

Making the Machine Visible

Stewarding Critical AI Engagement in a P-12 School

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UQSchoolsNet
AI in Action Speaker Series
10th September 2026

Today's session

Why this matters?

The Practical

What's Actually Working in Classrooms?

The Ethical

Where It Gets Complicated?

The Concern

Over-Reliance and Creativity Loss

The Response

Structures That Hold It Together

Stewardship



Today's session

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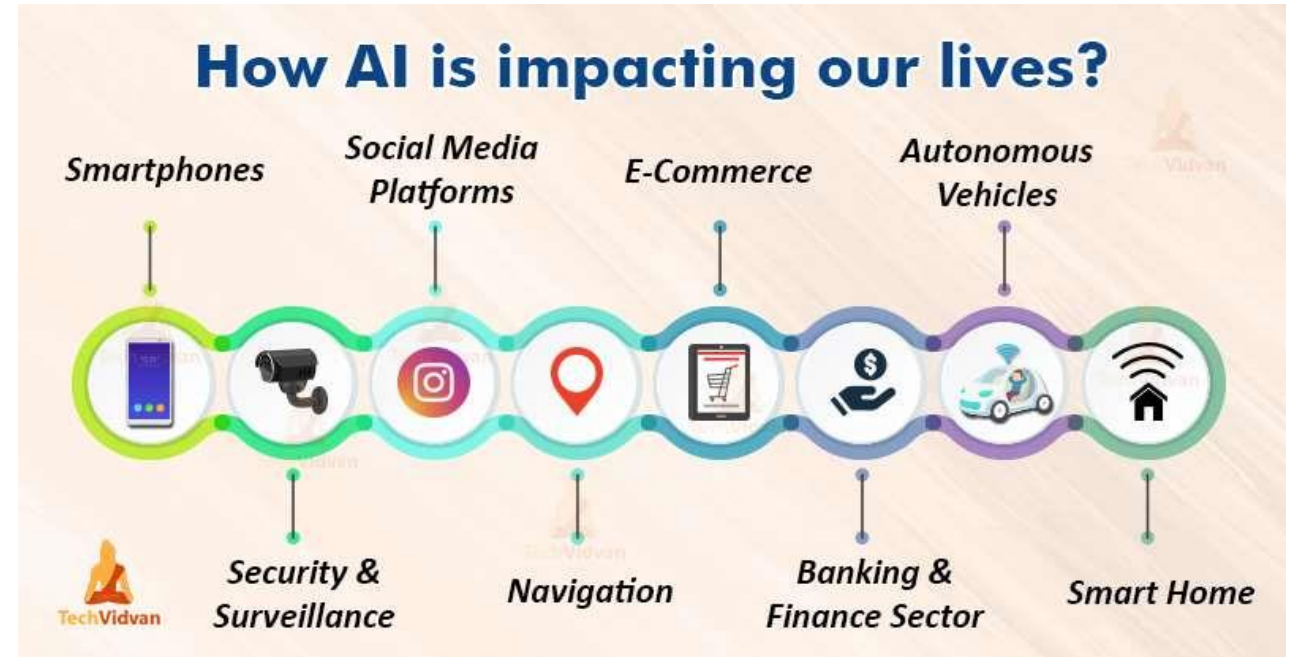
<https://www.menti.com/al2obiixakzy>



What one word describes how you currently feel about AI



Why this Matters?



Transformative?

Potential to lead to more equity?

Just another technology integrated into education??

Why this Matters?

Please submit your response in the chat box

1. What AI tool do you use the most?

2. What do you use it for?

Why this Matters?

1. AI is marketed as weightless and instant,
but it **has a body**.

Labour
Land
Water
Carbon

Has a body ... it pushes back against the idea that AI is pure abstraction, pure intelligence floating in a cloud.

..... it is saying: no, this thing eats resources and produces waste, just like any other industrial system. It's grounded, physical, costly, even if the interface hides that from us and our students.

2. Dual roles
adopting and holding accountable.



The Practical – What’s working in classrooms?

