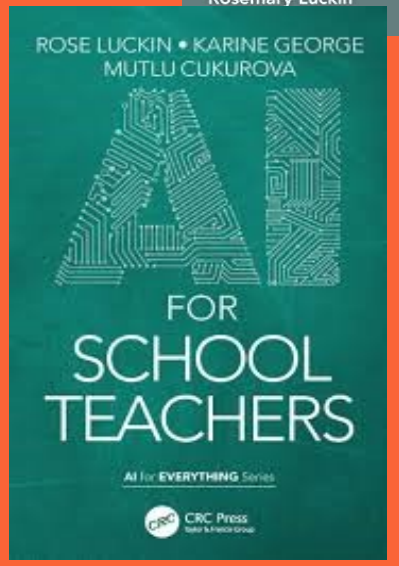
Future-Ready Humans in an AI-Ready World: The Intelligence We Can't Afford to Lose



Prof. Rose Luckin
Professor Emerita UCL
CEO & Founder EVR Ltd

UCL

EDUCATE
VENTURES RESEARCH

For all your AI needs: we help you realise the opportunity of AI

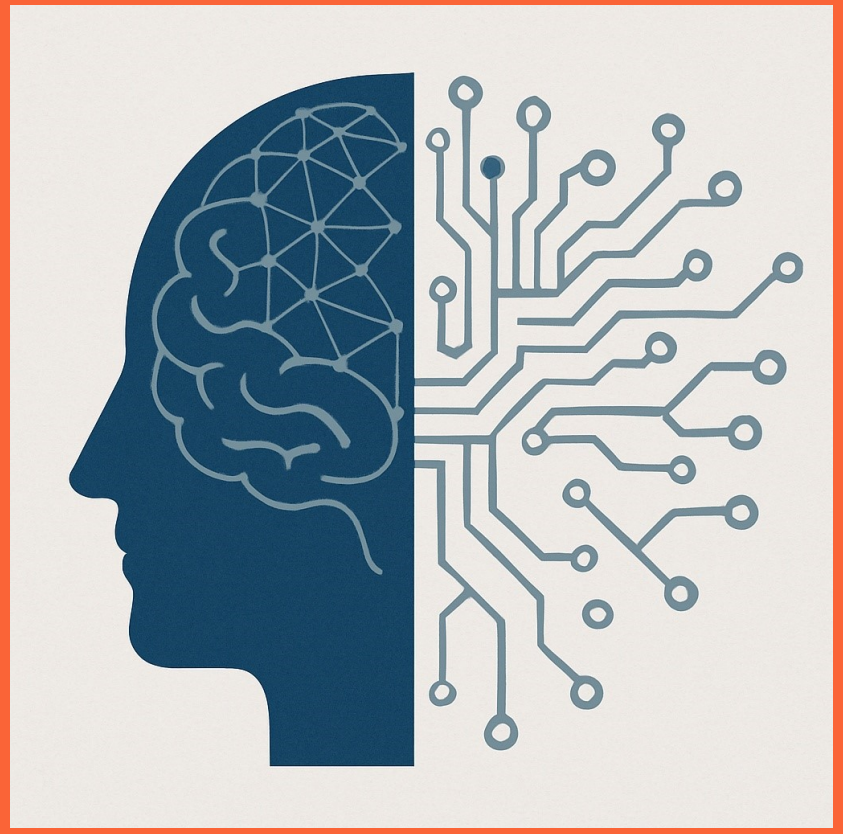
Cambridge Schools Conference, December 2025
Future-ready: preparing learners to thrive

- The profound question we face
- AI: where are we?
- The 3 lenses of AI in education
- Human Intelligence imperative
- AI to stimulate Learning Mastery
- Closing thoughts

“Learn Fast Act More Slowly”

Are we preparing learners to thrive *with* AI, or are we inadvertently creating dependency *on* AI?

Our Changing Human cognition



Memory (Sparrow et al. 2011) - the Google effect (digital amnesia),

Navigation (McKinlay 2016; Milner 2016) satnavs atrophied abilities,

Cognitive rewards (Bhatnaga et al., 2018) mechanisms because of gamification, etc.”

Critical thinking Lee et al. (2025) Microsoft study knowledge workers’ use of genAI found the tool had changed “**the nature of critical thinking**” from “information gathering to information verification”, from “problem-solving to AI response integration” and from “task execution to task stewardship”.

