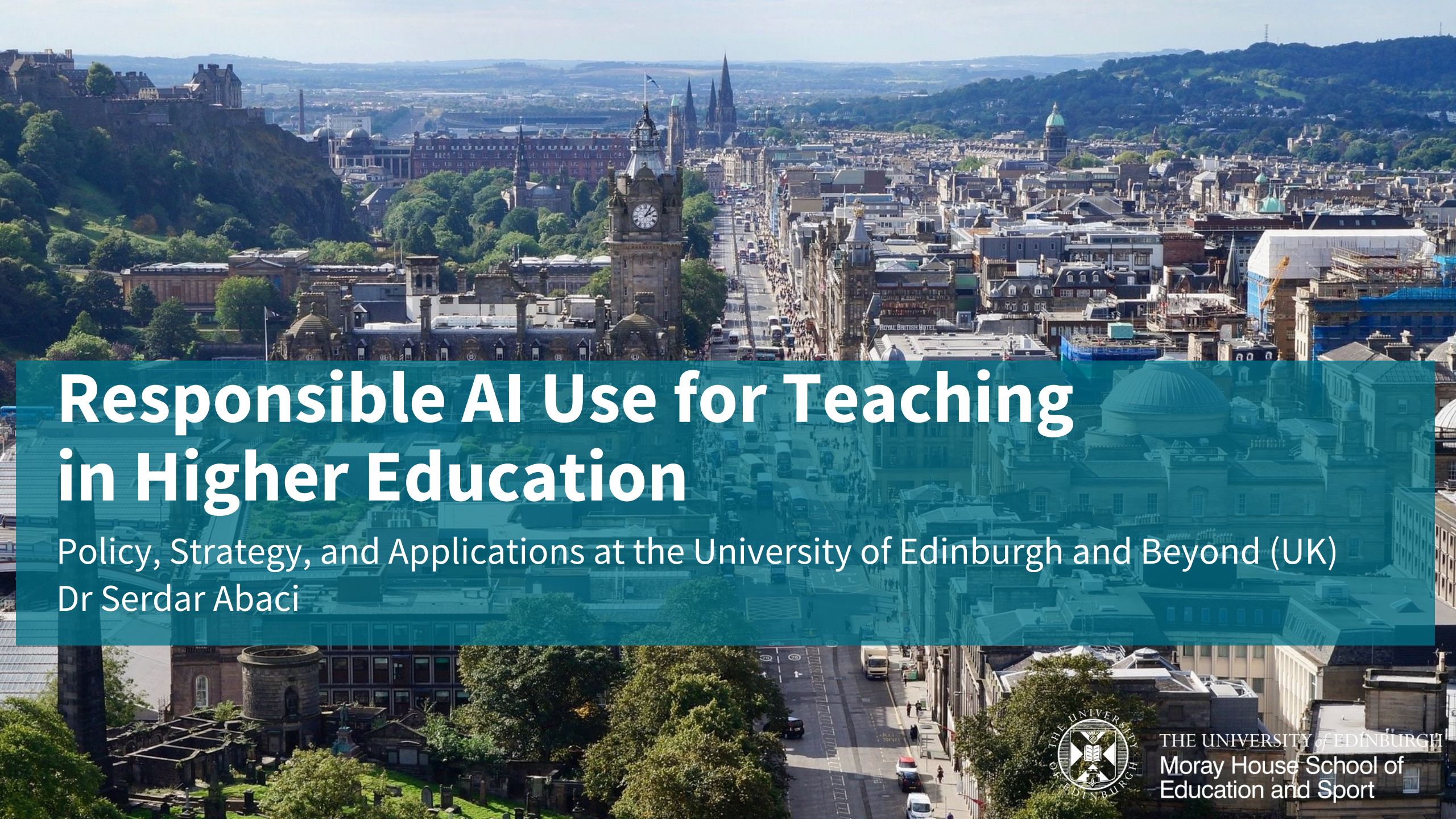


# Responsible AI Use for Teaching in Higher Education

Policy, Strategy, and Applications at the University of Edinburgh and Beyond (UK)

Dr Serdar Abaci

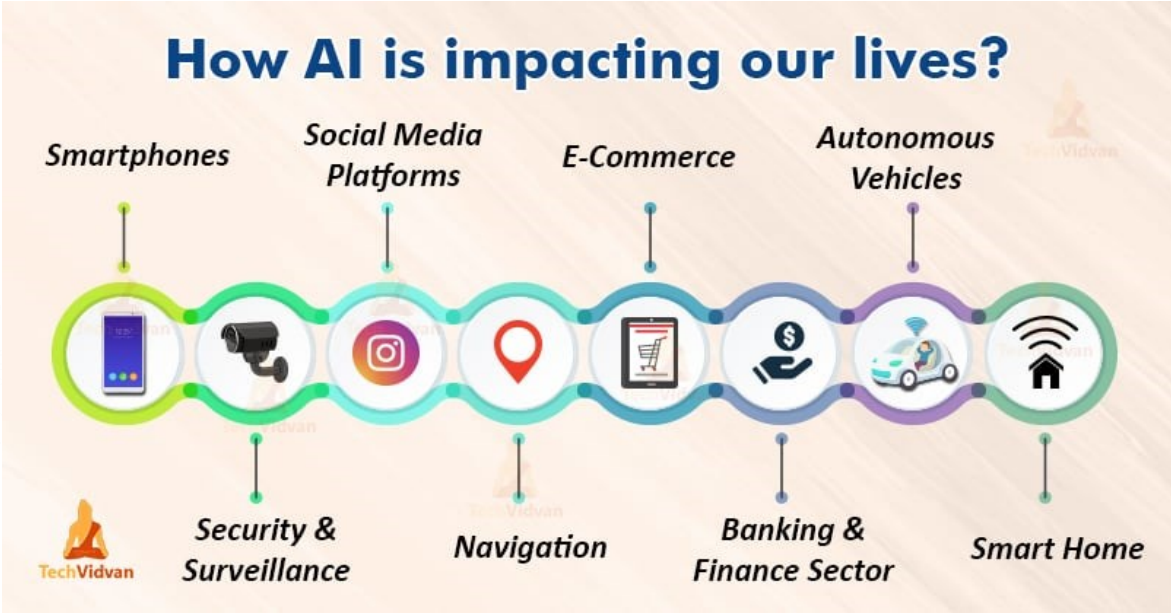
THE UNIVERSITY of EDINBURGH
Moray House School of Education and Sport

