UNIVERSITY OF TORONTO MISSISSAUGA

ROBERT GILLESPIE ACADEMIC SKILLS CENTRE

The Neuroinclusive Classroom Series: The Paradox of AI in Neuroinclusive Teaching

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LAND ACKNOWLEDGEMENT

We wish to acknowledge this land on which the University of Toronto operates. For thousands of years, it has been the traditional land of the Huron-Wendat, the Seneca, and the Mississaugas of the Credit.

Today, this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.

ACCESS CHECK

Access is a shared responsibility among everyone in this space. While attention has been paid to reduce barriers to participation, I encourage interventions on the following (and more!) to enhance access.

Technology
Space
Pace

"We all have bodies, hearts, and minds. We all have needs and capacities, strengths and vulnerabilities"

- Skin, Tooth, and Bone: A Disability Justice Primer

Session Outcomes

- Critically evaluate the benefits and challenges of integrating Large Language Models (LLMs) and other AI tools for neurodiverse learners, including impacts on cognitive load, attention, and stress.
- Consider how Universal Design for Learning (UDL) principles can guide neuroinclusive integration of AI technologies in higher education.
- Analyze scenarios where AI use may either support or hinder learner agency and accessibility
- Apply strategies for designing AI-supported activities that:
    - Promote clarity and transparency
    - Account for learner variability
    - Foster meaningful choice and autonomy

Large Language Models

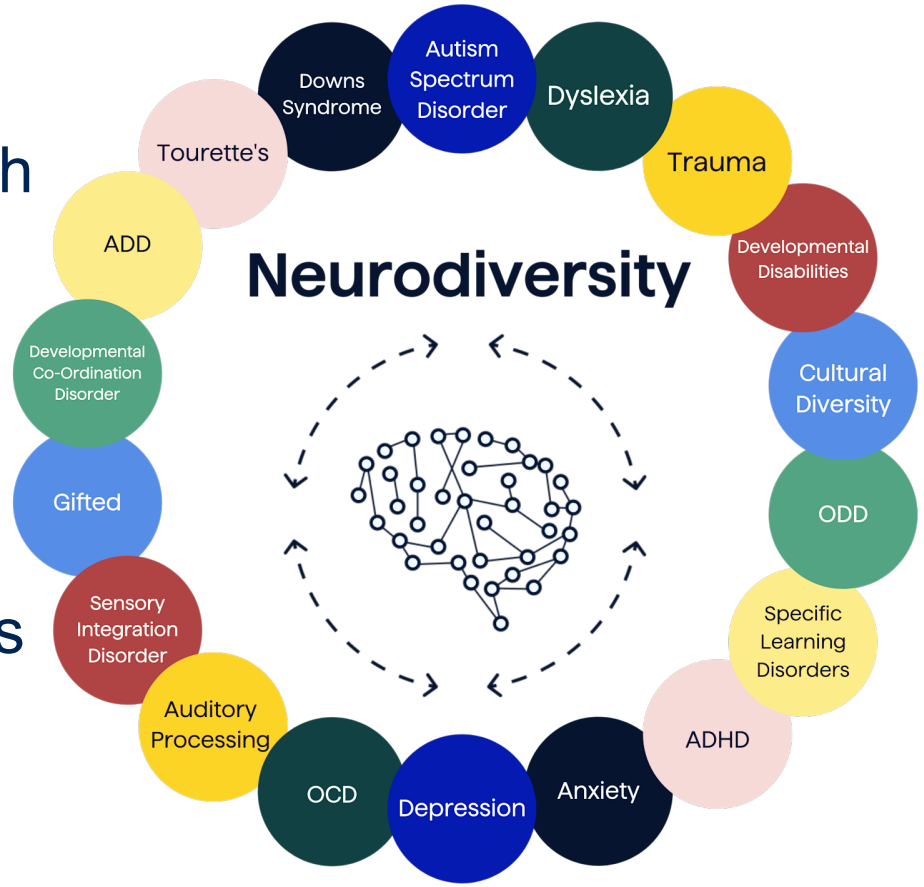
General purpose AI systems trained on massive datasets to summarize, generate, and predict ‘natural’ language text.

- not built, evaluated or governed like assistive tech

How are your students already using LLMs?

What is Neurodiversity?

- People experience and interact with the world around them in many different ways
- No one "right" way of thinking, learning, and behaving, and differences are viewed as strengths not deficits.



Paradoxical Narratives: Palantir's Neurodivergent Fellowship

Palantir

The Program

Neurodivergent individuals will play a disproportionate role in shaping the future of America and the West. They see past performative ideologies and perceive beauty in the world that still exists — which technology and art can expose.

The current LLM tech landscape positions them to dominate. Pattern recognition. Non-linear thinking. Hyperfocus. The cognitive traits that make the neurodivergent different are precisely what make them exceptional in an AI-driven world.