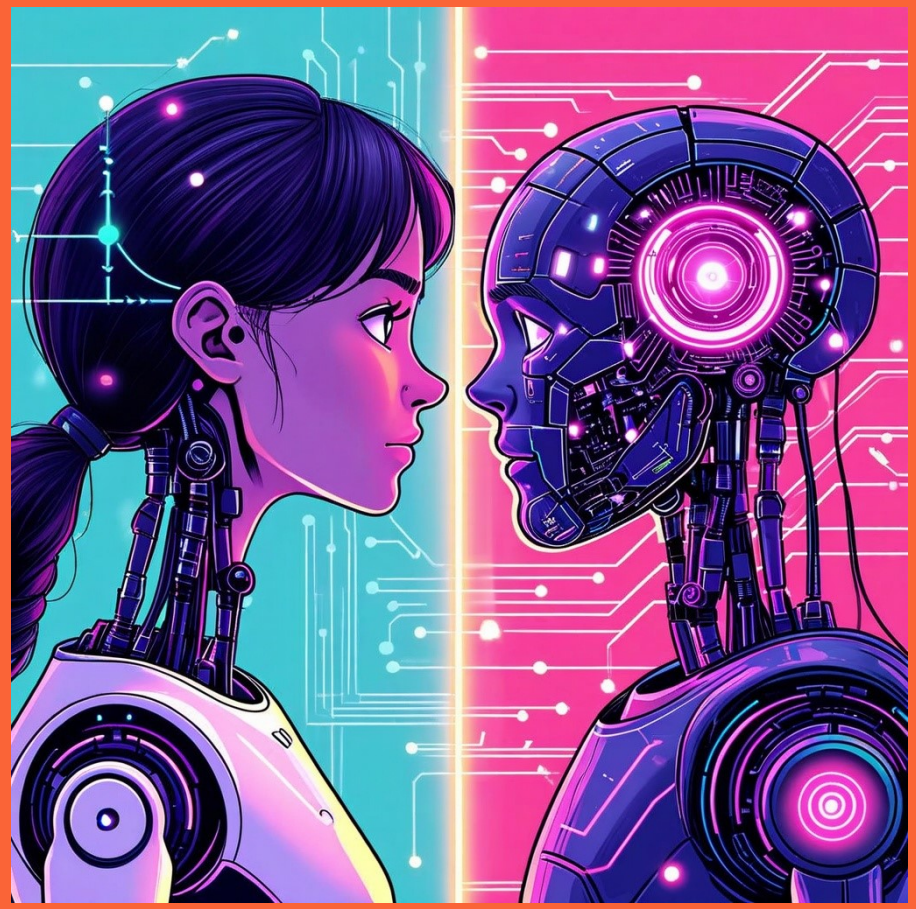
Are we allowing AI to ‘sever’ our minds?

Are we unwittingly creating a detrimental division between our tech-dependent and our more deliberate selves?

The 'Atrophying' Mind and the “Attention” economy

The shift: from doing tasks to managing AI outputs

Human-AI Collaboration is not always synergistic



AI is the catalyst for change; it’s sophistication should make us humans recognise that we need to become much more intelligent

AI is also the tool that can help humans achieve increased intelligence and meta intelligence to become super intelligent

But first:
What is AI and why is it important for education?

AI

- Technology that analyses its environment and acts with some autonomy to achieve goals

- How do you use AI? Speech to Text, Chatbot, Assistant, Analysis?

- AI's history is important
- Its Future is uncertain
- AGI is not 'just round the corner'

Not all AI is equal

GOFAI (Good old fashioned AI)

Machine Learning AI:
Finds insights, makes predictions, and helps automate decisions

Generative AI: a form of Machine Learning AI:
Creates new things (words, images, designs)

November 2022:
a defining moment?

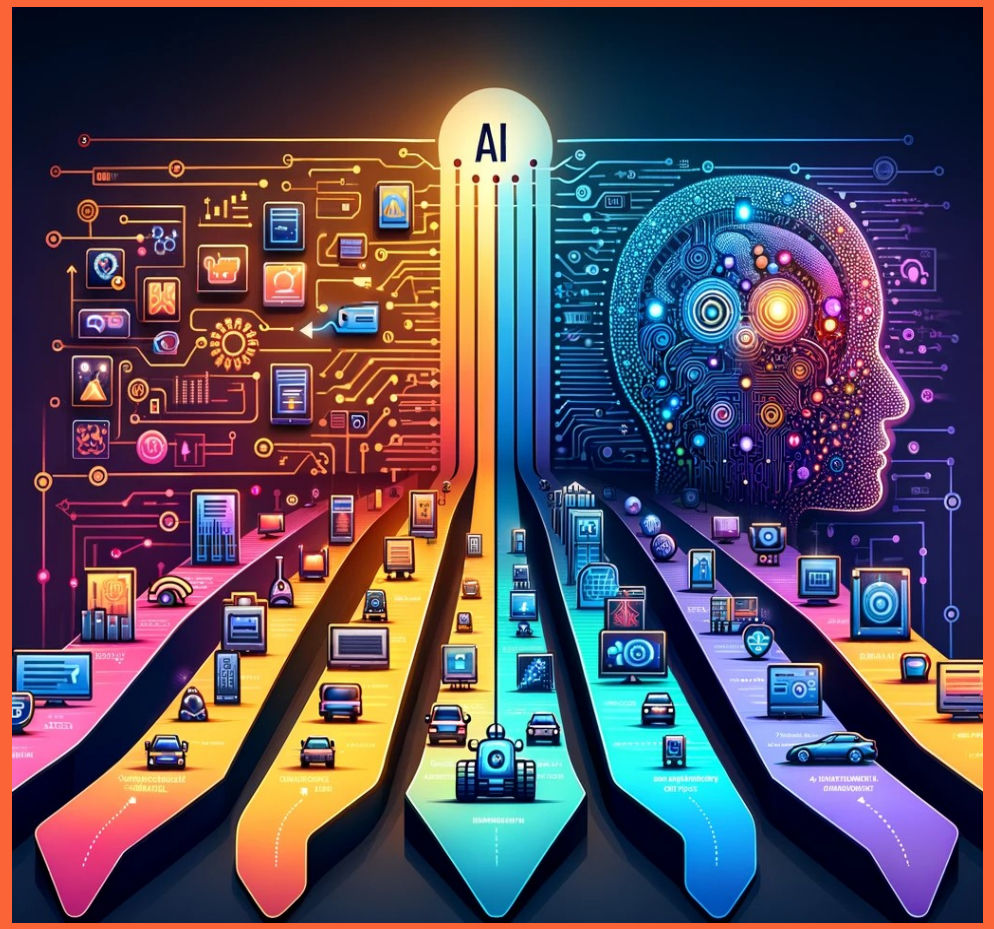
Scaled, ‘freely’ available AI for anyone with an internet connection
ChatGPT: 100M users in 2 months
(vs Netflix: 10+ years)

BUT Generative AI is ‘the new kid on the block’ not the whole story.
More risky than non-generative AI – and can still be a useful teaching tool.