AI @ St John’s

Academic Integrity
Generative AI
Bias & Limitations
Challenges
Activity
Assessment
Resources



ACTIVITY

Building a culture via the Academic Integrity Policy & AI (Chat GPT) Activity

Academic Integrity Policy
Generative AI
NLP
Introduction and demo of ChatGPT
Complete activity on ChatGPT
Demonstration of formulating questions
Discuss reflections on:

- Usefulness of AI
- Limitations
- Potential Ethical implications

CHATGPT ACTIVITY (SAMPLE)

By completing this activity, you will have a hands-on experience of interacting with ChatGPT and gain a deeper understanding of natural language processing and AI.

- Access ChatGPT online. <https://openai.com/blog/chatgpt/>
- Formulate three prompts/questions you could ask the bot.
These can be related to a topic you are studying in class, or they can be open-ended questions that encourage creative responses.
- Interact with ChatGPT by **inputting** the prompts or questions and **reading** the responses generated.
- Record the responses in your Onenote.
- In your groups **discuss** the quality of the responses and any biases or limitations you **observe** in the AI-generated responses.
- Write a reflection on your experience of interacting with ChatGPT.
Your reflection can include your thoughts on the **usefulness of natural language processing and AI** in general, the **limitations** of the technology, and its **potential implications** for society.
- For an additional challenge, you can try and “**trick**” ChatGPT by **inputting** prompts that are intentionally difficult to respond to or that lead to unexpected results.
- Class discussion



BIASES OR LIMITATIONS OBSERVED IN AI-GENERATED RESPONSES

Some examples include:

- **Limited training data:** AI algorithms require large amounts of data to be trained effectively. If the training data is limited, the AI-generated responses may be incomplete or inaccurate.
- **Biased data:** If the training data is biased, the AI-generated responses may also be biased. For example, if the training data predominantly includes information from one demographic group, the AI-generated responses may not be representative of other groups.
- **Lack of contextual understanding:** AI algorithms may struggle to understand the contextual nuances of language, such as sarcasm, humour, or metaphor. This can lead to inaccurate or inappropriate responses.
- **Overreliance on keywords:** Some AI algorithms rely heavily on keywords to generate responses. This can lead to inaccurate or incomplete responses if the keywords are ambiguous or if the question or prompt requires a more nuanced response.
- **Inability to handle rare events:** AI algorithms may not be able to handle rare events or situations that are not represented in the training data. This can lead to inaccurate or inappropriate responses.
- **Lack of emotional intelligence:** AI algorithms may struggle to understand or respond appropriately to emotional cues in language. This can result in responses that are perceived as cold or insensitive.
- **Lack of transparency:** Some AI algorithms may not provide transparent explanations for their responses. This can make it difficult to understand how the responses were generated or to identify biases or limitations.

The Practical – What’s working in classrooms?

English Teacher comment:

“Last year for Year 9 SOAR English I ran a Progress Checkpoint where students had to produce the best possible AI response to a question and, as part two, they had to complete an evaluative paragraph on what was done well and then identification of areas within AI that did not align with the task requirements or specific unit content and concepts that were being explored. It was under exam conditions, but it deepened their critical and evaluative thinking and worked with them to consider the ethical implications of AI use in assessment work following the assessment.”

In addition to staff training, I built a **"How AI is impacting our lives"** module for staff, moving beyond tool proficiency into what these systems cost and conceal. Naming climate change and environmental impact as a discrete issue, takes something normally hidden by the interface and puts it on the agenda in a professional learning space contributing to the AI culture we are trying to cultivate at the college.



Explainability

black box problem

Accountability

ethics

bias

who is accountable?





Does explainability matter?

Some cancer detection can be 80% accurate with AI while only about 40% accurate with a lab test.

So, does the AI need to explain how it does it?

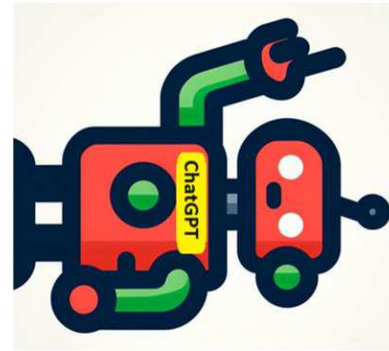
Write your thoughts in the chat.

Does explainability matter in education?

1. Advice on use of grammar in writing?
2. Formative assessment?
3. Assessment grading?

Reflect on what would make an appropriate explanation in each context?

Explainable AI (XAI)



“the ability to explain or to present in understandable terms to a human”

(Doshi-Velez and Kim, 2017)

- A major field of research
- Many application areas demand XAI
- Should we demand XAI in education?