# Outline

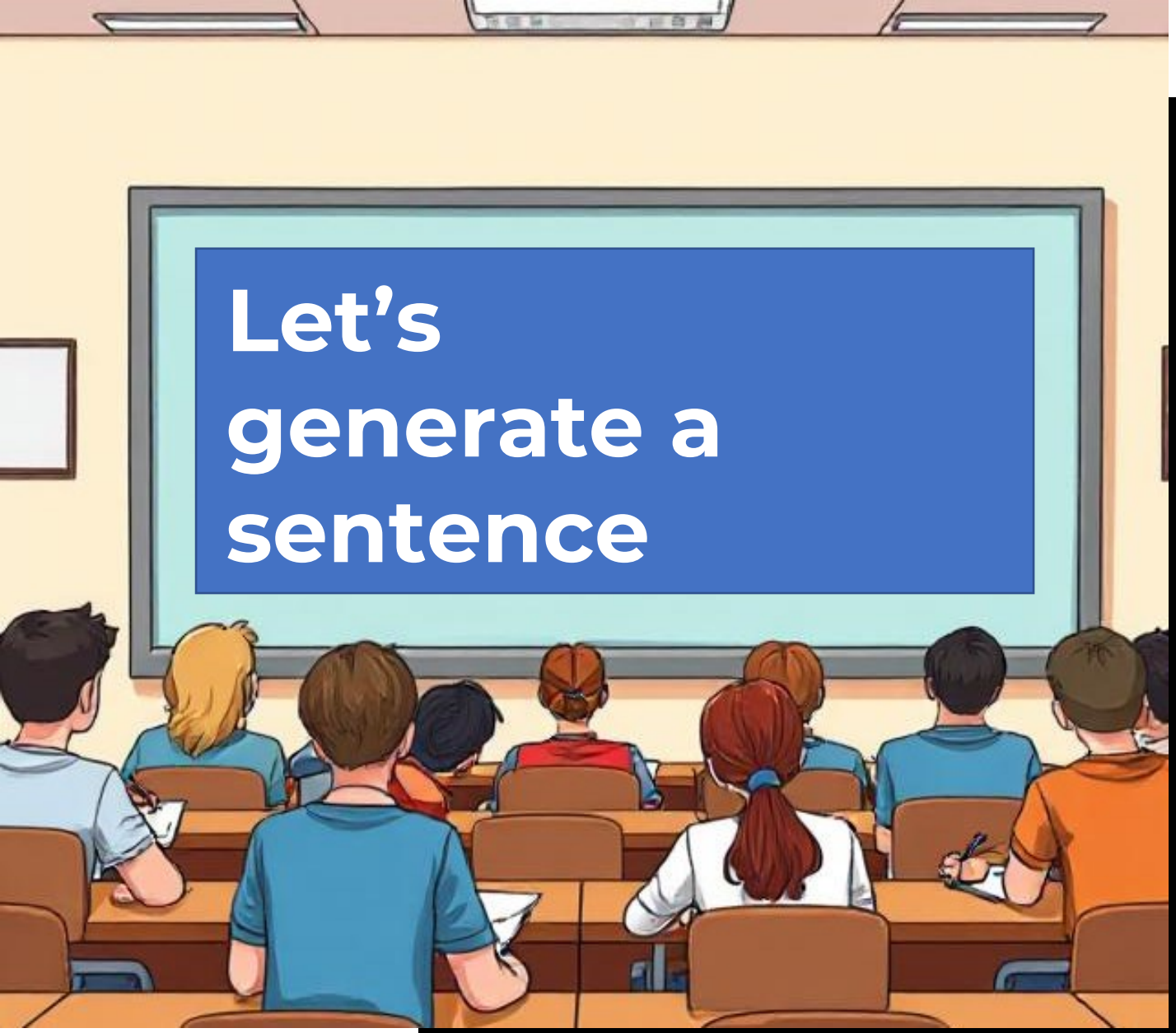
- What is AI? Write a sentence ‘like AI’
- Critical views on generative AI use in Education
- GenAI use at the University of Edinburgh (UoE)
- AI in Secondary Schools project

# What is AI? How does it work?

- Artificial Intelligence, also known as machine learning (ML) is a method that enables computers to perform tasks that usually requires human intelligence.
- It provides 'shortcuts' to conventional computational models and can be used to make predictions or optimisations.
- As a technology, many systems use AI methods 'under the bonnet'

