Climbers



Wall Sit



Jumping Jacks



Push Ups or Knee Push Ups



Tuck and Roll + Jump Up High

Challenge:
How many can you do in 1 minute?



Flexibility in Structure

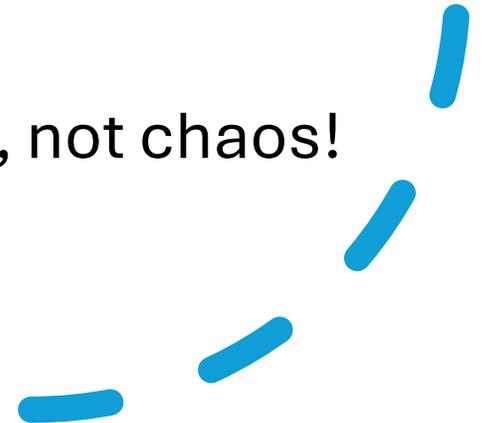
Structure is important but rigid structure is harmful.

Embodied-friendly classrooms allow:

- Seating choice
- Alternative ways to complete work
- Micro-breaks without punishment
- Predictable transitions

A safe nervous system = higher executive functioning.

Flexibility means intelligent design, not chaos!





Safe Spaces / Regulation Zones

1. Micro Safe Zones (within classroom)

Tent or canopy

Beanbags

Dimmer lighting

Soft textures

2. Dedicated Regulation Rooms

Weighted blankets

Rocking chairs

Low lighting

Minimal visual load

Critical principle:

Safe spaces are not “time-out punishment.”

They are:

Nervous system reset zones.



Mainstream vs Specialist Settings

This is not only for specialist schools.

Mainstream schools:

Increasing diversity of neurotypes

Rising anxiety

Rising sensory overload

Embodied design:

- ✓ Reduces exclusions
- ✓ Reduces conflict
- ✓ Increases learning retention
- ✓ Supports staff wellbeing

SENDCOs:

Environmental audits should be standard.



What This Is Not

It is not:

- Lowering standards
- Creating chaos
- “Special treatment”
- Over-accommodation

It is:

- Brain-informed design
- Preventative support
- Cost-effective regulation
- Inclusive by default

When we design for sensory sensitivity, we **improve conditions for everyone**



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Practical Starting Points

If you do nothing else:

- ✓ Audit lighting.
- ✓ Create one calm zone per classroom.
- ✓ Introduce scheduled micro-movement breaks.
- ✓ Reduce visual clutter by 30%.
- ✓ Train staff on nervous system basics.

Small shifts
Massive impact

Final Thoughts

“Children are not difficult. They are adapting to the environments we create.”

If behaviour improves when environment improves, it was never the child.

Embodied cognition is not a trend, it is developmental reality.

Design for the body and learning will follow.

“If the environment overwhelms the nervous system, the brain cannot learn.”

Embodied cognition asks educators to move from **controlling behaviour → designing environments that support regulation.**

Selected Academic References

Macedonia, M. (2019). *Embodied Learning: Why at School the Mind Needs the Body*. *Frontiers in Psychology*.

Macrine, S. & Fugate, J. (2021). *Translating Embodied Cognition for Classroom Learning*. *Frontiers in Education*.

Schmidt, M. et al. (2019). *Effects of Embodied Learning on Attention and Vocabulary Acquisition*.

Klatte, M. et al. (2013). *Effects of Noise on Children's Cognitive Performance*.

Adams, D. (2025). *Sensory Aspects of the Built School Environment and Learning*.

Noise and Learning

Environmental noise disrupts speech perception, listening comprehension, and cognitive performance in children.

Source:

Klatte, M., Bergström, K., & Lachmann, T. (2013)

Effects of Classroom Noise on Children's Learning and Cognition

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3757288/>

Movement and Embodied Learning

Physical movement integrated with learning tasks improves attention, memory retention, and engagement.

Source:

Macedonia, M. (2019)

Embodied Learning: Why the Mind Needs the Body in School

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6779792/>

Sensory Environment and Learning

Classroom environmental factors such as lighting, sound, and layout significantly influence student wellbeing and learning performance.

Source:

Adams, D. (2025)

Sensory Aspects of the Built School Environment

<https://www.tandfonline.com/doi/full/10.1080/13603116.2025.2589290>

Flexible Seating and Engagement

Flexible classroom seating and movement-friendly learning environments can improve student focus and participation.

Overview:

<https://www.edutopia.org/article/flexible-seating-benefits-students>

Embodied Cognition in Education

Embodied cognition research shows thinking and learning emerge from interaction between brain, body, and environment.

Source:

Macrine, S., & Fugate, J. (2021)

Translating Embodied Cognition for Classroom Learning

<https://www.frontiersin.org/articles/10.3389/feduc.2021.712626>