Current situation of **XAI** in relation to education (Rachha and Seyam, 2023).

Need for:

- a unified framework for XAI in education
- established principles and guidelines for **human-in-the-loop** XAI systems
- a holistic consideration of incorporating multiple disciplines in XAI design
- identification of associated risk and mitigation

AI functionalities embedded in educational software

- automatic evaluation of students' skills and understanding
- personalised feedback
- expert systems
- intelligent human-computer interaction including identifying students' emotional responses
- visualisation
- intelligent agents
- teachable agents
- adaptive instruction
- tracking learning activities

Fang, M., & Webb, M. (2023). Predictive Evaluation of Artificial Intelligence Functionalities of Software: A Study of Apps for Children's Learning of English. Towards a Collaborative Society Through Creative Learning: IFIP World Conference on Computers in Education, WCCE 2022, Hiroshima, Japan, August 20–24, 2022, Revised Selected Papers

A social constructivist approach

building on Squires and Preece (1999) and Simina and Hamel (2005)

AI functionalities	Cognitive authenticity			Contextual authenticity	
	Credibility	Complexity	Ownership	Collaboration	Curriculum
Automatic evaluation	Help learners monitor and test ideas; Guide learners to solve problems				
Personalized feedback	Provide multiple forms of feedback and multiple ways for learners to learn				
Intelligent communication	Act as knowledgeable others and simulate teacher-student interaction		Motivate learners to control and be responsible for individual learning	Act as peers to practise pronunciation	Provide contextualised input and authentic learning materials
Adaptive instruction		Adaptive feedback or instruction that is consistent with learners' performance			Consider learners' ZPD; promote courses related to a learners' individual level
Tracking learning activities	Help learners monitor their learning process and make improvement			Share learning reports with others; extend authentic learning	

Fang, M., & Webb, M. (2023). Predictive Evaluation of Artificial Intelligence Functionalities of Software: A Study of Apps for Children's Learning of English. Towards a Collaborative Society Through Creative Learning: IFIP World Conference on Computers in Education, WCCE 2022, Hiroshima, Japan, August 20–24, 2022, Revised Selected Papers

AI in Education (AIED) Systems

STUDENT-FOCUSED AIED
Intelligent Tutoring Systems (ITS)
AI-assisted Apps (e.g., maths, text-to-speech, language learning)
AI-assisted Simulations (e.g., games-based learning, VR, AR)
AI to Support Learners with Disabilities
Automatic Essay Writing (AEW)
Chatbots
Automatic Formative Assessment (AFA)
Learning Network Orchestrators
Dialogue-based Tutoring Systems (DBTS)
Exploratory Learning Environments (ELE)
AI-assisted Lifelong Learning Assistant
TEACHER-FOCUSED AIED
Plagiarism detection
Smart Curation of Learning Materials
Classroom Monitoring
Automatic Summative Assessment
AI Teaching Assistant (including assessment assistant)
Classroom Orchestration
INSTITUTION-FOCUSED AIED
Admissions (e.g., student selection)
Course-planning, Scheduling, Timetabling
School Security
Identifying <i>Dropouts</i> and <i>Students at risk</i>
e-Proctoring

A Taxonomy of AIED Systems

Holmes, W., & Tuomi, I. (2022). State of the art and practice in AI in education. *European Journal of Education*, 57(4), 542-570.

The Concern – Over-Reliance and Creativity Loss

While AI can reduce cognitive load and support learning, **over-reliance** may weaken **critical thinking, problem-solving, creativity, and independent judgement.**

Schools should ensure AI augments rather than replaces thinking, designing learning experiences that require students to **question, verify, reflect on, and take responsibility** for AI-supported work.



Important skills and activities

Being aware of and recognising instances of “intelligent” behaviour

Being able to rehearse achievements of recent advances in machine learning, such as decision making, applications in healthcare, robotics, voice recognition, and shaping public opinion.

Being able to discuss about the future of education, work and life.

Appreciating the consequences of using data with particular characteristics (e.g. unconscious biases), as well as any important related ethical issues.

Experimenting with simple AI applications incorporating machine learning.

I4ALL Informatics Reference Framework for School

Understanding

Concepts and various approaches to the development of AI

The comparison between AI and human intelligence

Applications of AI in the real world including advantages, limitations and implications for society.