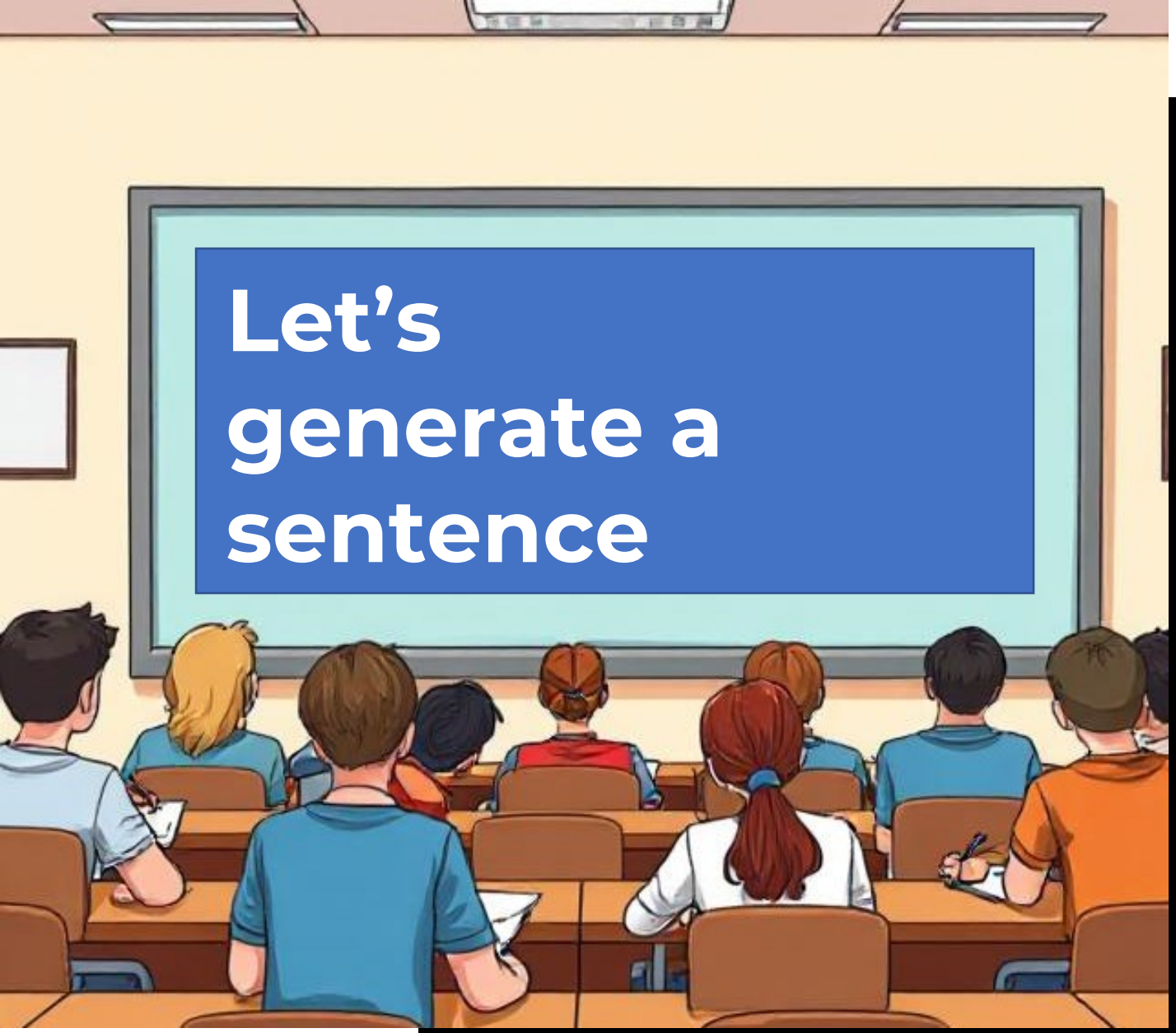



https://techvidvan.com/tutorials/ai-in-human-life/



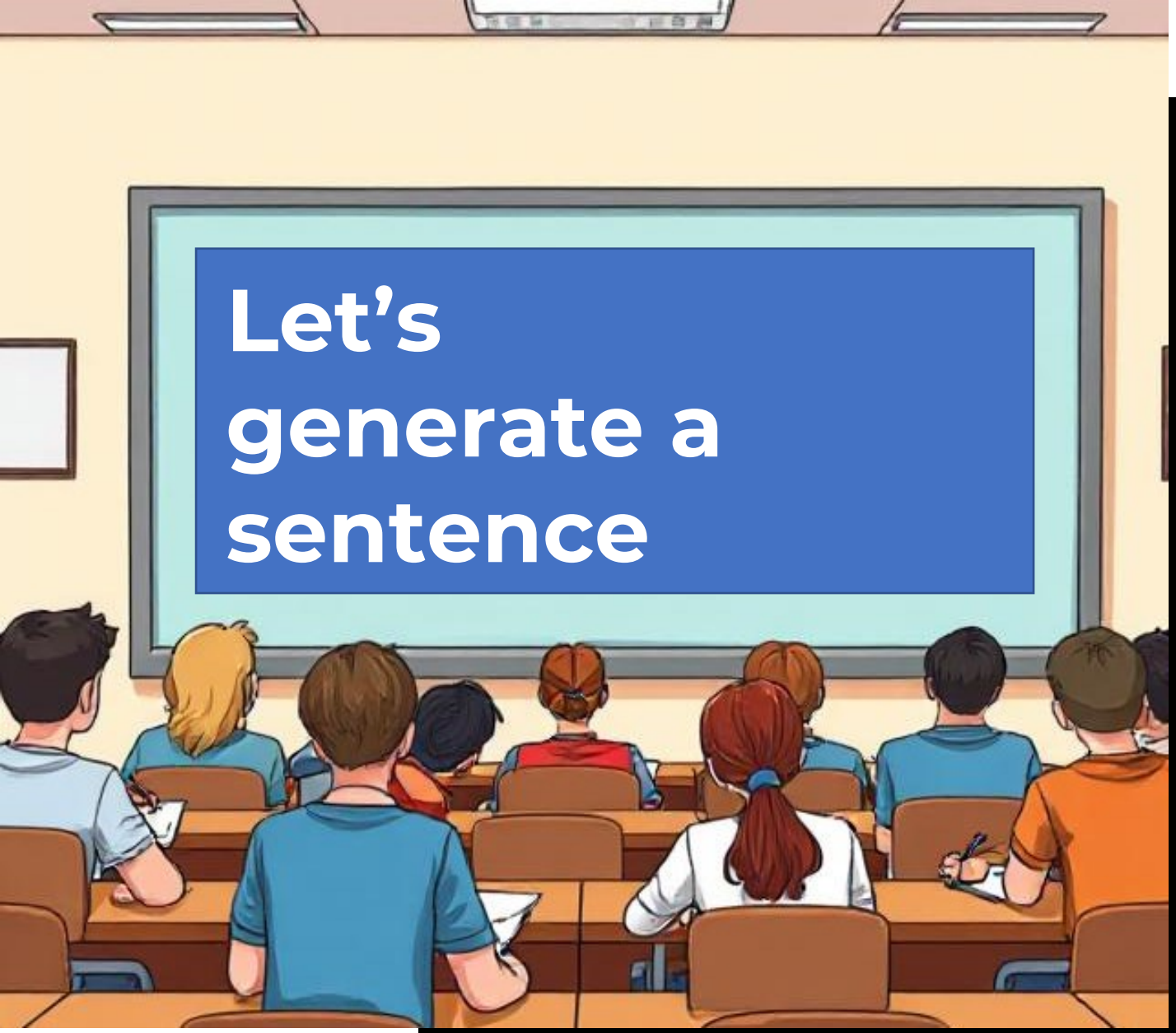

Now, let’s take part in an exercise that will help us understand the very basics of how LLMs work.

In this activity, we’ll work together to generate a sentence in a similar (but much simpler) way to LLMs.




You are going to train our model by giving examples of:

- An **animal** (like ‘cat’ or ‘aardvark’)
- A **past tense verb** (like ‘sat’ or ‘spoke’)
- A **preposition** (such as ‘on’ or ‘opposite’)
- And an **object** (like ‘mat’ or ‘pencil case’)




You are going to train our model by giving examples of:

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- A **past tense verb** (like ‘sat’ or ‘spoke’)
- A **preposition** (such as ‘on’ or ‘opposite’)
- And an **object** (like ‘mat’ or ‘car’)

**wooclap.com/TEDUAI**

# Let’s write a story

The previous method just used *frequency* (most popular word) to choose each word in the sentence.

But LLMs use *context* as well, including looking at the prompt, and a certain window of words that came before in the text to determine the most probable next word.

In this next activity, we’ll use a **prompt** and a **context window** to help us generate a story!

Alice was beginning to get very tired of sitting by her sister on the bank, and of having nothing to do: once or twice she had peeped into the book her sister was reading, but it had no pictures or conversations in it, "and what is the use of a book," thought Alice, "without pictures or conversations?"

**Context window**

**What word should come next?**

# Let’s write a story

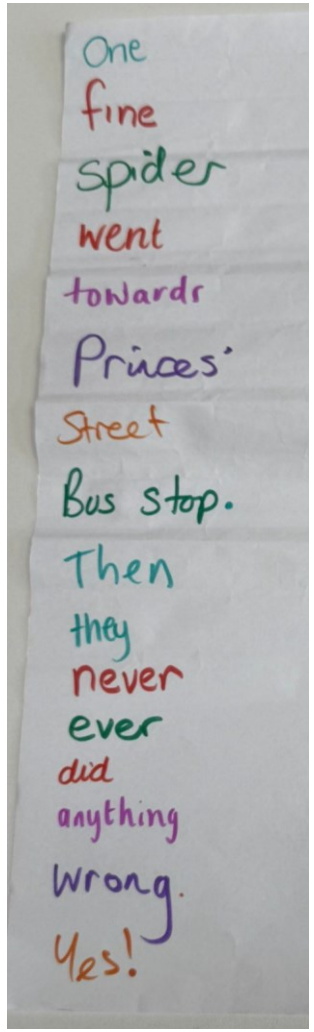
## Your prompt is:

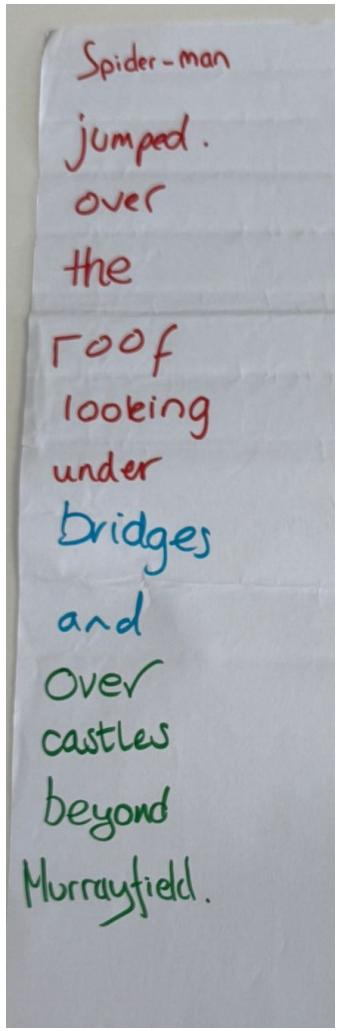
Write a story about Spider-Man visiting Edinburgh

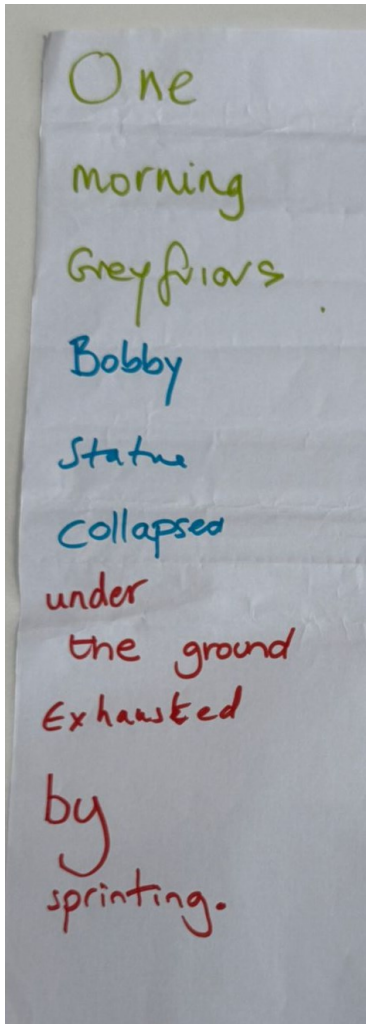
# Let’s write a story

1. Write a word. Pass the paper on.
2. Write a second word below the first.
   Pass the paper on.
3. Write a third word below the second.
   Pass the paper on.
4. Write a fourth word. Fold the paper to cover the first word. Pass the paper on.
5. Write another word.
   Fold the paper and pass it on.
   Only three words to be visible at any time

