

A digital artwork depicting a robot with a metallic, silver face and large, expressive eyes. The robot is dressed in elaborate, historical-style clothing, including a large, white lace ruff collar and a voluminous, multi-colored (green, blue, and red) striped gown. The robot is positioned in front of a large, multi-paned stained-glass window. In the lower right foreground, an open book lies on a surface, with a quill pen resting on it. The overall scene suggests a fusion of historical education and modern artificial intelligence.

The future of AI in education and learning in Scotland

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Policy paper

The Bletchley Declaration by Countries Attending the AI Safety Summit, 1-2 November 2023

Published 1 November 2023



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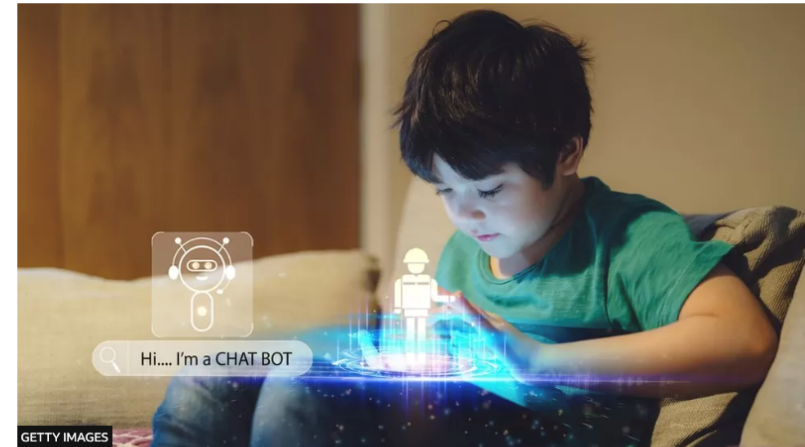
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What is artificial intelligence and why does it matter to you?

4 days ago · Comments



The UK government revealed a "world first agreement" on Wednesday to help protect us from certain kinds of artificial intelligence or AI.

This agreement, known as the Bletchley Declaration, was signed by 28 countries, including the United States, China and the European Union, at the UK's Artificial Intelligence Safety Summit.

Around 100 government and technology leaders from across the world came together to discuss important issues and developments in the world of AI at the two-day conference in Buckinghamshire.

But what exactly is artificial intelligence? And why is it something that we might need protecting from?

The rise of Generative AI

- ChatGPT, GPT4 and competitor products just got *really* smart – huge advances are reported daily (not yearly)
- They can generate high-quality new text – stories, poems, instructions, software
- They can pass university-level exams, professional exams, interview tests...
- They're examples of Large Language Models (LLMs), a type of statistical approach to AI. It is difficult even for their developers to explain how they generate a specific bit of text
- There are immense implications for society, not least for education



Dermott and Bing: The school of the future

AI in Education needs urgent attention

“Generative AI tools are forcing educational policy-makers and institutions to revisit why, what and how we learn”

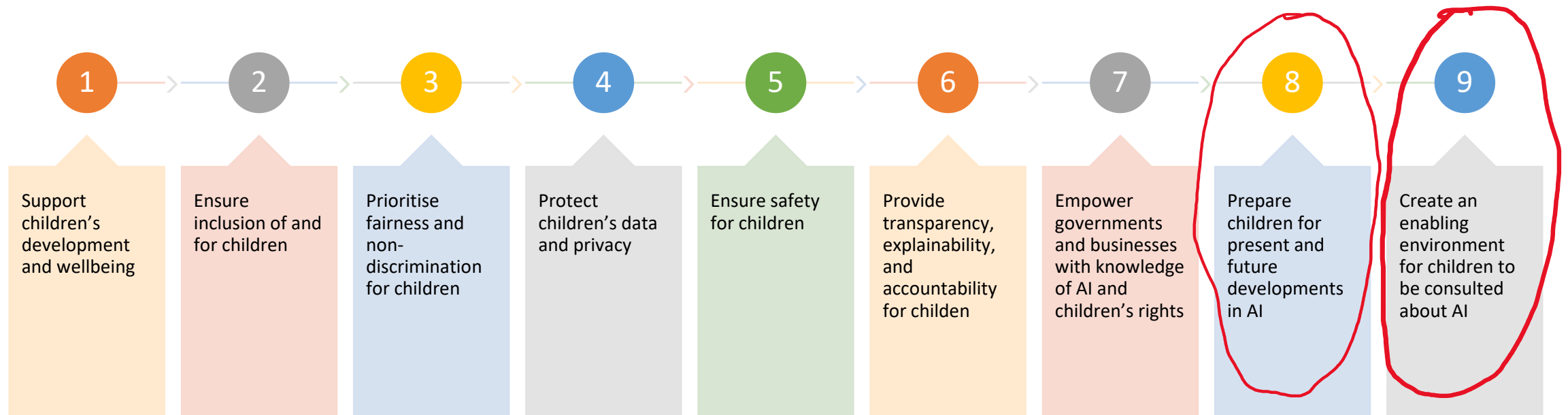
“To ensure a human-centred use of AI, open public debate and policy dialogues on the long-term implications should urgently be conducted”