Machine Learning's Perfect Storm

- Data
- Algorithms
- Processing Power

- The Landscape is changing very quickly
- AI is and will transform society, education, the world
- What we don't know is exactly how!



How ready are you?

Rate your confidence across eight areas

1=Not Started/ Don’t know
5=Advanced/ Confident

The 3 lenses of AI in education and the importance of Human Intelligence

Artificial intelligence in Education

1

AI tools:

Using AI in Education to tackle some of the big educational challenges

2

Increasing Human Intelligence:

Changing Education so that we focus on human intelligence and prepare people for an AI world

3

Learning about AI:

Educating People about AI so that they can use it safely and effectively

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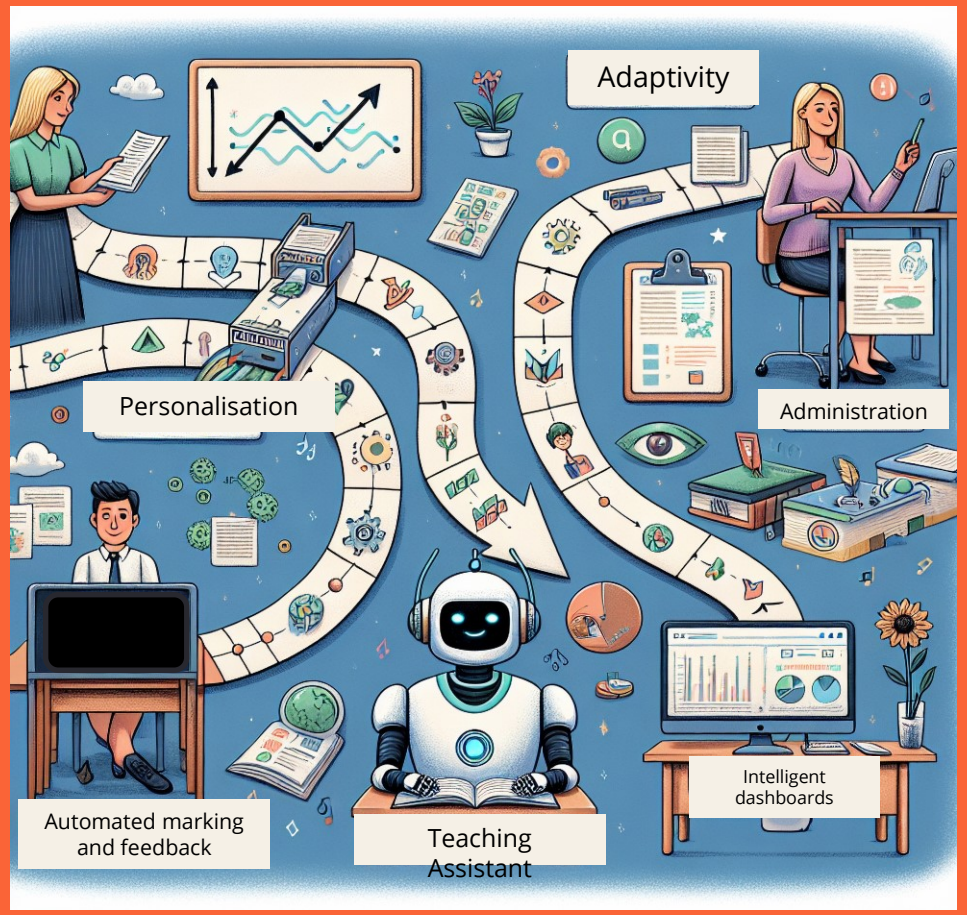
AI brings great opportunities



- Adaptive and personalised learning
- Automated marking and feedback
- Augmented and virtual reality
- AI powered dashboards for learner analytics
- Content generation
- Teacher and learner assistants

We need to understand exactly how best to drive positive impact from these

Risks

Protecting young people from mis-placed trust	Protecting young people 's personal data	Protecting young people from becoming "de-skilled"	Protecting young people's agency
Protecting young people’s intellectual property	Protecting young people from inappropriate tools	Protecting young people from "fake" news/images	Protecting young people from profiling
Protecting equal access and opportunity	Protecting young people from bias	Protecting young people from a lack of transparency	Protecting young people from over-reliance

Human Intelligence imperative

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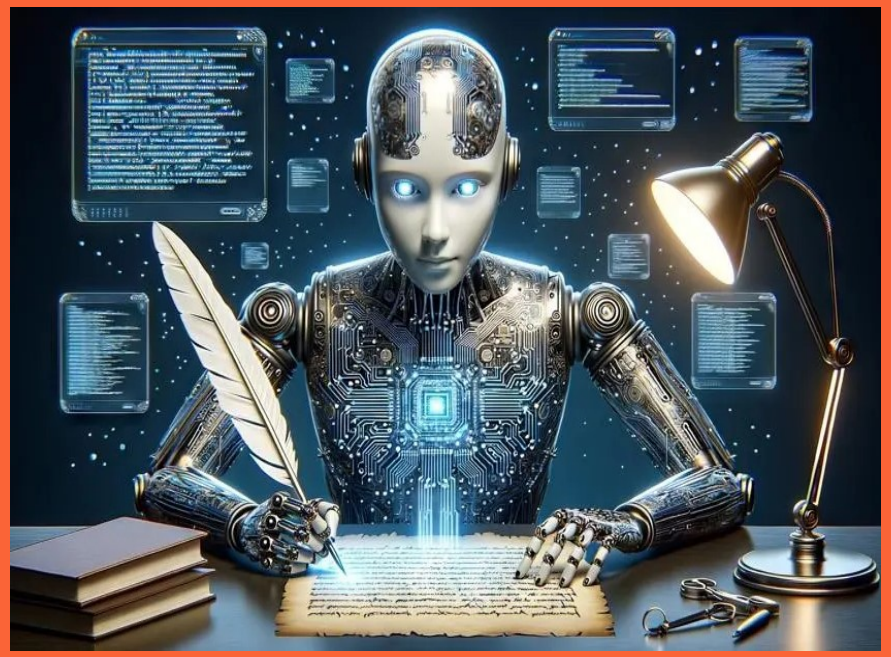
"You're not going to lose your job to an AI, but you're going to lose your job to somebody who uses AI" - NVIDIA CEO Jensen Huang