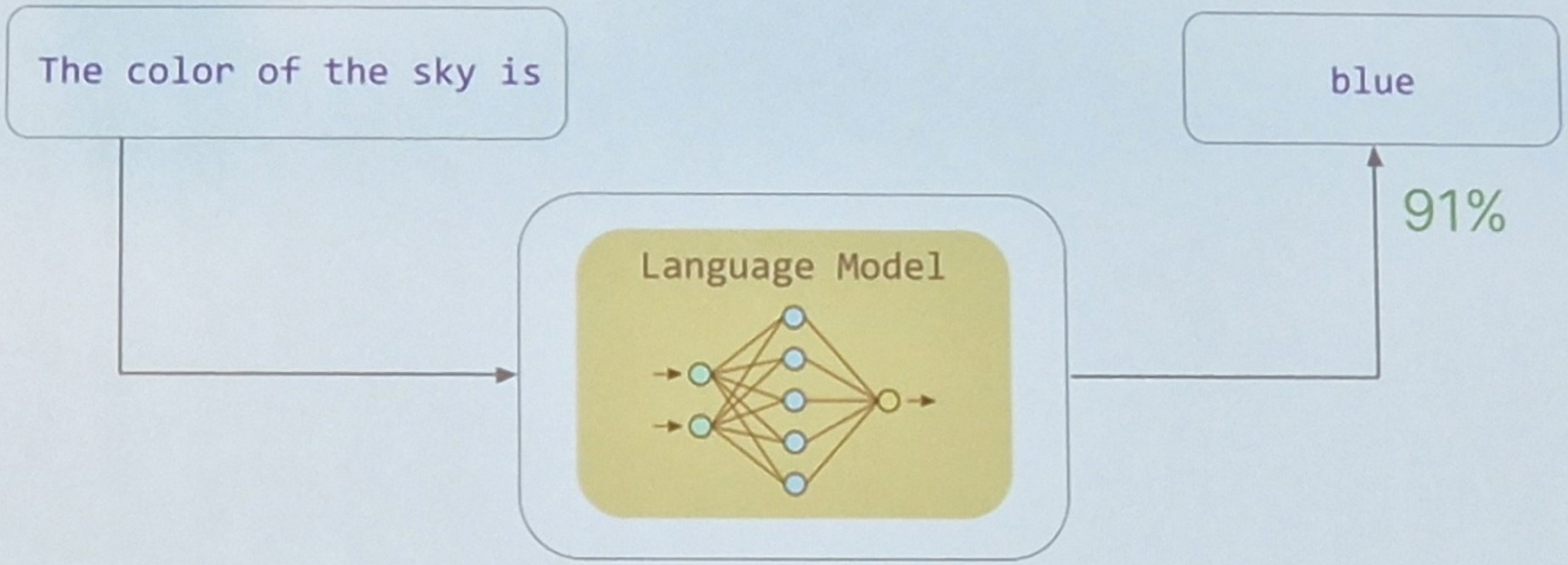
# Let's write a story



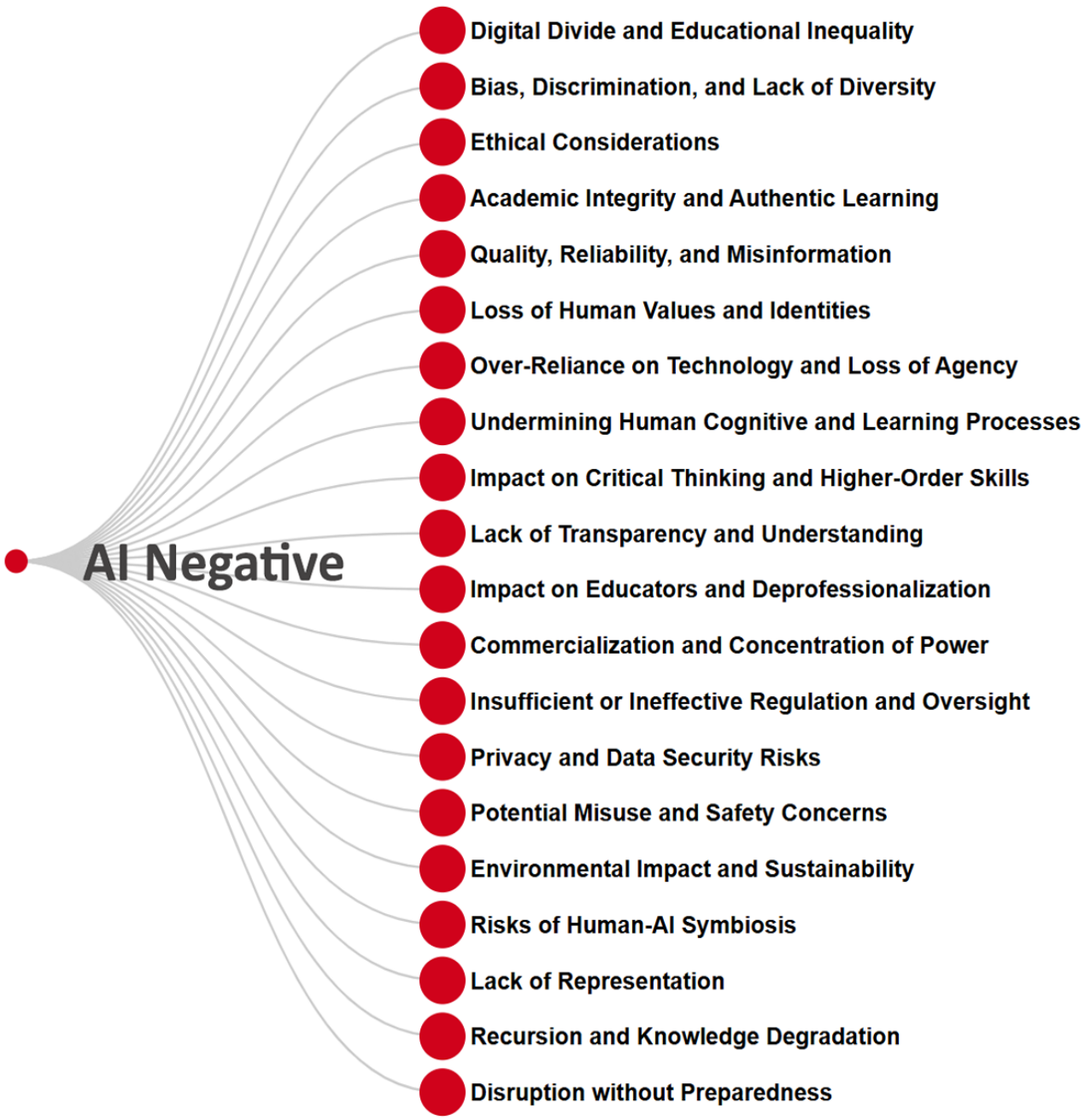

# Language modelling

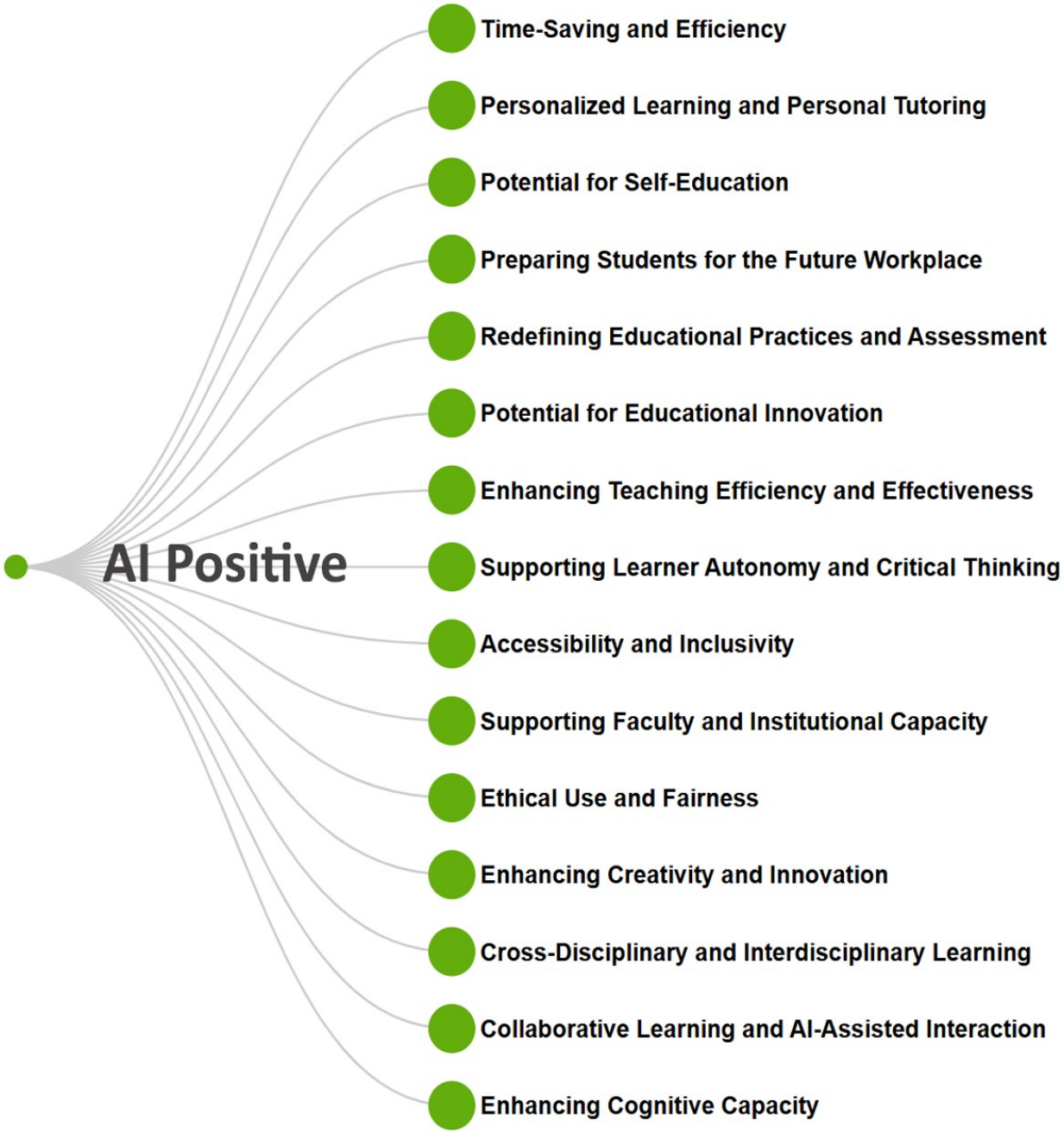



Given sequence of words so far (context), predict what comes next.