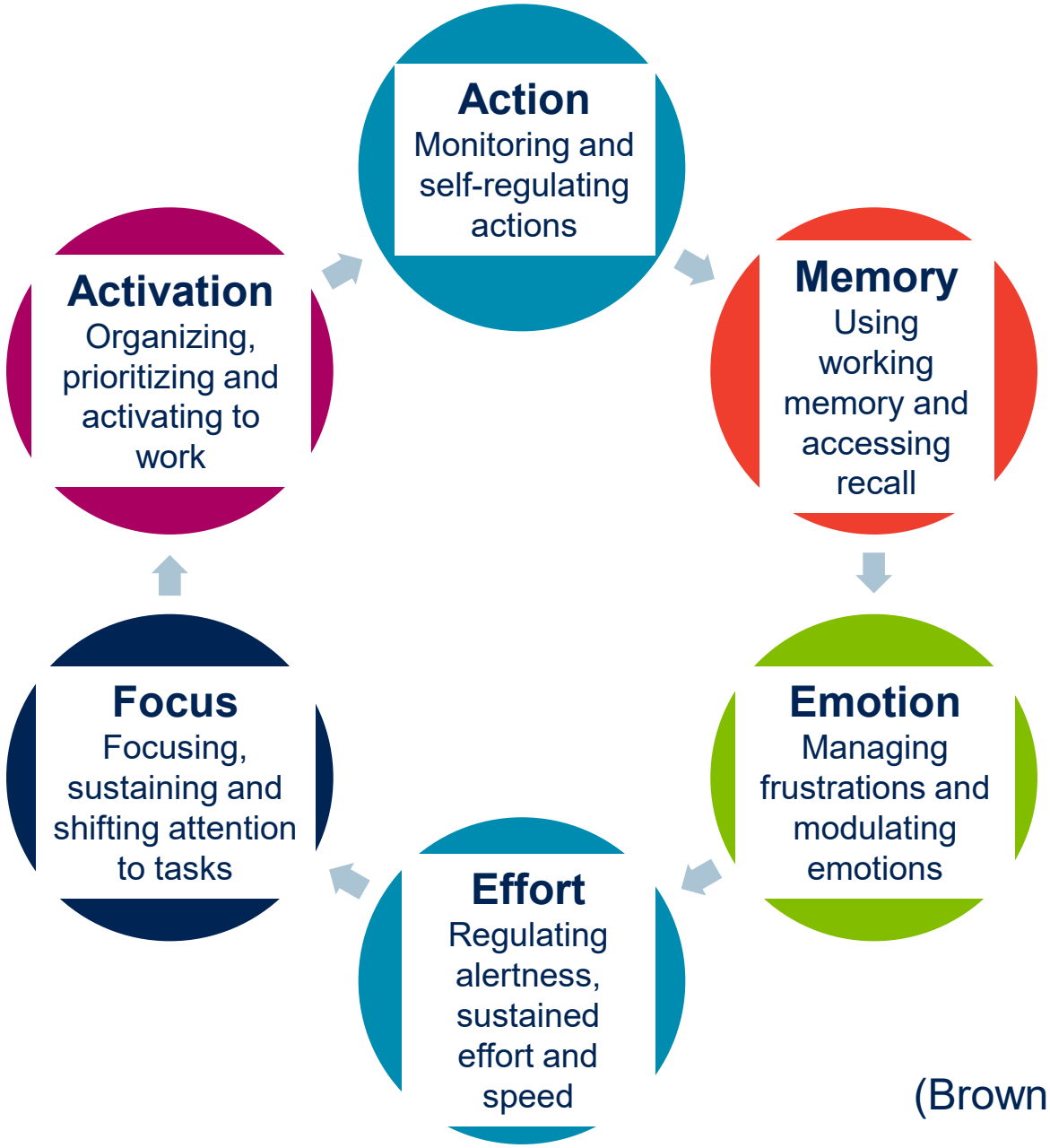
Palantir is launching the Neurodivergent Fellowship as a recruitment pathway for exceptional neurodivergent talent. This is not a diversity initiative. We believe neurodivergent individuals will have a competitive advantage as elite builders of the next technological era, and we're hiring accordingly for all roles.

Higher Education Context

Making the Invisible Visible: Neurodivergent Students' Experiences in Canadian Higher Education (2024)

- 1/3 of neurodivergent students do not have a formal diagnosis, which limits access to educational supports and accommodations.
- Less than ½ disclosed identity or diagnosis.
- Challenges w/ Executive Function reported 2-3x more often than any other challenge.

Executive Function Challenges



(Brown, 2005)

AI and Academic Deskilling

Cognitive Offloading

- AI-generated explanations and summaries replace disciplinary reasoning, reducing students' critical thinking and internalization of concepts.