Super Intelligence is possible and necessary for human society

We need to increase the sophistication of our human intelligence through developing advanced meta intelligence

And we must beware of overreliance on AI

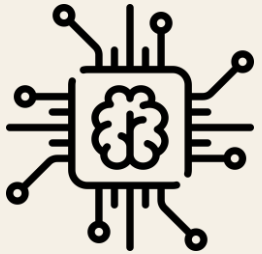
Human and artificial machine intelligence are different



Humans and machines learn differently

3. Social intelligence

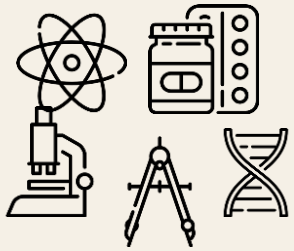
4. Meta-cognitive intelligence



5. Meta-subjective intelligence

2. Meta-knowing intelligence

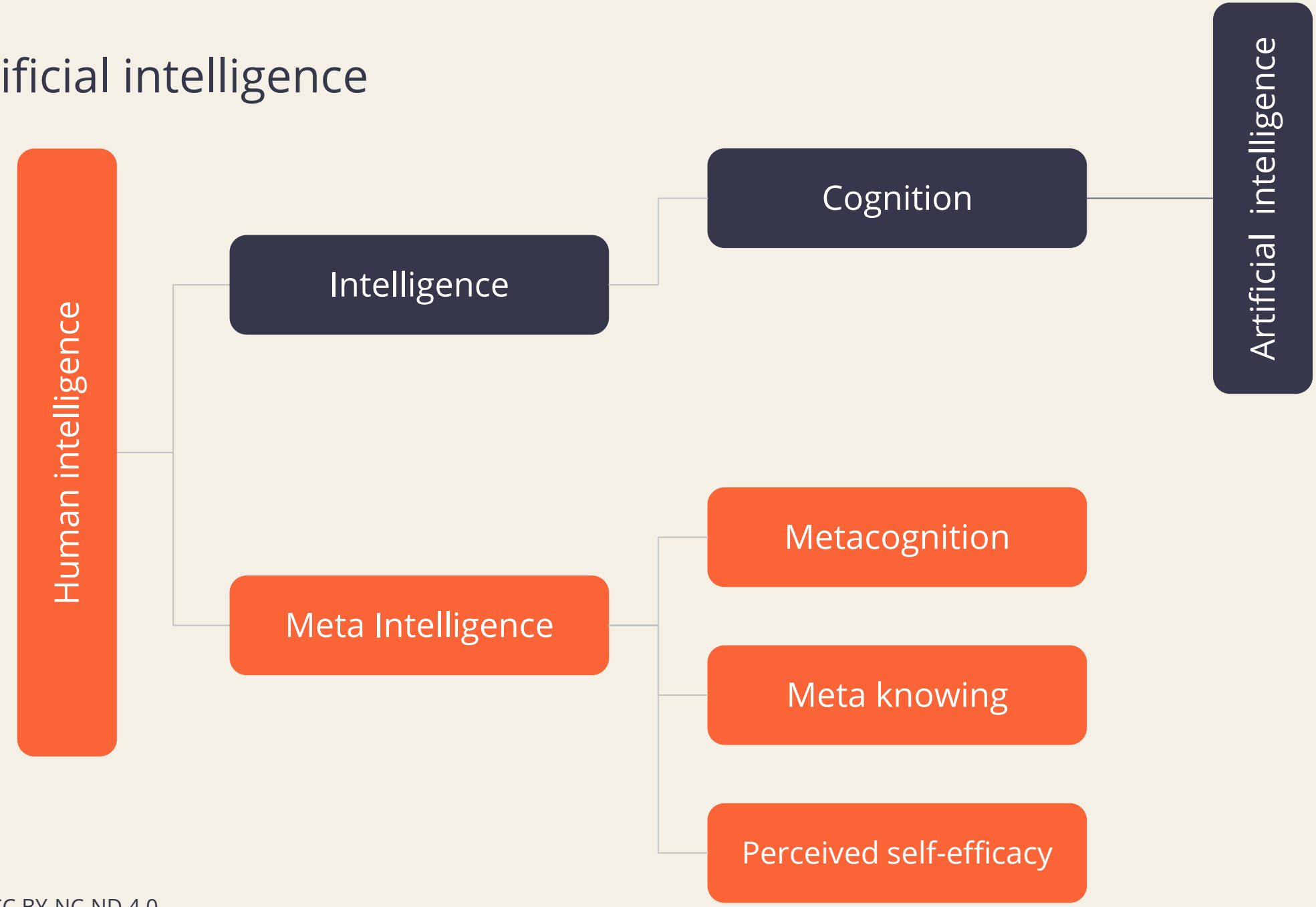
6. Meta-contextual intelligence



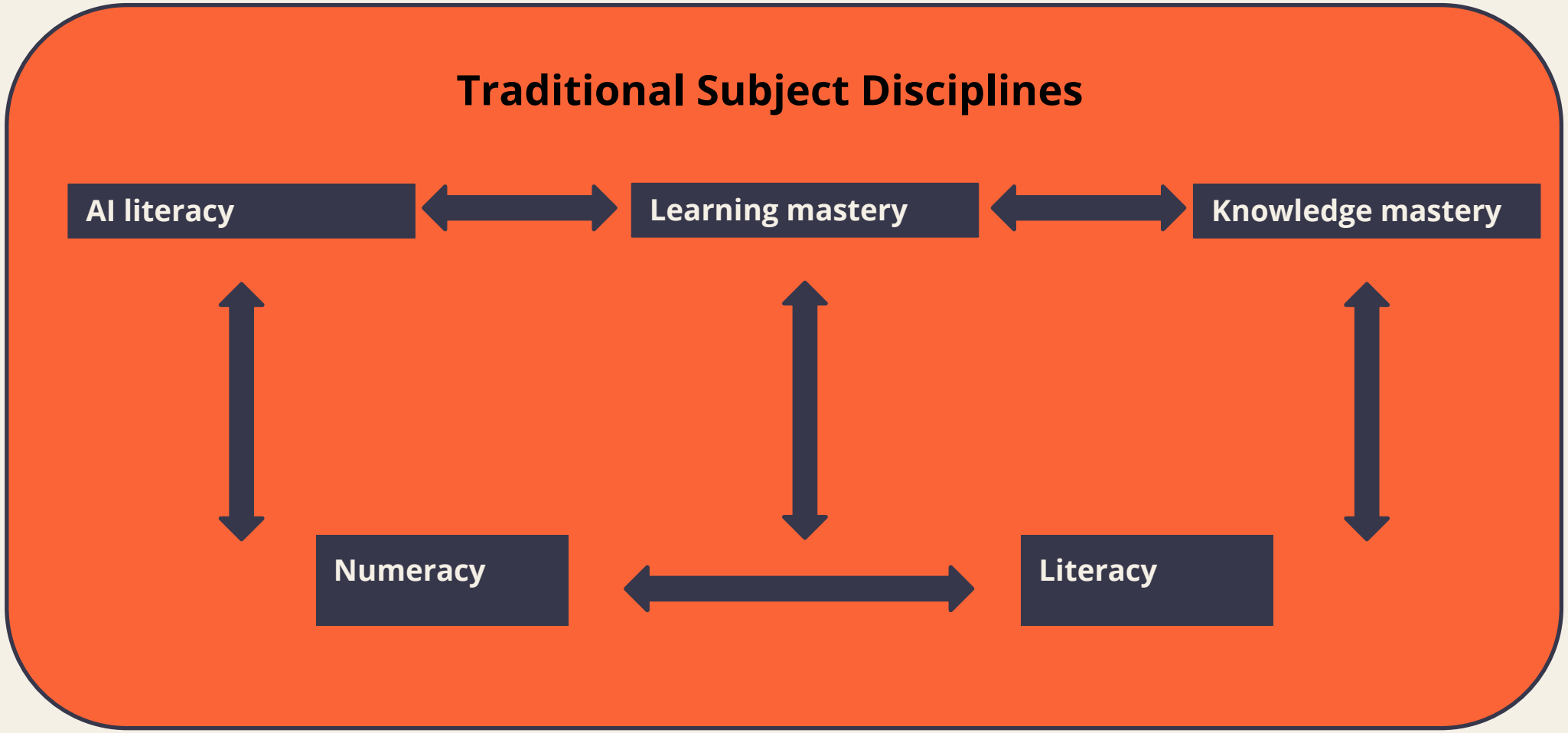
1.Interdisciplinary academic intelligence

7. Perceived self-efficacy

Human vs artificial intelligence



What do students need to learn?



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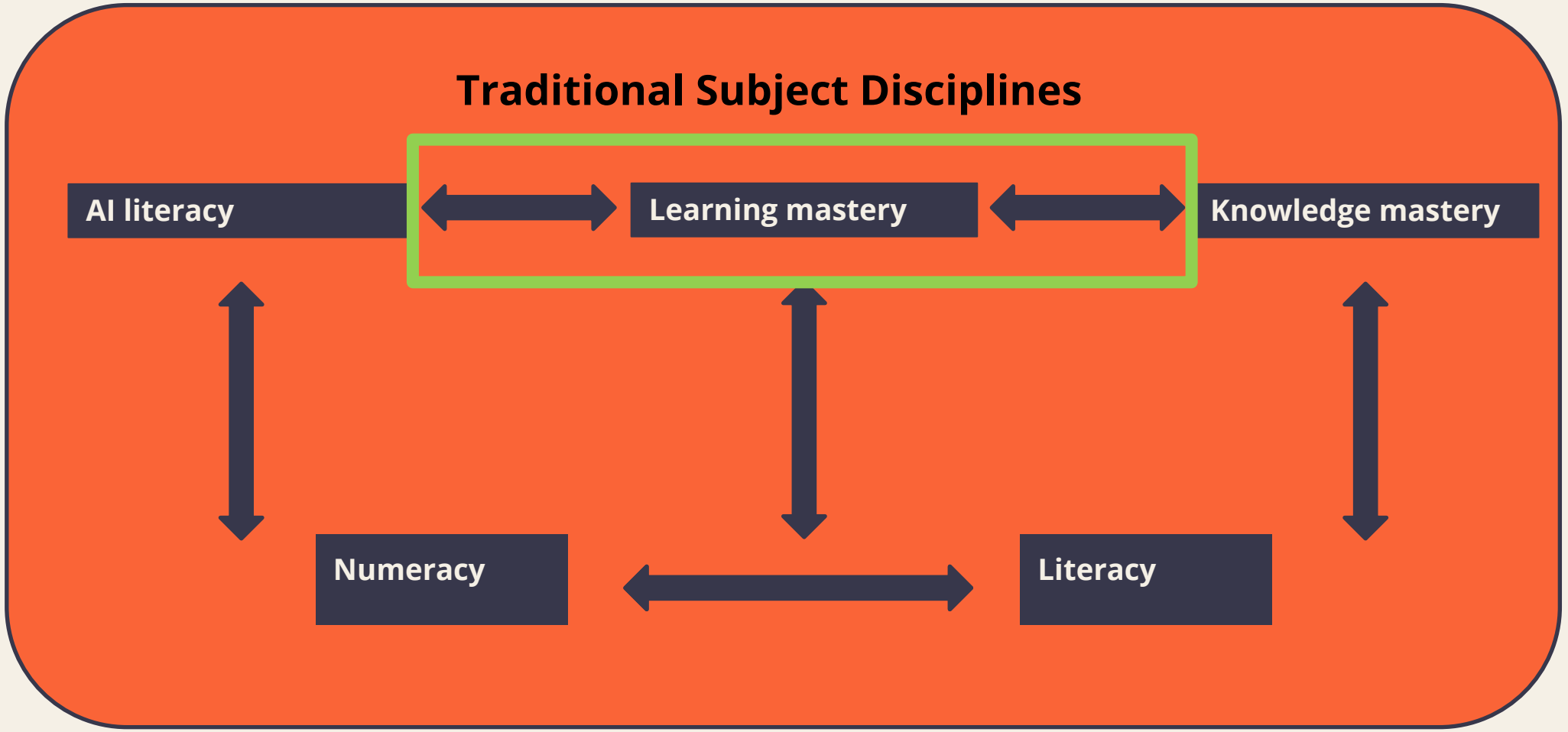

