UNIVERSITY OF CALGARY

Artificial Intelligence and other Advanced Technologies: Implications for Pedagogy, Policy and Practice in K-12 Education

Dr. Sarah Eaton
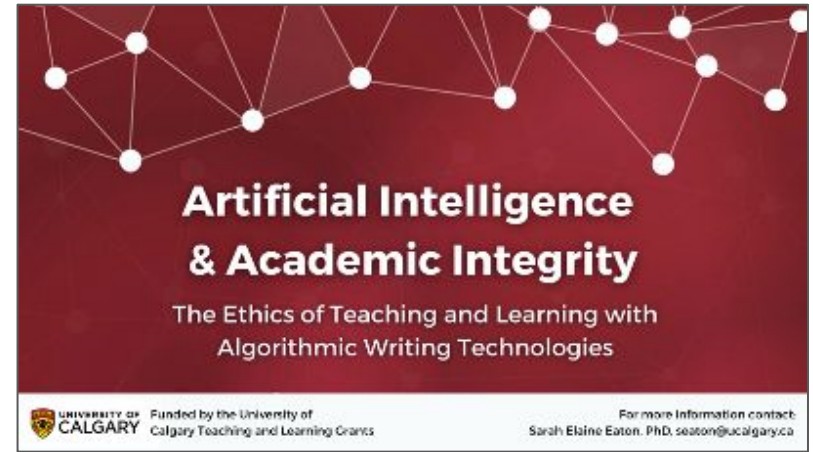seaton@ucalgary.ca