Src: Prof J. Hilston (2025)

# Is GenAI promising for education?




Bozkurt et al. (2024) 'The Manifesto for Teaching and Learning in a Time of Generative AI: A Critical Collective Stance to Better Navigate the Future', *Open Praxis*, 16(4), p. 487–513. Available at: https://doi.org/10.55982/openpraxis.16.4.777.

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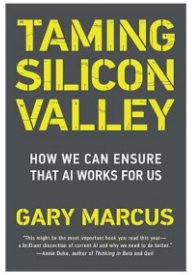
# Hype versus reality

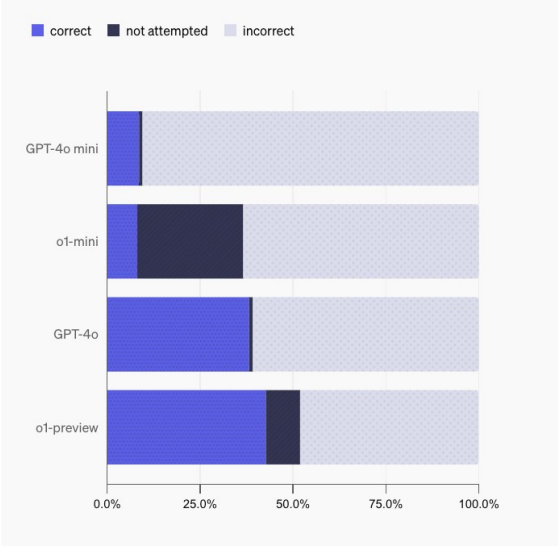
- Is GenAI really promising for education?
- Will it free up teachers' time to spend more time with learners?
- Will every learner have a personal tutor?

- There is a lot of hype but not very much evidence yet
- There are known limitations and concerns with current GenAI tools…
- …and yet they can be useful for learning already when used carefully

# The AI we have is not the AI we want (Marcus 2024)




- If you were going to design a great AI tool for education, you wouldn't come up with ChatGPT (or any of its competitors)
- It can't tell fact from fiction – it's often wrong but it sounds confident
- A recent study shows GPT4o has 42% accuracy on (obscure) factual questions
- Throwing more compute/data at new models probably won't fix accuracy
- And there are a whole lot more problems besides…

LEARNING, MEDIA AND TECHNOLOGY
https://doi.org/10.1080/17439884.2025.2537959

Routledge
Taylor & Francis Group

RESEARCH ARTICLE

OPEN ACCESS Check for updates

# When the prompting stops: exploring teachers' work around the educational frailties of generative AI tools

Neil Selwyn [a,b], Marita Ljungqvist[a] and Anders Sonesson[a]

[a]Department of Educational Sciences, Lund University, Lund, Sweden; [b]School of Education, Culture and Society, Monash University, Clayton, VIC, Australia

## ABSTRACT

Teachers are now encouraged to use generative artificial intelligence (GenAI) tools to complete various school-related administrative tasks, with the promise of saving considerable amounts of time and effort. Drawing on interviews from 57 teachers across eight schools in Sweden and Australia, this paper explores teachers' experiences when working with GenAI. In particular, it focuses on the large amounts of work that teachers put into reviewing, repairing and sometimes completely reworking AI-produced outputs that they perceive to be deficient. Rather than reflecting teachers' lack of skill in prompting GenAI effectively, the paper shows how this work foregrounds the educational limitations and frailties of AI and other automated technologies – with teachers having to act on a wide range of complex professional judgements around pedagogical appropriateness, social relations and overall educational value to bear on AI-generated content. The paper concludes by considering the need to challenge ongoing industry and policy claims around the labour-saving benefits of artificial intelligence in education, and instead focus on the ways in which these technologies are dependent on the hidden labour of humans to co-produce the illusion of automation.

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# ‘Capitulation’

> “In this paper, it is acknowledged that GenAI’s capabilities can enhance some teaching and learning practices, such as learning design, regulation of learning, automated content, feedback, and assessment. Nevertheless, we also highlight its limitations, potential disruptions, ethical consequences, and potential misuses.

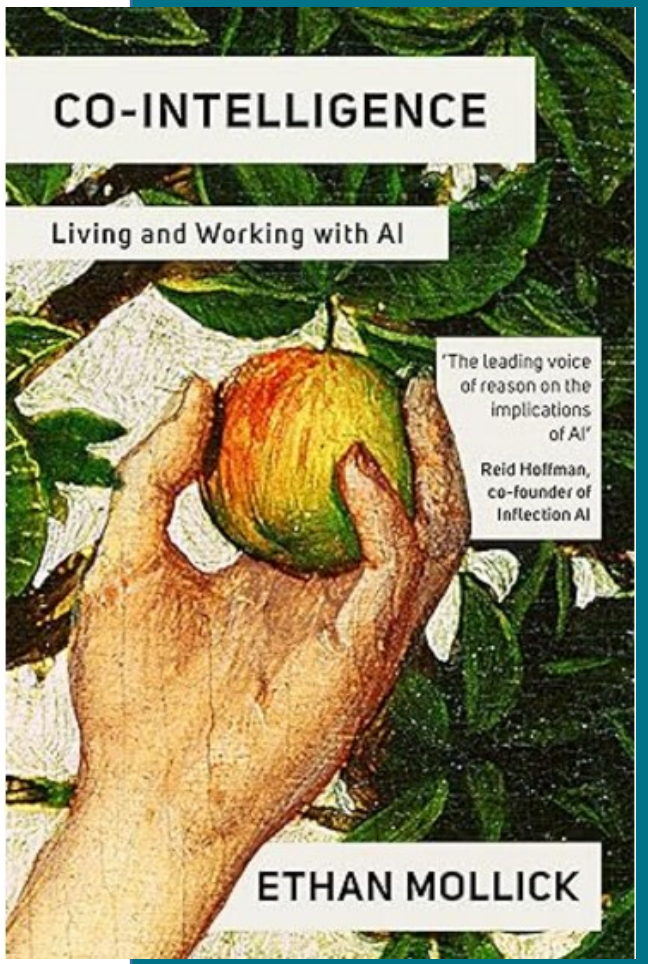
Giannakos, M., Azevedo, R., Brusilovsky, P., Cukurova, M., Dimitriadis, Y., Hernandez-Leo, D., … Rienties, B. (2024). The promise and challenges of generative AI in education. *Behaviour & Information Technology*, 1–27. https://doi.org/10.1080/0144929X.2024.2394886

# How might we use GenAI tools carefully then?

As a partner to think with.