The Response – Structures That Hold It Together



College Policies and Guidelines:

- Artificial Intelligence (AI) procedure and guidelines
- Drafting and academic integrity procedure
- Assessment procedure
- Software and digital platform approval procedure

Vendor procurement questions

Scaling to sector level

Stewardship

We must:

- approach AI with **curiosity and responsibility**.
- explore what it can make possible while **questioning how it works and whom it affects**.
- use AI **thoughtfully, ethically, and with accountability** for the choices and consequences that follow.

It is our responsibility as educators to **train our staff and students to do the same**.



Common pitfalls and how to avoid them

- Pitfall:** adopting flashy AI tools without measurable learning goals
- Fix:** require learning outcomes and data plan before procurement
-
- Pitfall:** uneven rollouts widen equity gaps
- Fix:** mandate resourcing support and offline alternatives for remote/low-bandwidth schools
-
- Pitfall:** assessment unchanged
- Fix:** redesign assessments with authenticity and process evidence; pilot, measure, refine
-
- Pitfall:** vendor/data privacy risks
- Fix:** insist on vendor product expectations, data locality, human rights reviews (follow Human Rights Commission recommendations).



Future focused education

Authenticity of Learning

Future-Focused Responses

- Shift from product to process
- Integrate AI as co-pilot, not author
- Cultivate meta-cognition

Assessment Integrity and Innovation

Future-Focused Responses

- Authentic, multimodal assessment
- Process evidence
- Assessment redesign, not just policing
- AI-enhanced formative assessment



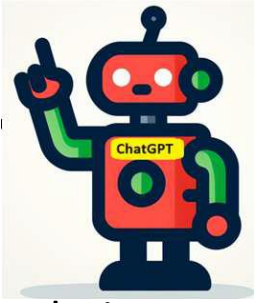
Preserving Human Connection

Future-Focused Responses

- Teacher presence remains central
- Design for connection
- Rehumanize digital learning
- Ethical modeling

Recent Developments in Digital Technologies in Education

Additional requirement for your assignment – Appendix on Use of Generative AI



Whether or not you use generative AI, such as CHAT GPT, to help you with your assignment is entirely your choice. But if you do choose to use generative AI you must incorporate (as Appendix 1) in your assignment an explanation of how you have used generative AI. Your explanation might include:

- specific questions that you have asked the AI
- a flowchart of the approach that you have used
- how you have checked the answers you have received.

You will not be penalised for the use of generative AI, indeed you might gain additional credit particularly in relation to the following marking criteria:

- flexible and creative analysis of complex or contradictory data/theories/evidence.
- evaluation and synthesis of digital and non-digital literature to inform responses

However, you must be critical in your use of generative AI and check all of the answers it gives you. Any assertions made by generative AI need to be checked by finding the relevant literature and reading it carefully – you will need to find references that support the assertions, otherwise you will be making unsupported assertions.

If we detect that you have used generative AI and have not explained that use, then you may be penalised.



E.G. Appendix 1: Use of Generative AI

Introduction

- I utilized the AI assistant Claude and Bard AI to aid in researching and drafting some portions of this assignment.

Specific Claude Queries

- Overview of recent developments in digital education technologies
- Definition of key terminology like gamification and digital games
- Summary of literature on benefits and challenges of implementing games in classrooms
- Suggestions for how education leaders can support faculty adoption of games

Response Validation

- Compared Claude's summaries to original source papers to check accuracy.
- Followed the links provided by the Bing AI for more information.
- Assessed logical flow and consistency of arguments.
- Corrected factual errors and unsupported assertions.