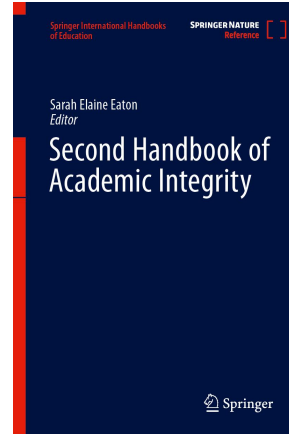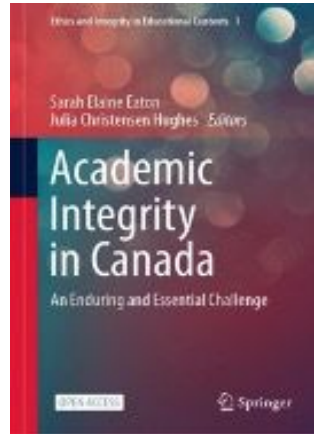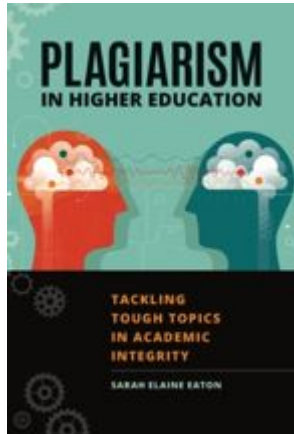
CASS
College of Alberta School Superintendents
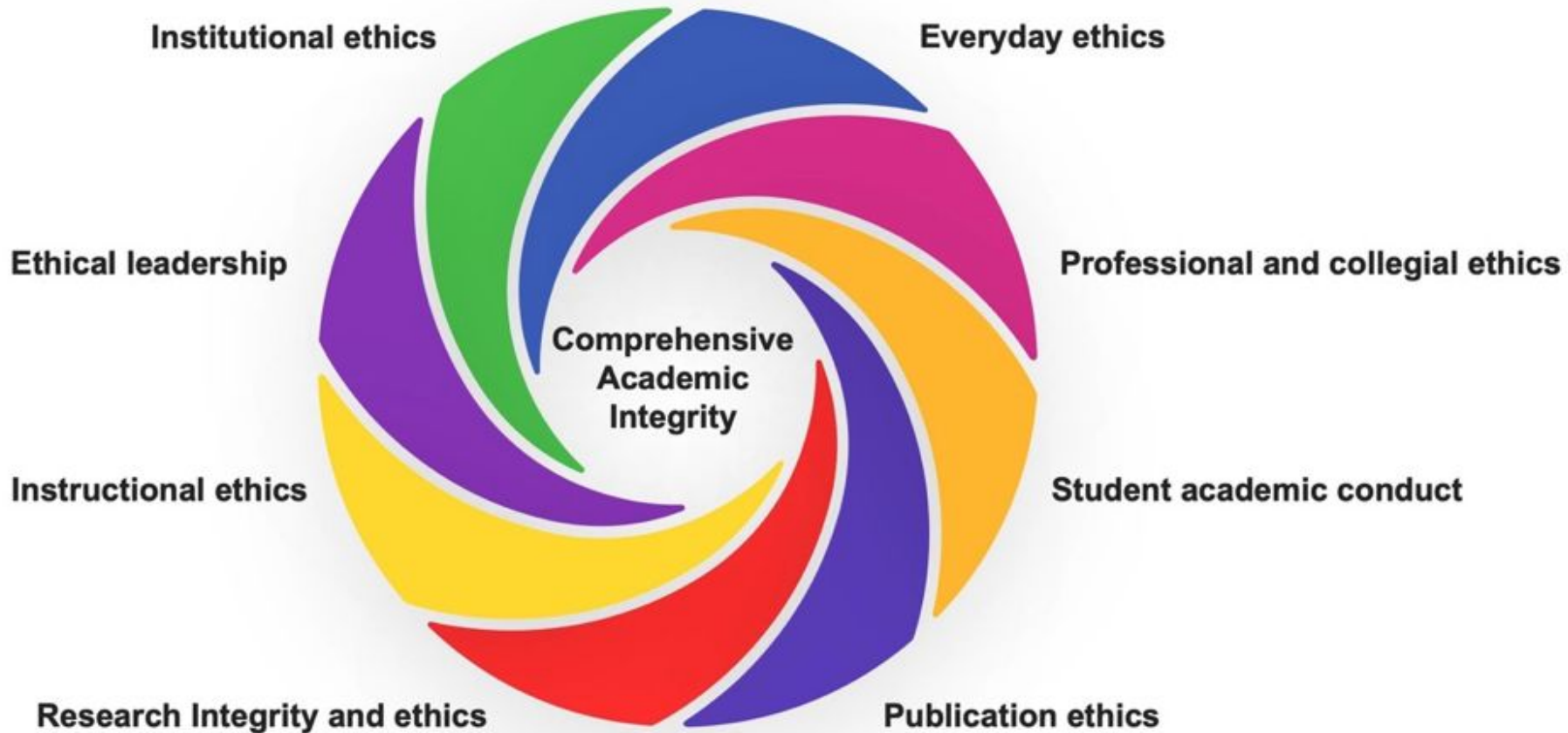
Guiding Questions