UNESCO’s Guidance for generative AI in education and research. 2023



Image by Lucas and Bing “The school of the future”

UNICEF policy guidance on AI and children



UNICEF policy guidance on AI and Children (2020)

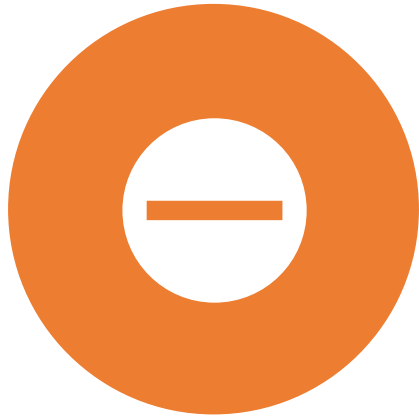
Learners
should be
consulted
about the use
of AI in their
education

“It is important for children to know about artificial intelligence because it is the future and it is good to learn new things when they affect our lives.”

- Member of Children's Parliament (MCP), age 10, Glasgow

See also Professor Muir's report on learners at the heart of education

Options for education systems to respond to AI



BAN



EVADE (MOVE TO INVIGILATED
EXAMS ONLY)



ADAPT (DEVELOP NEW METHODS
OF ASSESSMENT/POLICIES ETC)



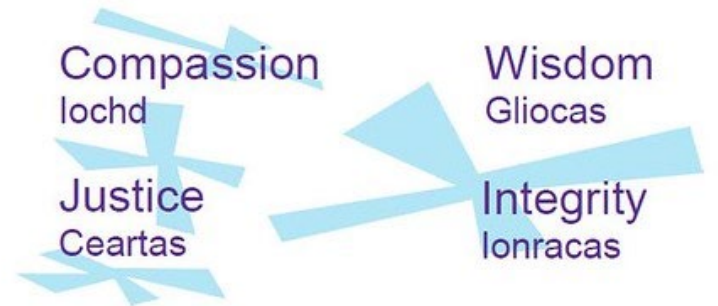
We shouldn't just assess what is easiest to measure. We should assess the knowledge, skills and attributes required by citizens in the age of AI

Judy and Dalle-2: An oil painting of a robot dog with a massive wagging tail

Scotland's educational values in the age of AI

Our collective responsibility is now to ensure that learners leave school able to create and use AI with wisdom, compassion, justice and integrity.