Exemplar – AI Use Field Notes

AI Writing Field Notes										
Please complete this form everytime you use AI to support your writing.										
AI Tool			AI Use			Evaluation of output				Comments
Date	AI Tool	Prompt (if you want to share)	Stage of writing (choose)	Reason for using AI (Why did you use it?)	How you used AI (What did you ask it to do?)	Usefulness of output (choose)	Modification needed (choose)	Impact on your writing (choose)	Trust in output (choose)	Reflection on this task (1–2 lines) Incl details if "other" was selected.
#####	ChatGPT	am writing a 500-word re	☐ Brainstorming idea	☐ Improve quality	☐ Brainstorm ideas	☐ 4: Very useful	☐ 4 = Heavy rewriting	☐ Saved time	☐ 3 = Moderate trust	Description of AI use: I used ChatGPT to help me brainstorm possible examples from my teaching practice that might be relevant to the collective writing project. After identifying the example I wanted to focus on, I asked ChatGPT to suggest a possible structure for a 500-word reflective piece and to help improve the clarity of several paragraphs. How I used the output: I did not use any text directly. Instead, I adapted some of the suggested structure and rewrote the sections in my own words. I also used the AI-generated suggestions to identify areas where my reflection lacked detail or explanation. Reflection: The AI helped me organise my ideas more efficiently and encouraged me to think about aspects of my practice that I had not initially considered. However, I found that many of the suggestions were generic and required substantial adaptation to reflect my own context and experiences.
Additional notes					Explain concepts & Provide feedback			Changed ideas and	Improved quality	
2 June 2026	ChatGPT	"I received feedback that	☐ Editing / polishing	☐ Check understanding	☐ Provide feedback	☐ 4: Very useful	☐ 3 = Moderate change	☐ Changed ideas	☐ 2 = Low trust	How I responded:
Additional notes				Improve quality	Brainstorm ideas & Edit/rewrite			Improved quality		
#####	ChatGPT, Gemini		☐ Drafting	☐ Improve quality	☐ Edit/rewrite	☐ 4: Very useful	☐ 1 = None/minimal	☐ Improved quality	☐ 4 = High trust	I used language editing to improve clarity and
#####	ChatGPT		☐ Researching / summarising	☐ Improve quality	☐ Generate text	☐ 4: Very useful	☐ 3 = Moderate change	☐ Improved quality	☐ 3 = Moderate trust	for brainstorming ideas (how my teaching activities
#####	ChatGPT		☐ Editing / polishing	☐ Improve quality	☐ Edit/rewrite	☐ 4: Very useful	☐ 2 = Light edits	☐ Improved quality	☐ 4 = High trust	I used language editing (again, for my 2nd draft) to

How can WE transform learning and teaching with AI?



Conclusion – key questions

- What AI functionalities do we want in our IT applications?
- What data are these apps using and how is the data managed?
- What new AI-based applications do we want to make available to our staff and students?
- How should we evaluate potential applications?
- Who should be making decisions about the choice of AI-based applications. – IT support, staff, students...?
- What type and level of explainability do we want for our AI applications in each context?
- How do we develop AI literacy in all staff and students?
- Are we assessing our students for appropriate skills and understanding?
- Should we assess students' capabilities in using AI and other technologies?