My talk today will focus on Questions 1, 2, and 3:

1. How can artificial intelligence be leveraged to build effective relationships and advance practice and enhance and extend access to learning for all students?
2. How can system education leaders ensure policies provide an ethical frame for potential uses in ways that support inclusion, equity, decolonization and optimum learning?
3. What risks, barriers and biases must system education leaders mitigate?

Provenance of my talk …

Institutional ethics

Everyday ethics

Ethical leadership

Professional and collegial ethics

Comprehensive
Academic
Integrity

Instructional ethics

Student academic conduct

Research Integrity and ethics

Publication ethics

UNIVERSITY OF
CALGARY

How ChatGPT is like Kleenex

Since November 2022, we've come to use the word "ChatGPT" like we use the word "Kleenex".

ChatGPT a product name that has become synonymous with artificial intelligence tools.

A Brief (and Oversimplified) History of ChatGPT

2017
- Transformers introduced

2018
- OpenAI released GPT

2019
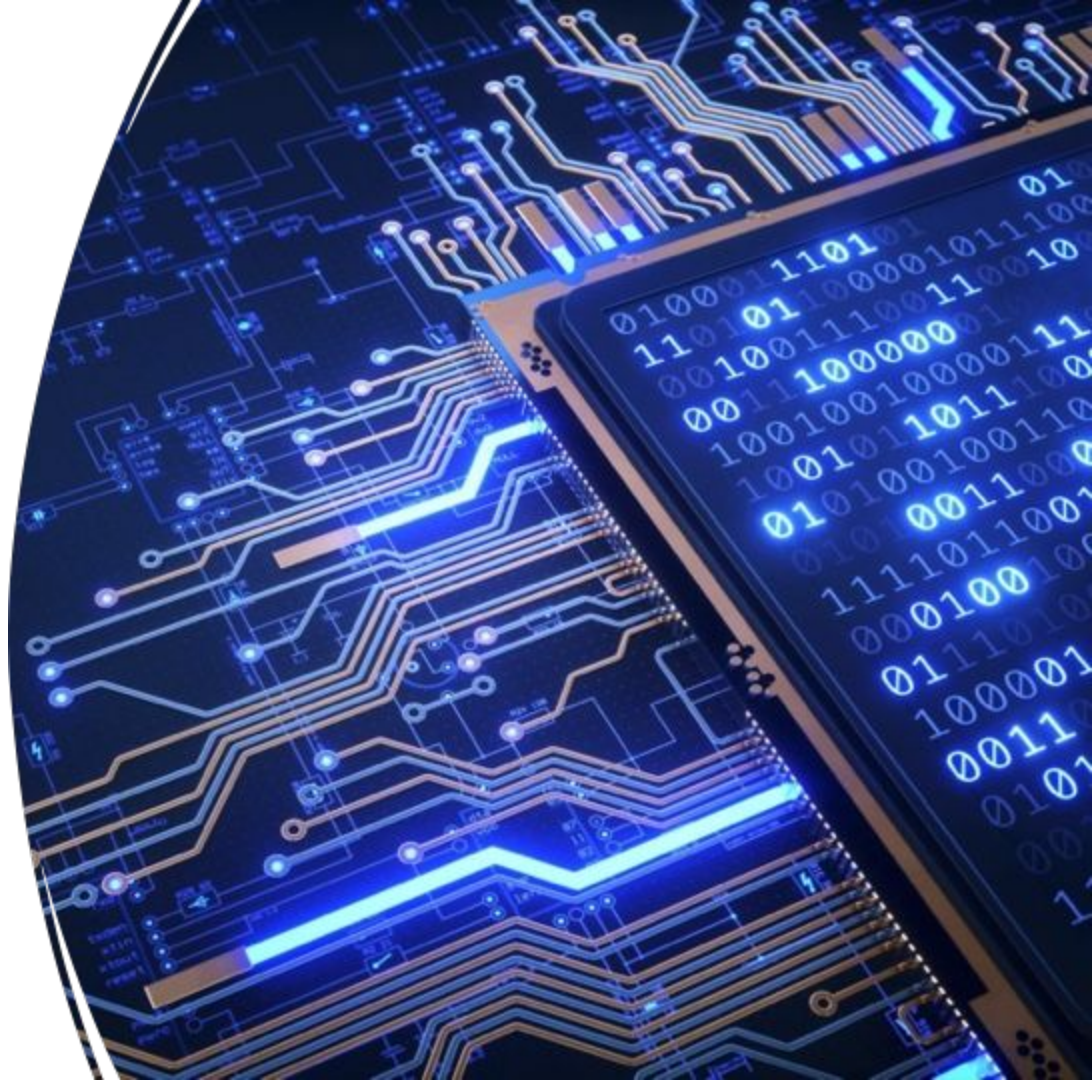- GPT-2 released

2020
- GPT-3 released

November 2022
- ChatGPT (3.5) Released

March 2023
- GPT-4 Released

Batorsky, 2020; Brown et al., 2020, Shree, 2020

UNIVERSITY OF CALGARY

Key Message: AI is Here to Stay

If we want students to be workforce ready
when they graduate,
we must teach ethical use
of artificial intelligence
across the curriculum.

UNIVERSITY OF CALGARY

But wait, there's more!

Precursor to GPT: Predictive Text

The predictive text tools that have become embedded into everyday technologies such as instant messaging apps and word processing programs were originally designed in the 1980s to help persons with disabilities. (Swiffin et al., 1987)

Key Message

Generative AI Can Be Used as an
Equity Accelerator to
assist those with:

- Learning difficulties
- Neurodivergence
- And others…

Problem:

"Equity added onto, not integrated into, core teaching and learning."

Honig & Rainey, 2023, p. 35';:::

New Technology

Excitement, confusion, eagerness, resistance, worry, and other reactions.

Teaching, Learning (and Cheating)

Teachers and students figure out how to use the new tech for teaching, learning, cheating, and more.

Academic Integrity Arms Race

Infographic designed by
Sarah Elaine Eaton
May, 2023

Students Find Workarounds

Students find hacks and share ideas about how to beat the anti-cheating technology.