# Four rules for co-intelligence (Mollick)

- **Principle 1 – always invite AI to the table** (experiment with AI on every task so you can figure out what it is good at)
- **Principle 2 – be the human in the loop** (know how to check the quality of the AI output, and how to blend it with your unique expertise)
- **Principle 3 – treat AI like an (alien) person** (but tell it what kind of a person it is). Establish a clear and specific persona defining who the AI is and what problem it should tackle. This is a convenience for getting more valuable output. *Never forget it is not human.*
- **Principle 4 – assume this is the worst AI you will ever use.** It will keep improving, so you need to keep experimenting to get the best from it



# AI for Teaching

**Table 1. The AI competency framework high-level structure: aspects and progression levels**

| Aspects | Progression | | |
|---|---|---|---|
| | Acquire | Deepen | Create |
| 1. Human-centred mindset | Human agency | Human accountability | Social responsibility |
| 2. Ethics of AI | Ethical principles | Safe and responsible use | Co-creating ethical rules |
| 3. AI foundations and applications | Basic AI techniques and applications | Application skills | Creating with AI |
| 4. AI pedagogy | AI-assisted teaching | AI–pedagogy integration | AI-enhanced pedagogical transformation |
| 5. AI for professional development | AI enabling lifelong professional learning | AI to enhance organizational learning | AI to support professional transformation |

# At the forefront of AI

The University of Edinburgh is the birthplace of Artificial Intelligence (AI) in Europe. AI has been part of our history for more than six decades, and continues to influence and drive our extraordinary work today and into the future.


# GENERATIVE AI LABORATORY



The Generative AI Laboratory (GAIL) at the University of Edinburgh is a centre for excellence dedicated to researching all aspects of generative artificial intelligence (AI) in society. Uniting the diverse research expertise across the University with generative AI at its core, GAIL taps into a thriving AI landscape with recognised strengths in natural language processing, machine learning, and data-driven innovation.

This interdisciplinary initiative focuses on advancing generative AI techniques in the key areas of future health and care, climate and sustainability, and economic growth, and is committed to innovating in generative AI through partnerships with global stakeholders, driving new collaborations and dynamic projects across government, industry, and the public sector.

# Russell Group principles on the use of GenAI

1. Universities will support students and staff to become AI-literate.
2. Staff should be equipped to support students to use generative AI tools effectively and appropriately in their learning experience.
3. Universities will adapt teaching and assessment to incorporate the ethical use of generative AI and support equal access.
4. Universities will ensure academic rigour and integrity is upheld.
5. Universities will work collaboratively to share best practice as the technology and its application in education evolves.

Source: https://www.russellgroup.ac.uk/sites/default/files/2025-01/Russell%20Group%20principles%20on%20generative%20AI%20in%20education.pdf

# UoE Guideline for Staff

1. **Verification** – correctness of the generated output
2. **Transparency** – about the use of GenAI
3. **Respect for IP, confidential information and personal data**
4. **Understand and explore** – the benefits and pitfalls of GenAI for teaching, research and professional services
5. **Responsibility** – exercise professional judgment in assessing and mitigating risks

Source: https://information-services.ed.ac.uk/computing/comms-and-collab/elm/generative-ai-guidance-for-staff

# AAUP Report on AI and Academic Professions

**Key concerns**

1. Improving Professional Development Regarding AI and Technology Harms
2. Implementing Shared Governance Policies to Promote Oversight
3. Improving Working and Learning Conditions
4. Demanding Transparency and the Ability to Opt Out
5. Protecting Faculty Members and Other Academic Workers

https://www.aaup.org/reports-publications/aaup-policies-reports/topical-reports/artificial-intelligence-and-academic

# UoE Guideline for Students

- The University trusts you to **act with integrity** in your use of GenAI for your studies.
- It does not ban the use of GenAI, though **its use is restricted for assessment**.
- Some of your **courses may also restrict its use in other ways**. Always check your course level guidance.
- These top-level guidelines provide **clarity on which uses of GenAI are strictly prohibited and constitute academic misconduct**.
- They also explain why you should be **cautious about over-reliance on generative AI** for your learning.
- This guidance is general and sets out the basics of the University's position – it is essential that you also **check the detailed information provided for each of your courses**.

Source: https://information-services.ed.ac.uk/computing/comms-and-collab/elm/guidance-for-working-with-generative-ai

# Seven Principles by the Students' Assembly on GenAI in HE

### 1) We value experimentation.

We believe in embracing emerging technologies, including generative AI (GenAI), and their capacity to enhance learning and development. We should not be afraid to experiment, unlock our **inner creativity** and use these tools to foster both imagination and innovation. We value **playfulness** in teaching and learning. We should **feel inspired**.

### 2) We embrace sustainability-driven innovation and conscious change.

We believe that it is our responsibility to be conscious and **proactive of the environmental impacts** of our AI uses. We must question the appropriateness and scope of the GenAI tools based on a cost-benefit analysis of their environmental footprint. Is the task at hand worthwhile, considering its ecological impact? If so, go create great things. If not, use other, more suitable and sustainable tools. As importantly, we believe that the university should **openly communicate** on the **ecological consequences** of the use of GenAI.

### 3) We believe in upholding the integrity of education.

GenAI should be used as a tool to enhance, not replace learning and teaching experiences. We value assessments and learning opportunities which emphasize engaged, thoughtful, critical, and creative contributions through multiple approaches, which may or may not include the use of GenAI tools. **Intentionality** is needed wherever these tools are encouraged or restricted.

### 4) We advocate for an empathetic understanding of individuality.

We respect individual approaches to the use of GenAI, and we believe in the **right to refusal** in the use of GenAI for both students and teachers to be respected. The choice of using or not using GenAI is left up to the individual, with the understanding that it serves to further learning and teaching and is not detrimental to the integrity of EFI. This means that students and teachers can refuse to be judged for using GenAI and refuse to use it in their work in so far as this use respects the principles hereby mentioned.

We strive to be conscious of the impact of GenAI use. We will be **mindful** of individuals' rights, needs, and desires both at EFI and within society. We acknowledge the possibility of human and AI error and the biases and human cost that may be present. We support improvements in the broader social contexts and aim for **positive future developments** in this area.

### 5) We strive towards trust and transparency.

We should be able to be held accountable for the way in which we use GenAI. This means we should be able to verbalize why and how we've used GenAI. We should take **responsibility for its use** and how it is implemented in assignments and projects; recognizing that **it is a tool, not a secret to be kept.** We should honor the principles of how to use genAI by using clear guidelines/rules that foster the implementations of these principles. We need to be honest, genuine and respectful.

In a similar manner, we expect EFI to overtly disclose all uses of GenAI (e.g., in communications, feedback, marking, teaching materials, or other organizational tasks). The institute should be **open about the investment choices** and procurement processes underway, as well as the third party tech providers involved. In the spirit of transparency, we believe in **open source technologies** and democratically-governed technologies.

### 6) We believe in a democratically governed GenAI.

We encourage **active participation** and **open lines of dialogue** between the institution and students during any regulation drafting about GenAI and throughout the implementation phase. We believe in the active role of student representatives in co-designing new regulatory measures or guidelines regarding GenAI.

We believe that the engagement of students allows for the development of an AI governance grounded in community concerns, narratives and **social justice**. This principle is presented in the spirit of encouraging an **institutionalized culture of deliberation** and collaboration throughout all levels of EFI.

### 7) We strive towards equality, inclusion and accessibility.

GenAI must not be a tool that excludes individuals or creates further inequalities in EFI. Democratizing access to GenAI to **support a variety of learning needs** is crucial. GenAIs that are introduced in the learning experience should have user-friendly interfaces to accommodate accessibility needs, including those of students, staff or academics with disabilities. We aim to foster an **inclusive and just environment** where GenAI serves as a catalyst for learning.

"…towards a **bolder, more democratic, fair, emphatetic, sustainable and transparent approach to GenAI in teaching, learning and research** [in HE]"

https://www.studentsassemblyongenai.com/principles

The Internet and Higher Education
Volume 67, October 2025, 101036

# The GenAI divide among university students: A call for action ☆

Karley Beckman [a], Tiffani Apps [a], Sarah Katherine Howard [b d], Claire Rogerson [a], Ann Rogerson [c], Jo Tondeur [d]

## Highlights

- Three student profiles highlight variations in the knowledge and use of ChatGPT in academic studies.
- Students with lower AI literacy were more cautious and fearful of GenAI.
- Students with higher AI literacy were more likely to use GenAI in productive ways.
- Findings demonstrate patterns of AI literacy and GenAI use that reflect existing digital divides at a time of rapid technological diffusion.
- Building on educational research into digital inequalities offers insights into key issues associated with GenAI currently facing HEIs.