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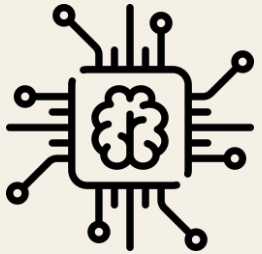

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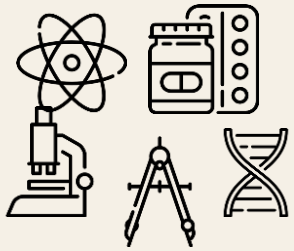

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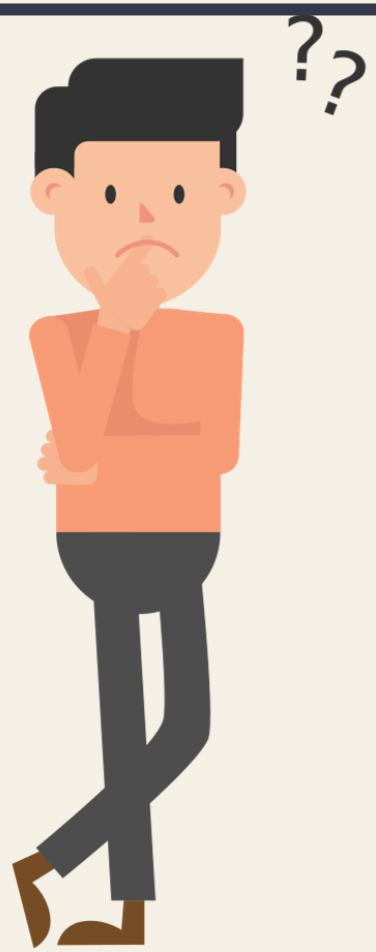
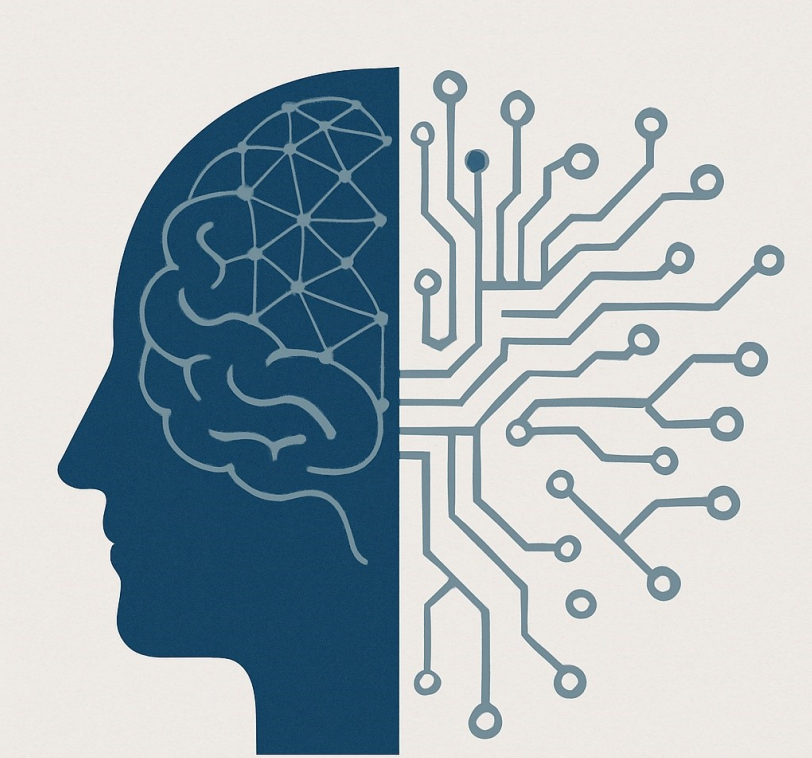


7. Perceived self-efficacy

AI to stimulate Learning Mastery

Example: AI to build Metacognition and AI applications that support these activities

Example: How can we leverage AI to support metacognition?