Anti-Cheating Tech

More tech is developed to catch students using technology to violate academic integrity. Often marketed as a solution to academic misconduct.

Key Message

An academic integrity arms race does not benefit student learning.

Thinking beyond today…

Children who are 5 years old or younger will never know school without artificial intelligence…

The current generation of children who started school this year will graduate from high school in or around the year 2041. Let's think about their future…

UNESCO Report (2023)

Neurotechnology "has broken into the market leading to an increased availability of direct-to-consumer products that may be used for recreational and mental augmentation purposes. However, the effects of these technologies are still unclear and their unregulated use entails unprecedented risks for human rights related to freedom of thought, mental integrity and to some of its underlying pre-conditions such as dignity, identity or human agency." (p. 3)

THE RISKS AND CHALLENGES OF NEUROTECHNOLOGIES FOR HUMAN RIGHTS

UNIVERSITY OF CALGARY
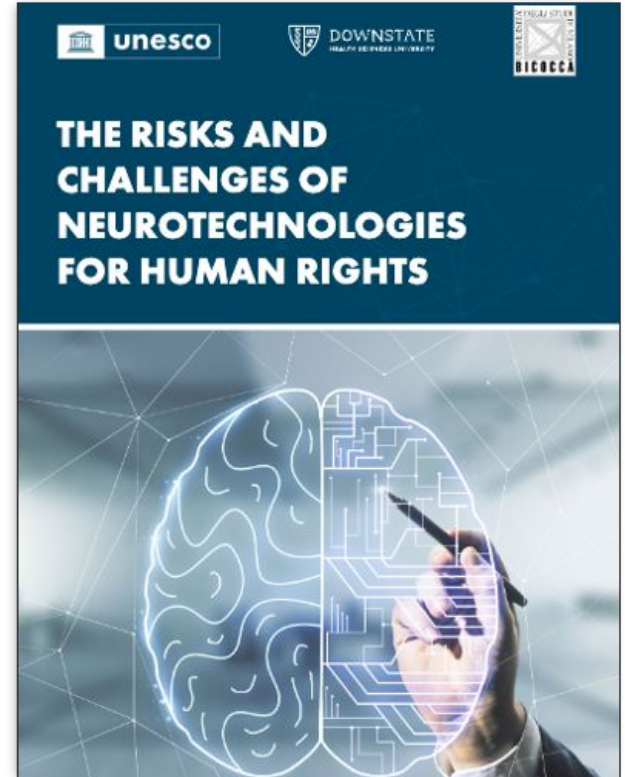
Key message

The rate of development
for direct-to-consumer
advanced technology is outpacing
what most educators
are currently keeping up with.

Neurotechnology for Education

Companies are already beginning to market neurotechnology for education and learning.

Example: Emotive.com

Teach with EMOTIV's research-grade EEG headsets & neuroscience applications

EMOTIV has combined our research-grade EEG headsets and neuroscience applications into affordable educational packages. Making it simpler and more accessible for you to teach your students about the human brain and human behavior. Learn with the same hardware being cited in over hundreds of academic articles yearly.

Learn more

NB: This is information, not an endorsement.

UNIVERSITY OF CALGARY

Neurotech is Expensive, but Available.

Prices currently start at about $6800 USD for two headsets.

https://www.emotiv.com/eeg-headsets-for-education/

(Again, information, not an endorsement.)

Packages

EMOTIV Starter & Standard Education Packages serve every size classroom. Find the right package for your program.

Starter Kit : $6,799 USD

Standard Kit : $15,350 USD

2 Insight Headsets
5 Channel Wireless EEG Headsets

5 Insight Headsets
5 Channel Wireless EEG Headsets

1 Epoc X Headset
14 Channel Wireless EEG Headsets

5 Epoc X Headset
14 Channel Wireless EEG Headsets

Ridiculous or rational?

Neurotechnology is not currently on the radar of most classroom educators, yet it is already available to consumers…

Organizations such as UNESCO are paying attention to the ethical implications of direct-to-consumer neurotech -- And so should we.