The Scottish Parliament Mace
Lorg-shuaicheantais Pàrlamaid na h-Alba



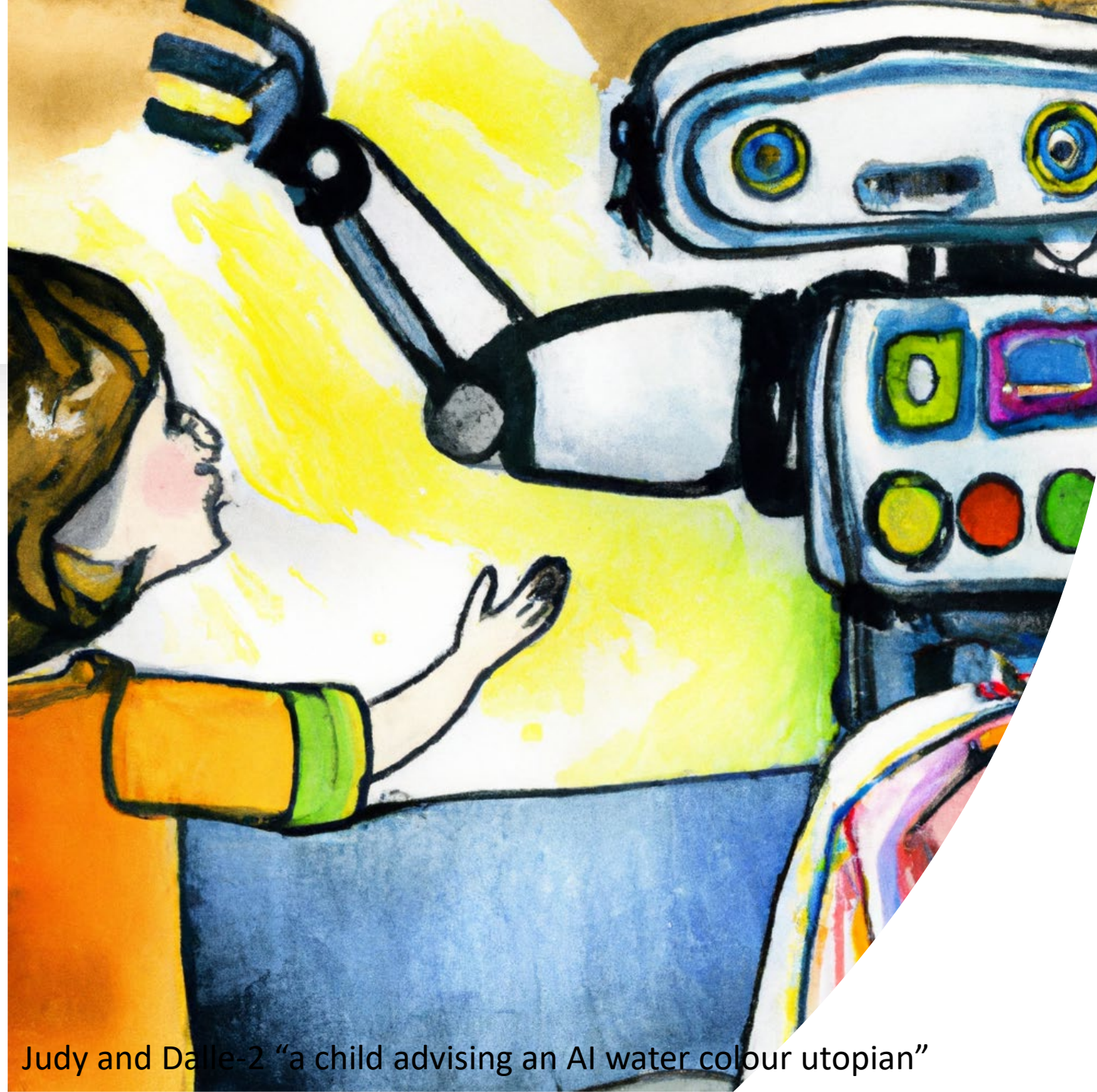
The Independent Review of Qualifications and Assessment in Scotland

“What does it mean to be an educated citizen in Scotland in the mid to late 21st century? What would it mean to be qualified for that? What knowledge, skills and capacities will learners need to thrive?”

“The impact of Artificial Intelligence is one that learners of the future will live with and the skills they will need to cope must now be part of the future of education and of qualifications”

AI literacy

“a set of competencies that enables individuals to critically evaluate AI technologies; communicate and collaborate effectively with AI; and use AI as a tool online, at home, and in the workplace” Long and Magerko (2020)



Judy and Dalle-2 “a child advising an AI water colour utopian”

The proposed Scottish Diploma of Achievement



Project learning and teacher assessment

Reverting to invigilated exams would be a backwards step

Instead, we can embrace the move towards **continuous teacher assessment of project learning** as proposed in the Scottish Diploma Achievement. Teachers are well-placed to spot when a learner's performance changes because of GenAI

Project based learning is ideal for developing critical thinking and problem solving skills – as required to use GenAI effectively

Sample assignment which embraces AI (my university course)