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# Edinburgh Language Model (ELM)

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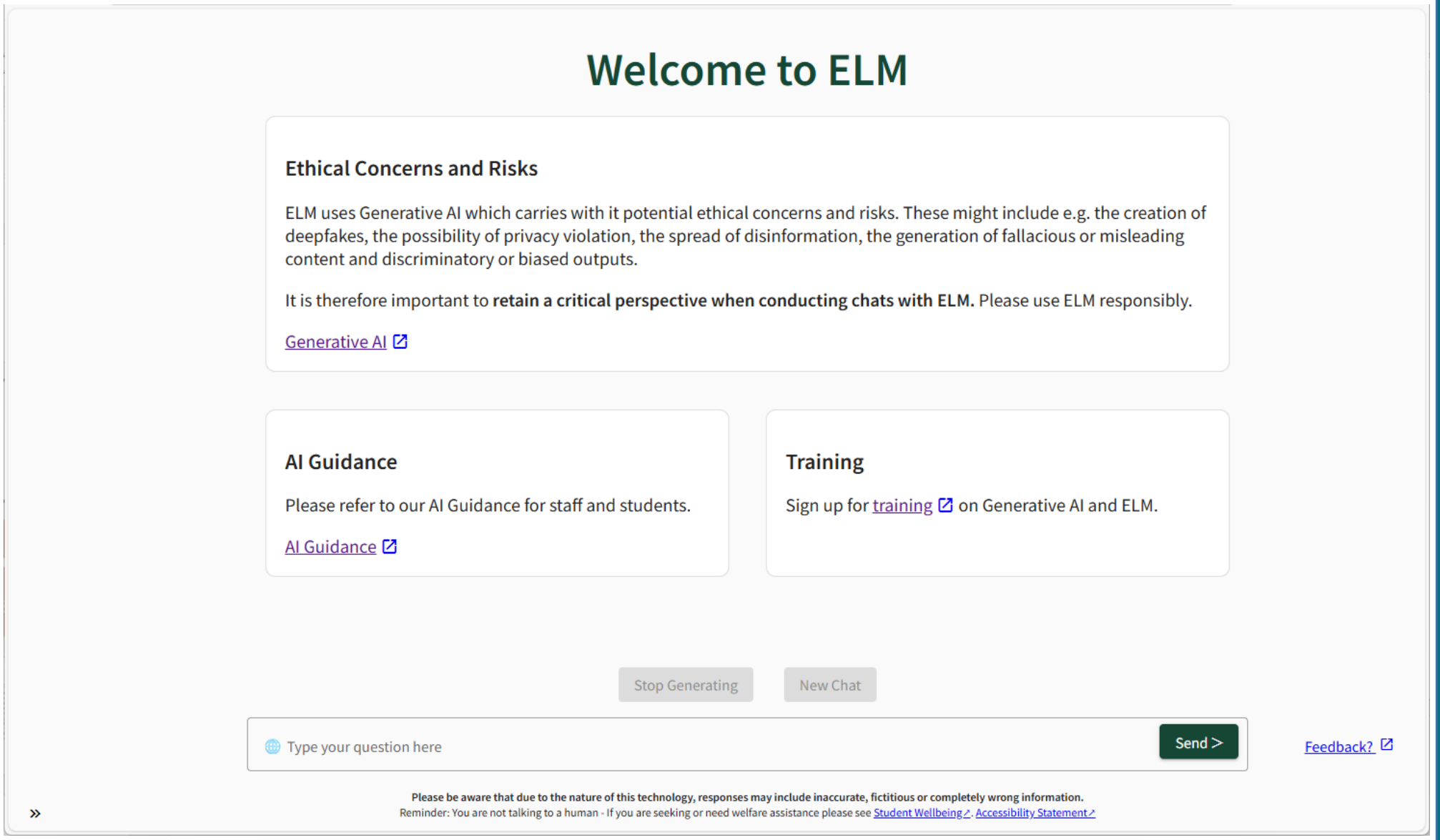

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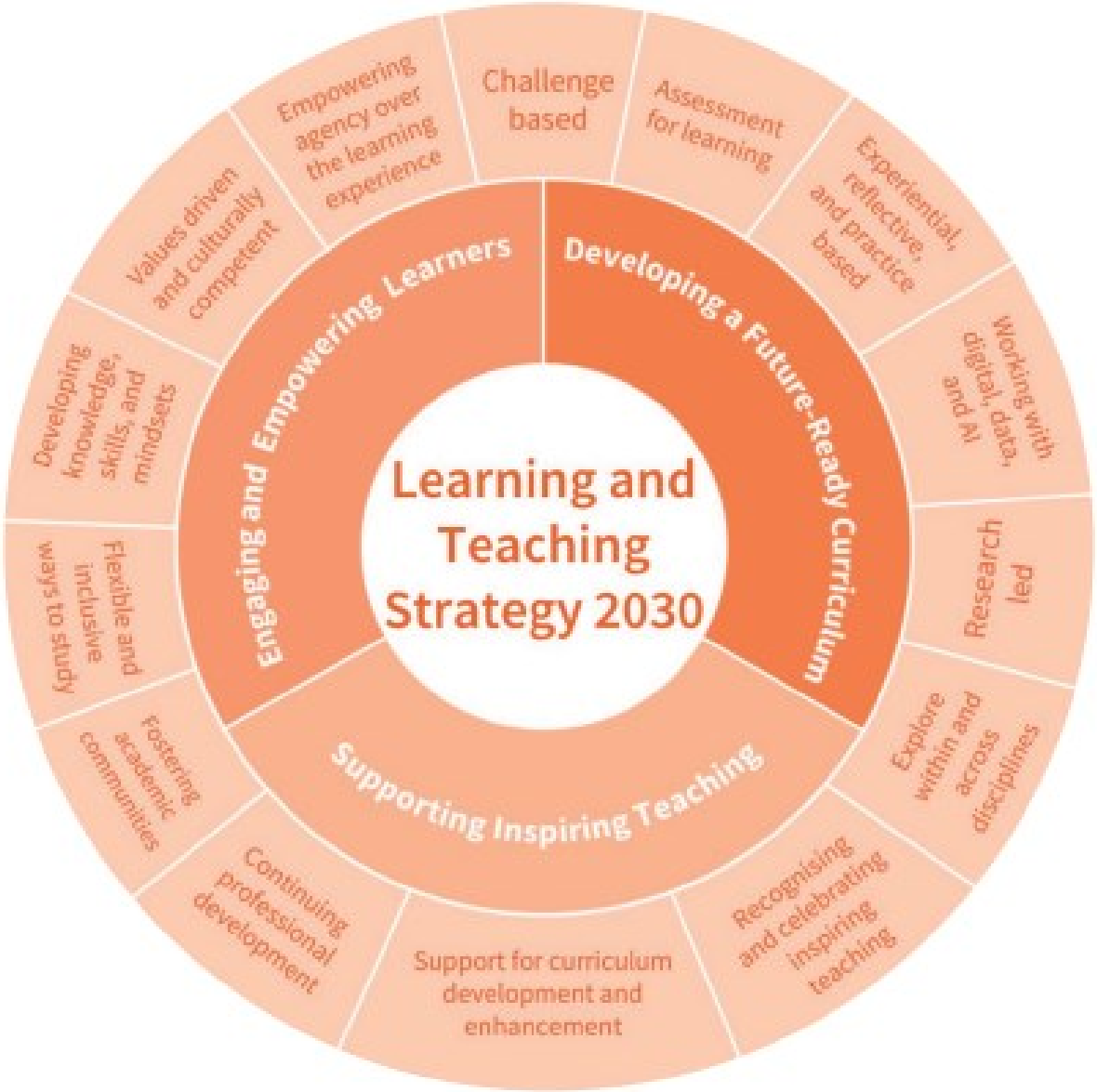
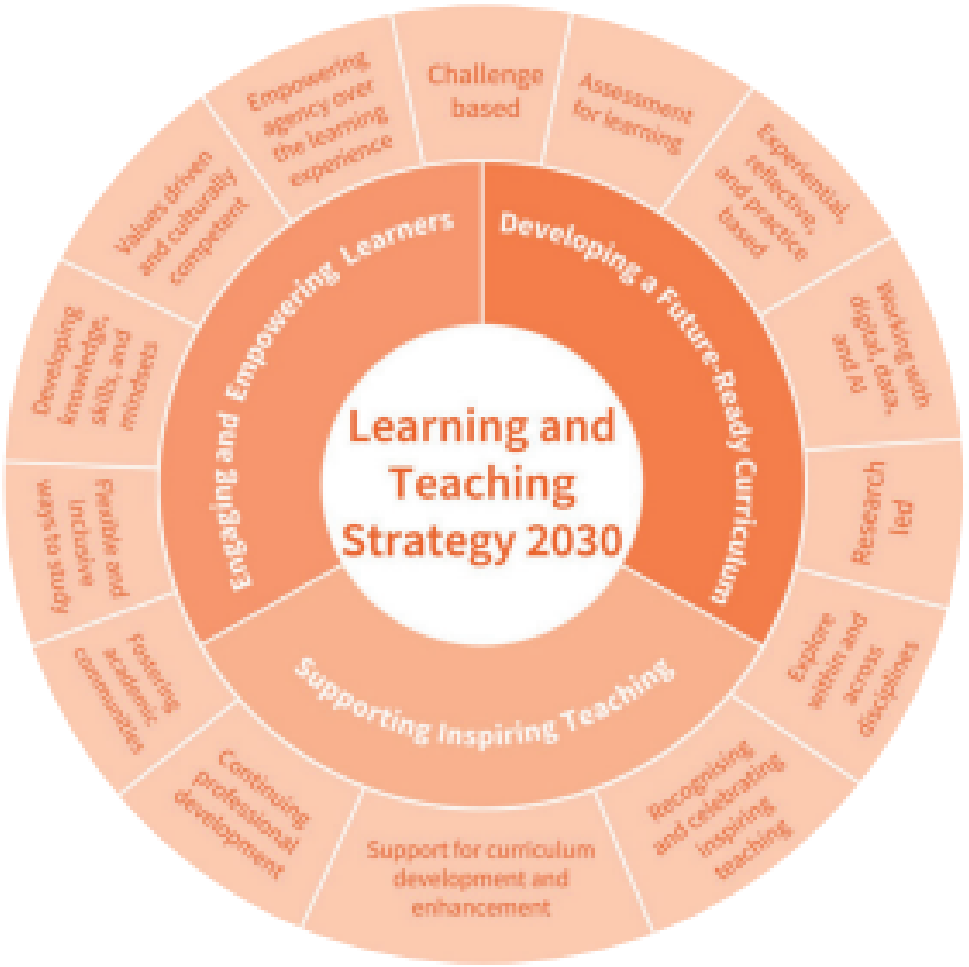
# Learning and Teaching Strategy 2030