UNIVERSITY OF CALGARY

Key message

Advanced technologies will continue to be a pervasive ethical challenge in education and research. Thinking about the impact and ethical implications of neurotechnology that is widely commercially available is ***pre-emptive, rather than speculative***.
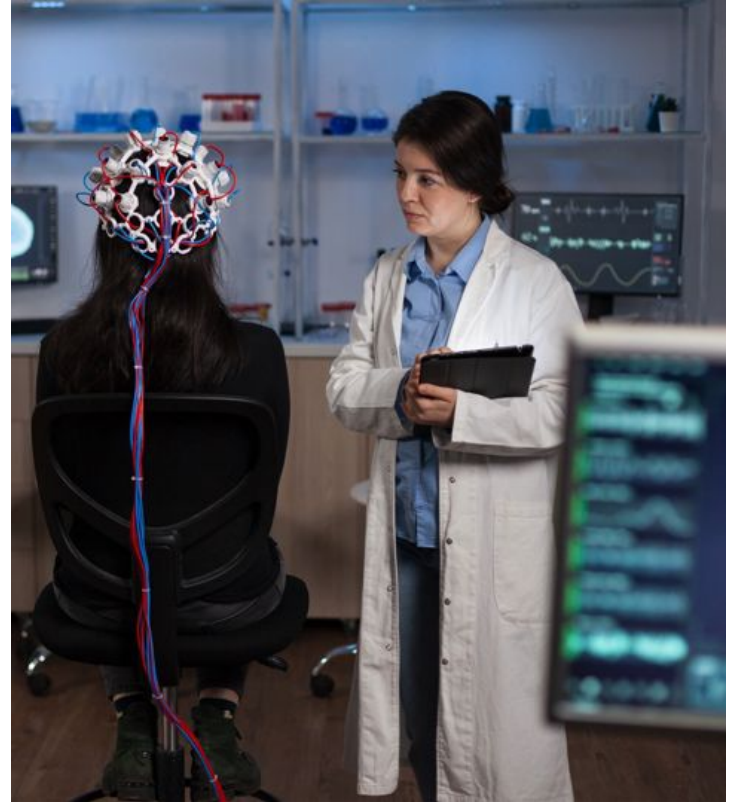
Preparing our teachers…

Children starting kindergarten today are likely to have easy access to commercially available neurotechnology before they graduate from high school.
What will this mean for educators in the next five to 15 years?

UNIVERSITY OF
CALGARY
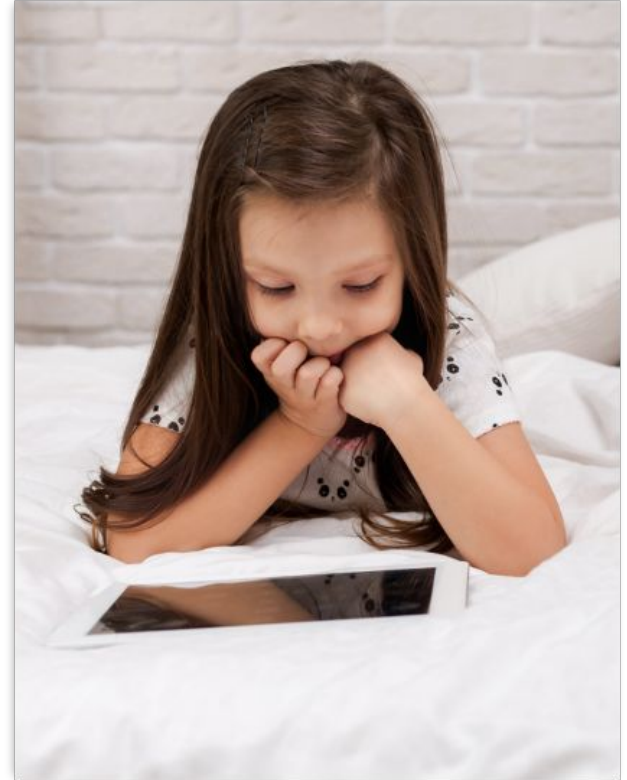
So what do we do? Some practical ideas

- Provide teachers with hands-on opportunities to learn GenAI apps and tools.
- Support peer-level communities of practice (teachers learning from and with each other.)
- Emphasize that GenAI is here to stay – and it is currently the least good and the least sophisticated it will ever be.
- Ignoring GenAI is not an option – in fact, it is irresponsible to do so.
- Focus on students, their learning, and their future.

Contact me

Sarah Elaine Eaton, PhD
Werklund School of
Education
University of Calgary

seaton@ucalgary.ca