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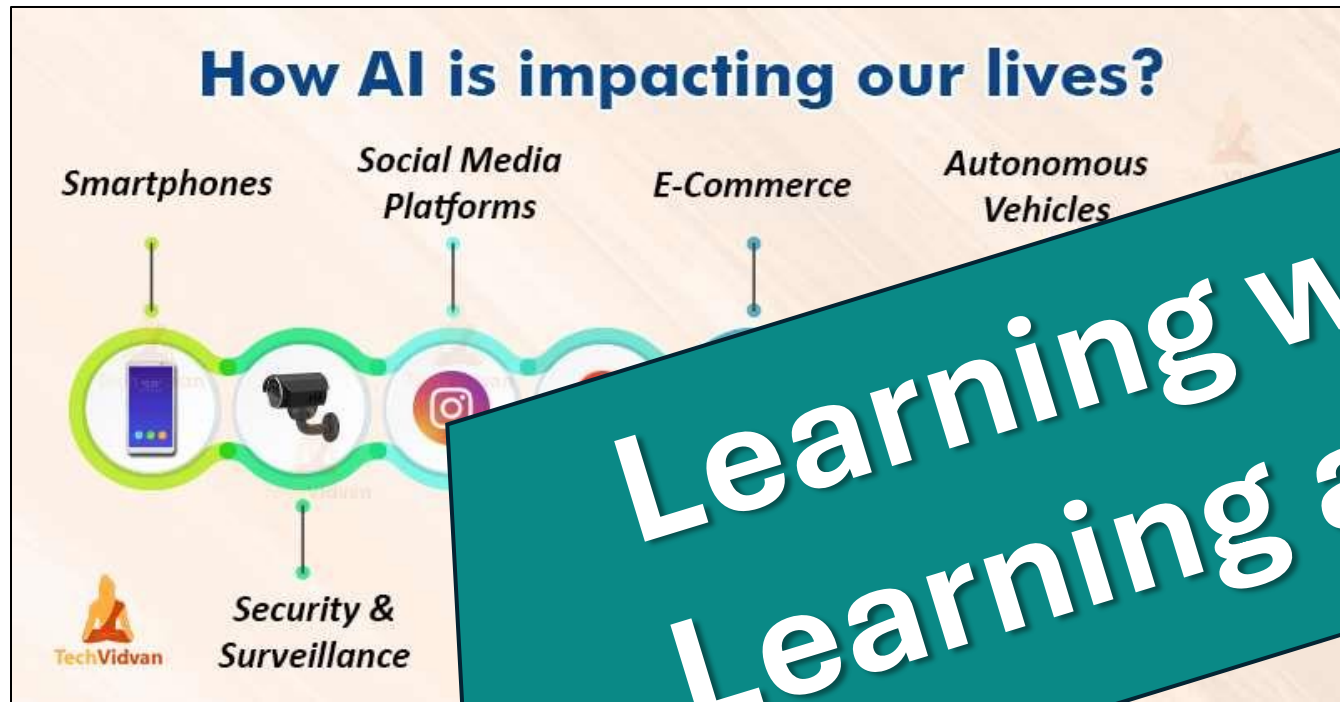
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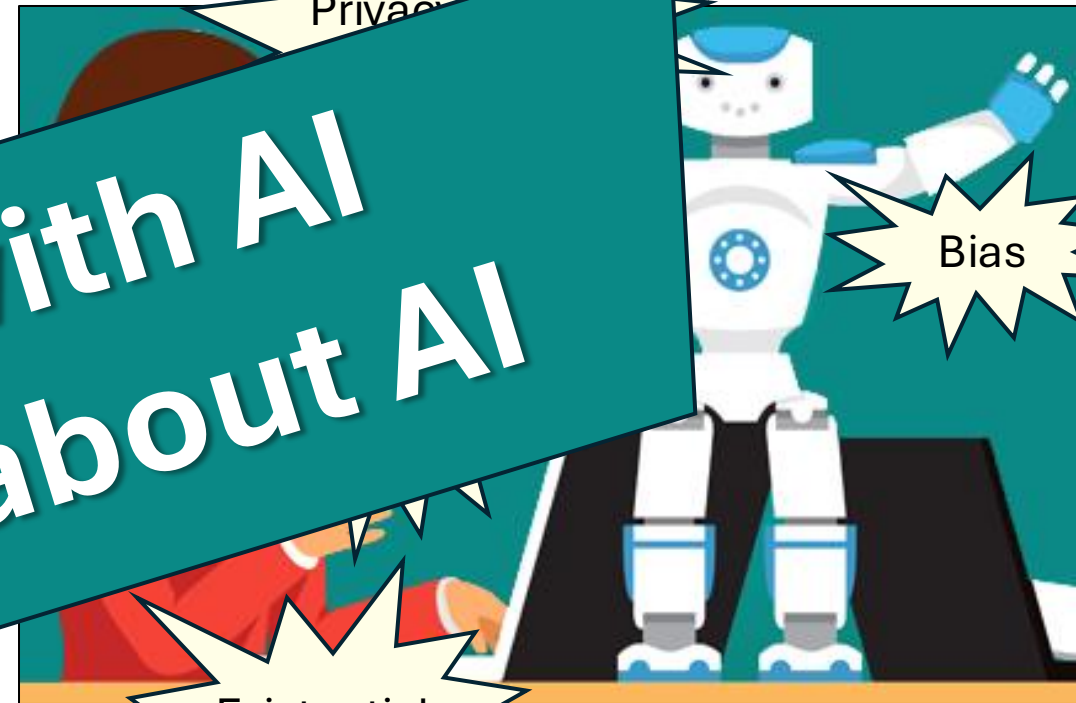
Stewardship



AI in Education - HOW?



Learning with AI Learning about AI



...ity of machine learning
Explainability
Can ChatGPT pass the Turing Test?

Existential threat
Specialised AI
Generative AI
Climate change

AI support should empower teachers AND empower learners

Thank you!

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