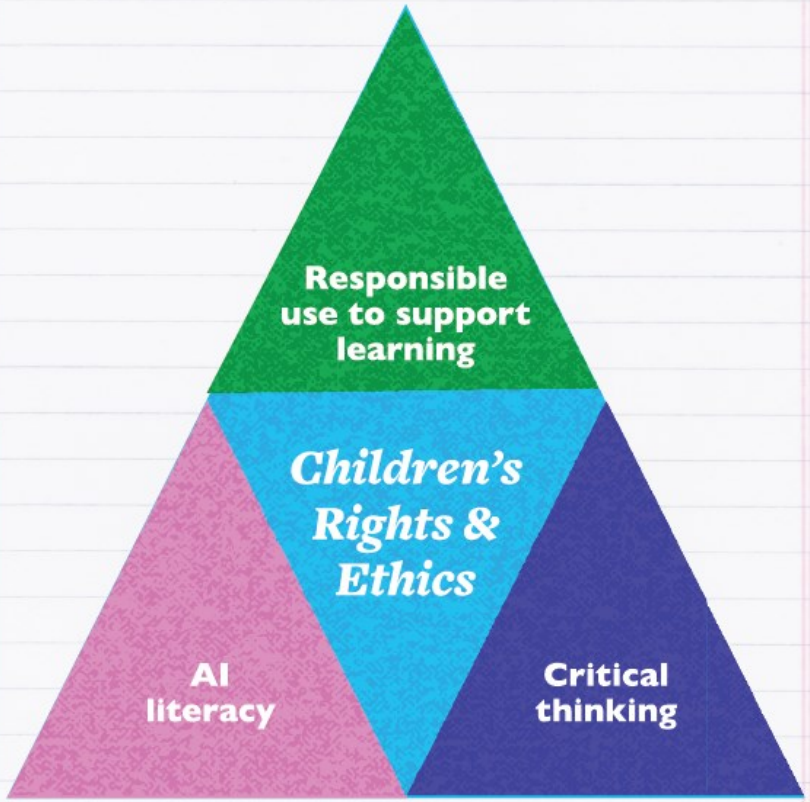
## Working with digital, data and AI

We live in an increasingly data, digital and AI-driven world. Our curriculum will provide opportunities for our students to cultivate digital literacy, data fluency and AI proficiency. We will engage proactively with AI, using our research strengths in this area to shape its ethical implementation, and educating our students to make responsible use of it. We will continue to make full use of the potential of digital technologies for providing new forms of inclusive online and hybrid teaching, building on our research



# TRAILS.scot

Teaching Responsible AI Literacy in Schools




# A draft AI curriculum framework for Scotland

We are seeking feedback from educators, AI experts, policymakers and other stakeholders to help us develop an updated version. If you would like to give feedback, please complete this form:

https://edin.ac/4kos03l

# Teach AI Literacy

## A Guide for Teachers

work-in-progress


TRAILS.scot

# Roles for GenAI tools to support learning

- Reading assistant
- Co-editor
- Junior researcher
- Conversational partner (e.g. modern languages)
- Debate partner
- Revision helper
- Brainstorming partner

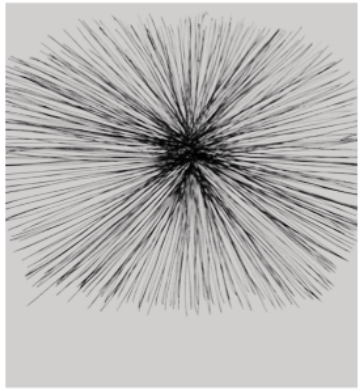
As with many other university students, the students in both studies used **GenAI tools** for editing writing, getting feedback on work, brainstorming, asking questions about course content, finding research articles and preparing content for presentations.

THESE USES ARE COVERED in the **Responsible Use to Support Learning** strand of the AI Curriculum Framework (*page 38*). The students' uses of GenAI for assistance related to disabilities included:

- Help with catching up after health or disability-related absence
- Filling in gaps from automated captioning errors,
- Reformatting resources to make them more reliable or compatible with other assistive technology
- Summarising topics in advance of a class
- Reducing the complexity of text to make reading easier
- Providing concise topic overviews
- Organising or structuring notes
- Clarifying or simplifying instructions
- Exam preparation e.G. Creating flashcards
- Creating study plans
- Advice on learning strategies
- Finding synonyms or definitions
- Suggesting or refining structure for reports

This is not a complete list, and it may need to be adapted for high school students. However, it is a starting point for schools when developing policies and positive examples of using GenAI tools as assistive technology.

Schools should develop clear policies to inform learners about the acceptable use of GenAI tools as assistive technology so that learners with additional support needs do not have to worry about whether their use of AI is considered 'cheating'. This is particularly important for students with dyslexia who may be concerned about accidentally plagiarising text without noticing it as a result of their condition because they find it hard to distinguish between sections of text. Rules about using GenAI tools might be confusing for users of existing assistive technology



tools (such as grammar checkers), which have recently introduced AI features that the user cannot turn off. It would be beneficial for schools to adopt an achievement paradigm focussed on learning AI skills rather than emphasising compliance and punishment for misusing AI tools (**https://edin.ac/43aqgND**). For example, students with additional support needs could attend workshops where they receive positive acceptable use examples with the opportunity to ask questions and swap tips with other students. ▪

Schools should develop clear policies to inform learners about the acceptable use of GenAI tools as assistive technology so that learners with additional support needs do not have to worry about whether their use of AI is considered 'cheating'.



# AI for ASN

- Catch up if you've been off sick
- Summarise topics before class
- Get concise overviews
- Make text simpler
- Find synonyms or definitions

# Learning about AI

A selection of **fun, low-tech, accessible activities** for **any Secondary teacher** introducing concepts in artificial intelligence

- Different types of AI systems and how they work
- Critical thinking skills
- Ethics, bias and sustainability issues
- Subject-specific materials for Computing, RMPS, Modern Studies and Music (more to come!)
- ASN materials

**TRAILS.scot/resource**

# Resources



## Children's Rights & AI Teaching Pack

Our friends at the Scottish AI Alliance and Children's Parliament have created a set of lessons aimed at upper Primary...

# Thank you!!

Questions or comments?

Serdar.abaci@ed.ac.uk

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