- **Prompts and Scaffolds:** Guiding students to apply metacognitive strategies and self-regulation
- **Progress Tracking:** Real-time feedback on performance and goal achievement
- **Learning Analytics:** Digital traces of planning, monitoring, and reflection behaviours
- **Personalised Dashboards:** Visual representations of learning progress and metacognitive knowledge
- **Adaptive Support:** Systems that adjust to individual metacognitive needs and provide targeted interventions

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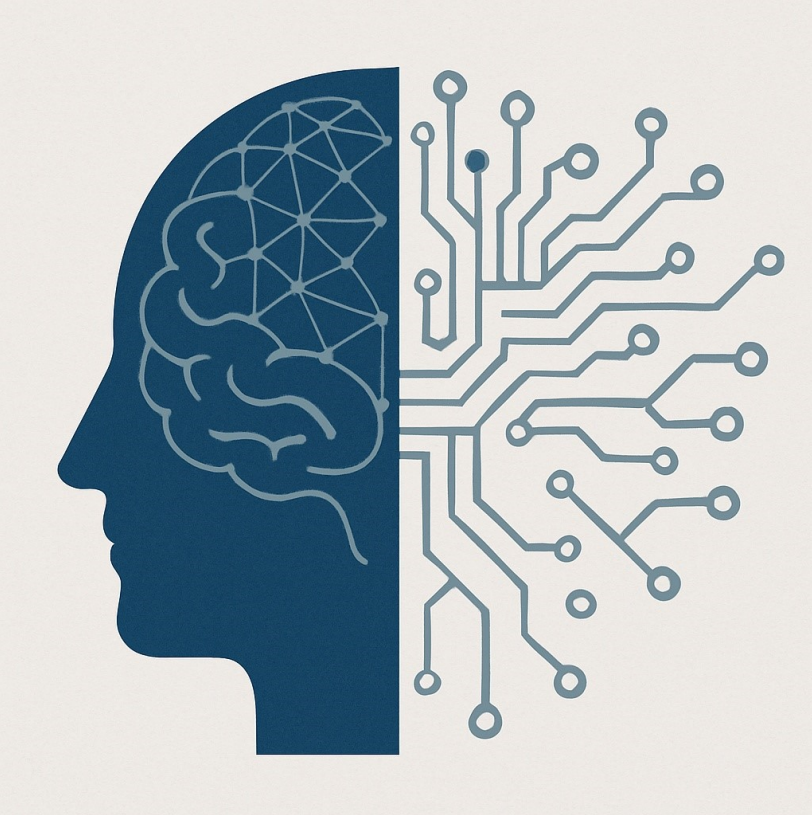


Video Platforms + AI Curation

- Ask an LLM: "Find educational videos that teach note-taking strategies for my Year 8 class" - create personalised playlists.

Text-Based Applications

- Metacognitive conversation partner
- Strategy generator and evaluator
- Reflection facilitator with specific example prompts

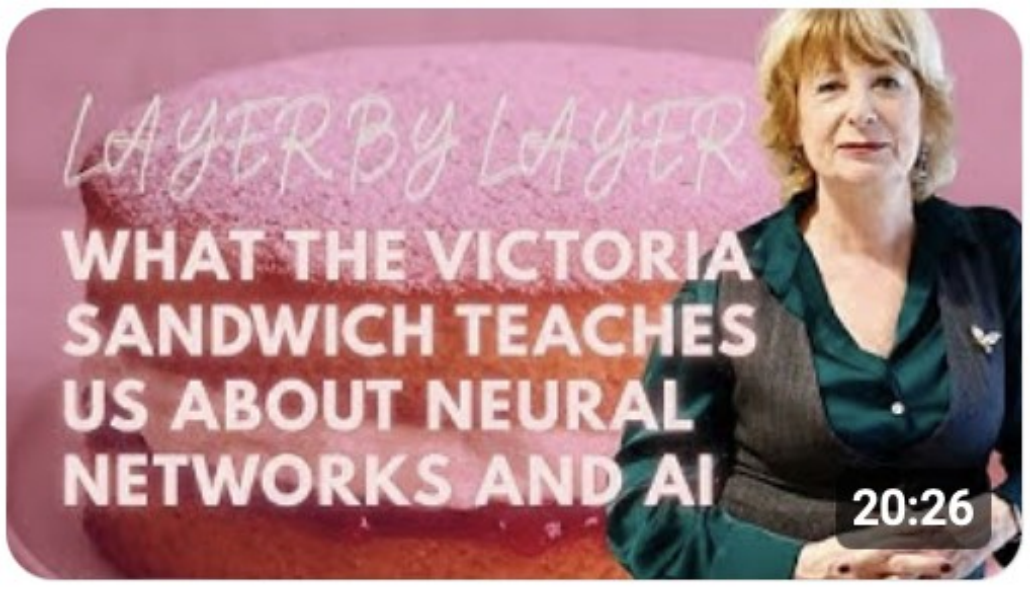
Voice Recognition Applications

- Think-aloud recording with transcription
- Voice-based learning journals
- Strategy verbalisation capture