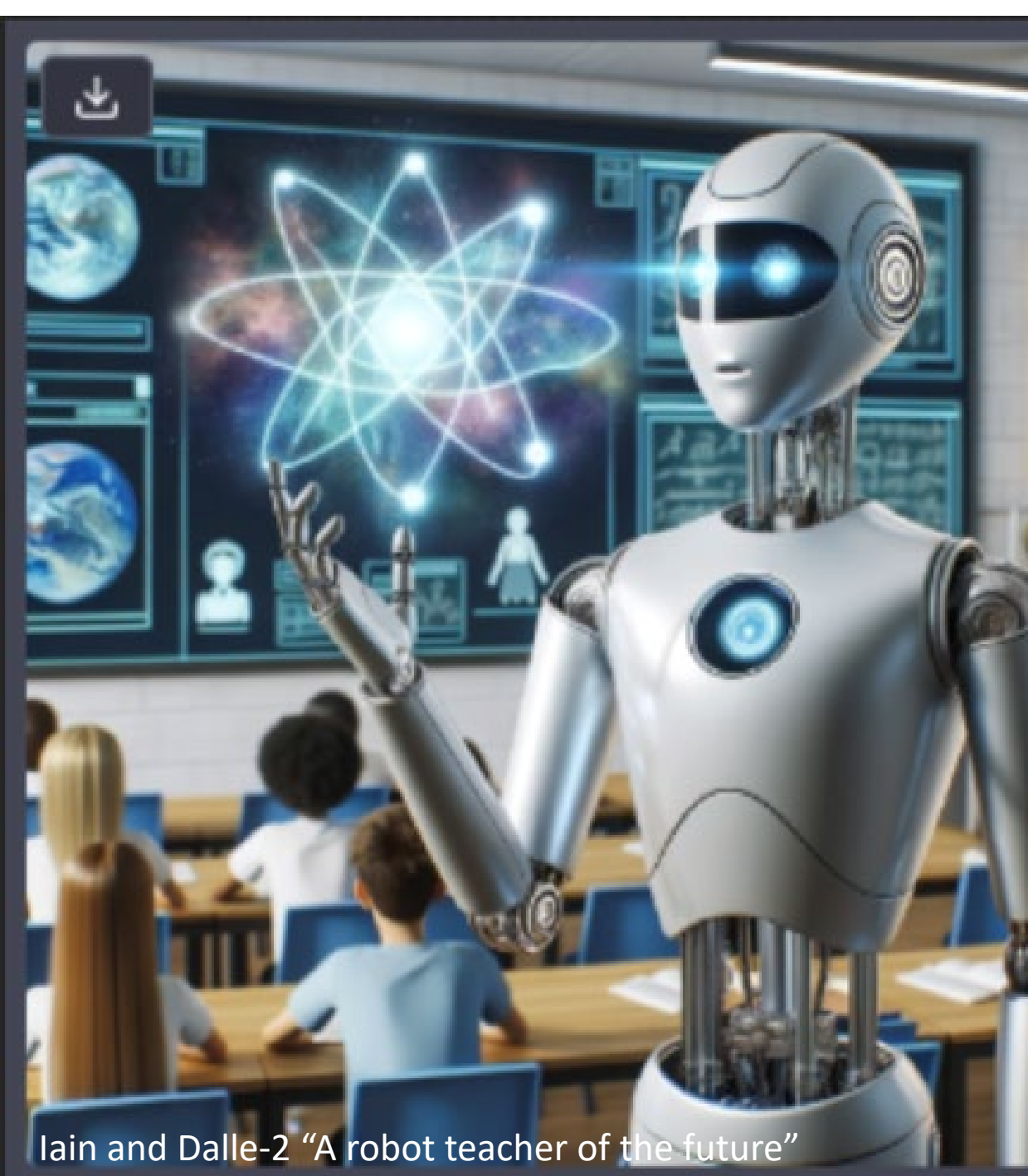
Working with Other People and AI

During this course we want you to develop your skills in teaching children about computer science. We encourage you to work with other people and Gen AI tools to help you do this. **You must make it clear how other people or AI tools were involved and what you learned from working with them.**

You will submit a form with your portfolio each semester, indicating which tasks other people or AI helped you with and to what extent you think the end result is better than you would have produced by yourself. The options on the form are as follows:

- I created all of the work in this portfolio by myself
- I adapted some existing materials.
 - Link to existing materials
 - Link to document showing highlights or changes tracker annotations to original materials
- I created some of the items in the portfolio in collaboration with one or more other students.
 - Name of student(s)
 - Which items did you collaborate on, and what work did you each do?
 - What did you learn from working with the other student(s)? To what extent and why do you think the end result is better than doing it all yourself?
- I created some of the items in the portfolio using an AI tool
 - Name of AI tool(s)
 - Which items did you use the AI tool, and for what purpose?
 - What prompts or processes did you use?
 - What did you learn from working with the AI tool(s)? To what extent and why do you think the end result is better than doing it all yourself?

Do **not** use AI tools to generate the assignment (or part of an assignment) and submit it as if it were your own work. This is academic misconduct.



Iain and Dalle-2 "A robot teacher of the future"

Reasons for students to be wary when using GenAI

- Generative AI "hallucinates"
 - It makes things up, including entire research studies
 - It gets facts wrong
- ChatGPT can't access current information
- Exploration by myself and colleagues suggests that ChatGPT is like a muddled (university) student
- GTP4 and other competitors are considerably better, *but* concerns will remain about bad actors deliberately using LLMs to generate misinformation

How does ChatGPT think it should be used?



As a language model, I can suggest some guidelines for students on best practices for using generative AI systems in education:



1. Understand the limitations and potential biases of AI: Generative AI systems are trained on large datasets and can sometimes replicate biases present in those datasets. Therefore, it is important to be aware of the potential biases that AI systems may have and to critically evaluate their outputs.
2. Use AI as a tool, not a replacement: Generative AI systems can be helpful tools for generating ideas or assisting with writing, but they should not replace critical thinking or human creativity.
3. Use high-quality inputs: The quality of the output generated by an AI system is heavily dependent on the quality of the input. Therefore, it is important to use high-quality inputs, such as well-written prompts or research materials, to improve the accuracy and relevance of the generated output.
4. Understand the purpose of the assignment: It is important to understand the purpose of the assignment and the role of the AI system in completing it. Some assignments may require original thought and creativity, while others may be more focused on information gathering or summarization.
5. Verify and edit generated output: It is important to carefully review and edit any output generated by an AI system, as it may contain errors or require clarification. Always double-check facts and citations to ensure the accuracy of the output.
6. Respect intellectual property: It is important to respect intellectual property and avoid plagiarizing any content generated by an AI system. Always cite sources and give credit where credit is due.
7. Be transparent about using AI: If using an AI system to generate output, be transparent about it and indicate which portions were generated by the system. This will help avoid confusion or accusations of plagiarism.

Overall, the use of generative AI systems in education can be a helpful tool for students, but it is important to use them responsibly and ethically. By following these guidelines, students can maximize the benefits of AI while avoiding potential pitfalls.

Regenerate response

Recommendations



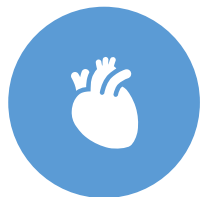
Scottish Government should establish a cross-sector commission on AI in Education (as advised by the Haywood report)



AI literacy should be integrated into the Scottish education system from early primary school



There should be flexible, ongoing opportunities for teachers to learn about AI literacy, and time to engage with it



Learners should be at the heart of decisions about AI within the education system (and their broader lives)



IT procurement decisions about AI should be informed by educational values and goals, teachers and learners

More information for teachers

Our educational video and Teacher's Guide about AI:
<https://dataschools.education/ai-literacy/>

Education Scotland podcast on AI:
<https://edin.ac/3tV7Rqc>

Hello World magazine special issue on AI in computing education:
<https://edin.ac/3QPrnh6>

101 creative ideas to use AI in education, A crowdsourced collection - <https://zenodo.org/record/8072950>

Using ChatGPT effectively - <https://edin.ac/3u5E52b>

Discussion questions

1. How can AI benefit everyone in the education system? What fears and opportunities should we consider?
2. How can we make sure that AI is used responsibly and ethically in our education system?



Image by Antonia and Dalle-2: "An oil painting of a robot teacher of the future"