Reduced Scholarly Practice

- Dependence on AI decreases practice with argument construction, revision and the iterative cognitive work essential for learning.

Diminished Engagement with Primary Sources

- AI summaries limit direct interaction with complex texts, reducing exposure to discipline-specific language and theories.

Masked Writing Skill Gaps

- AI writing tools enable submission of polished prose, hindering the identification and developing writing competencies.

Potential Compounding Impacts

Researchers estimate that kids with ADHD hear 20,000 more negative or corrective statements than neurotypical peers by age 10. (Furukawa et al. 2017)

AI detection software appears to disproportionately flag neurodivergent students' work a false positive. (Gegg-Harrison & Quaterman 2024)

Academic v. Procedural

When a student uses AI to format their bibliography, have they failed to learn about source evaluation and academic integrity?

Or, have they bypassed a procedural barrier?

Two Types of Rigour

ACADEMIC RIGOUR	PROCEDURAL DEMANDS
The learning goal itself	**Executive function tasks**
• Critical thinking about course concepts	• Remembering due dates and steps
• Disciplinary knowledge and reasoning	• Organizing notes and sources
• Applying theories to new contexts	• Formatting citations properly
• Synthesizing multiple sources	• Structuring a document
• Original analysis and argumentation	• Initiating and managing tasks

Universal Design for Learning

Multiple Means of ENGAGEMENT

The WHY of learning

How learners get interested and stay motivated

Multiple Means of REPRESENTATION

The WHAT of learning

How information is presented to learners

Multiple Means of ACTION & EXPRESSION

The HOW of learning

How learners demonstrate what they know

These principles will guide our three design strategies for neuroinclusive AI.

3 Design Principles

for Neuroinclusive AI integration

1. Clarity & Transparency
2. Account for Learner Variability
3. Foster Meaningful Choice & Autonomy

Clarity & Transparency

Ambiguity creates anxiety, guesswork and a hidden curriculum.

- Clearly distinguish what demonstrates learning vs what supports process
- Provide explicit protocols for when/how to use AI
- Explain pedagogical rationale
- Eliminate hidden rules and unstated expectations

Research Paper with Clarity & Transparency

LEARNING GOALS (this demonstrates learning)	PROCESS SUPPORT (AI tools may help with this)
✓ Evaluate source credibility	✓ Generate search terms
✓ Synthesize multiple perspectives	✓ Format bibliography
✓ Develop original argument	✓ Organize notes from readings
✓ Support claims with evidence	✓ Create project timeline
	✓ Check for clarity/coherence

Account for Learner Variability

Different students need different procedural supports – and some need protection from AI's capacity to overwhelm.

Universal Design means providing options, not one-size-fits solutions.

Task initiation: *'I can't start'*

Time management: *'When is this due?'*

Sustained attention: *'I keep getting distracted'*

Organization: *'Where does this go?'*

Working memory: *'What was I saying?'*

Emotional regulation: *'This is overwhelming'*

Options to Account for Learner Variability

For this analytical essay, you must demonstrate **critical evaluation of the theory**.

Choose your process:

OPTION A	Use AI to create an outline structure, then develop your analysis within that structure
OPTION B	Write your ideas freely first, then use AI to help organize them into a coherent structure
OPTION C	Work without AI, using this provided graphic organizer template
OPTION D	Propose your own process (must clearly separate procedural support from analytical work)

Foster Meaningful Choice & Autonomy

Build metacognitive awareness of procedural needs and not just AI proficiency

- Provide choice within structure (not unlimited choice)
- Support metacognition: help students identify procedural needs
- Distinguish between dependency and appropriate accommodation
- Build toward sustainable, transferable self-knowledge
- Name that executive function support is legitimate and not ‘cheating’

Reflection Questions for Fostering Meaningful Choice & Autonomy

1. **What procedural tasks were hardest for you?**
   (e.g., starting, organizing, finishing, managing time, remembering steps)
2. **What support strategies did you use?**
   (e.g., AI tools, peer review, instructor meeting, analog organizers, study group)
3. **Did this strategy help you focus on learning, or just 'get it done'?**
4. **What will you try differently next time, and why?**

Over time, students develop: *'I struggle with initiation, so I need structure up front'*
OR
'I get lost in details, so I need to outline first'

Key Takeaways

1. **Academic rigour ≠ Procedural barriers**
   We can maintain high learning standards while supporting executive function

2. **Executive function is the most reported challenge**
   Not intellectual capability—support here is legitimate accommodation

3. **AI is paradoxical**
   Can support AND complicate executive function—design thoughtfully

4. **The goal can be metacognitive self-knowledge**
   Not AI proficiency, but sustainable understanding of one's own process

5. **Neuroinclusive design benefits everyone**
   Clarity, options, and metacognition help all learners

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Thank You!

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