Not scary or magic but useful everyday to navigate life

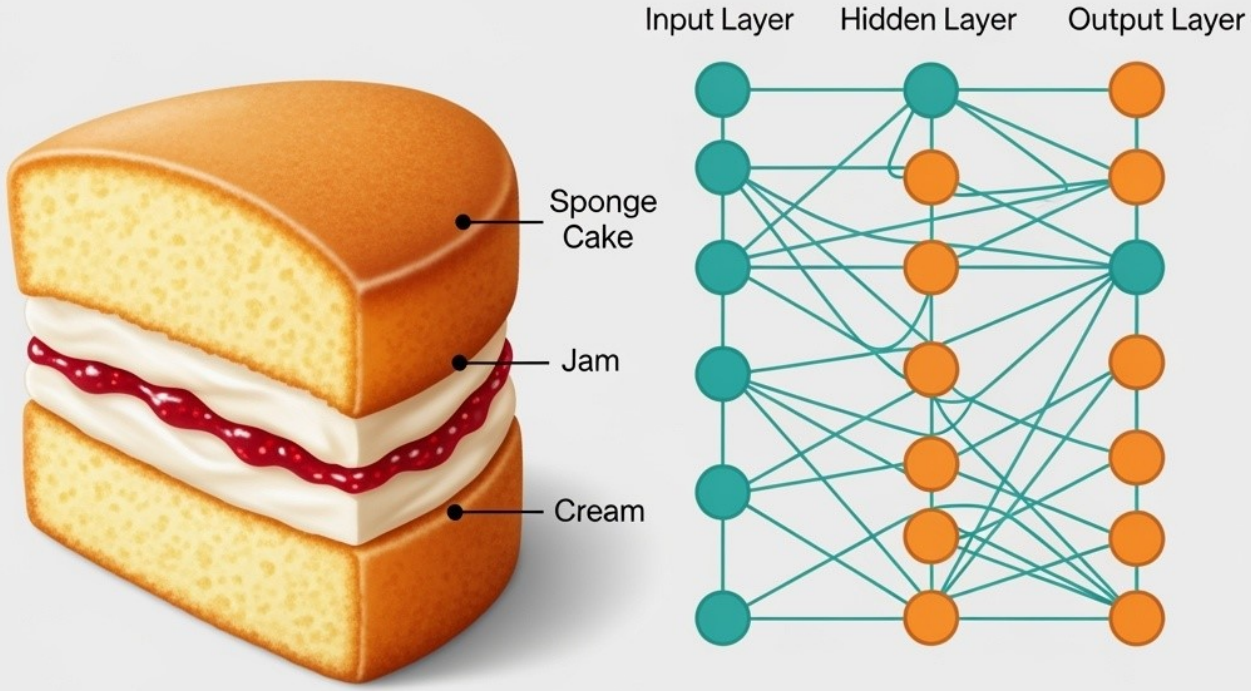
AI Literacy is for everyone

Come Bake With Me - "If You Can Make a Victoria Sandwich, You Can Understand Neural Networks!"



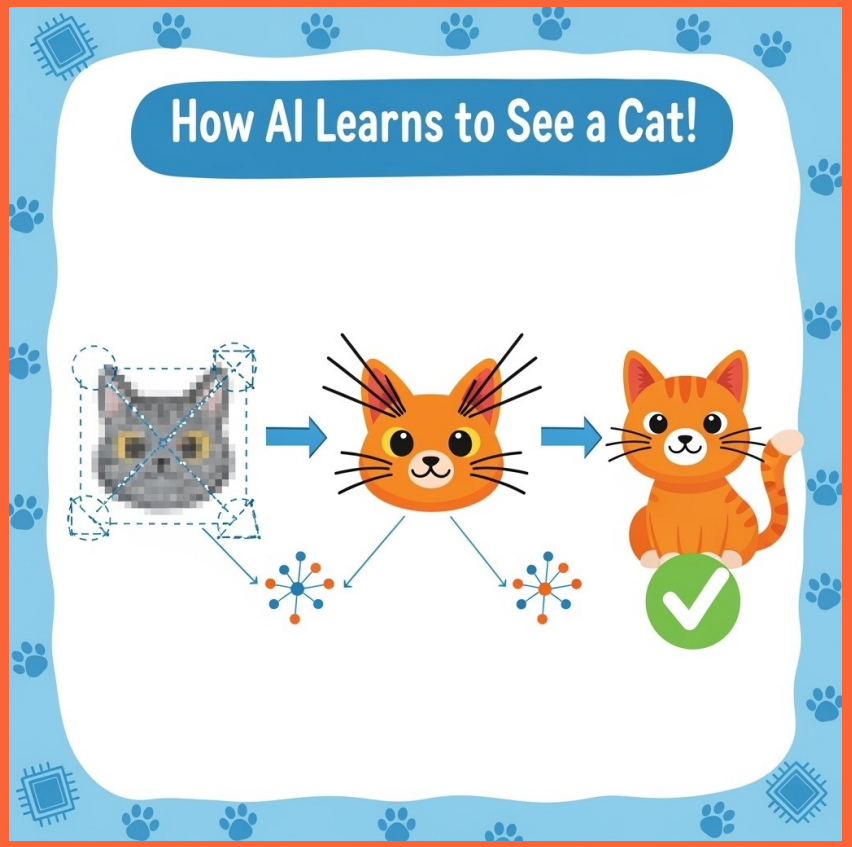
"AI transforms information layer by layer, just like baking transforms ingredients into deliciousness!"

https://www.youtube.com/@roses_ai



- Each layer of cake = Each layer of AI processing:
- **Input Layer**: Raw ingredients (butter, sugar, eggs, flour) = Your words/data going into AI
- **Hidden Layers**: The transformation in the oven = AI processing patterns
- **Output Layer**: The finished cake = AI's response

The Victoria Sandwich Lesson for Image Processing



"Just like baking needs each layer to be right, AI needs all its layers working together to recognize what's in a picture!"

https://www.youtube.com/@roses_ai

AI Photo Recognition:

"Is this a cat?"

Understand what each layer sees:

- **First Layer (Input):** The photo breaks into tiny pieces - colours, edges, shapes
- **Hidden Layers:** "I see pointy triangles + round shape + whiskers = cat ears and face!"
- **Output Layer:** "Yes, this is a cat!"

AI looks at pictures layer by layer, starting with simple things (is it bright? dark? curvy? straight?) and building up to understanding what the whole picture shows!

Closing thoughts: Actionable strategy is vital

4D AI STRATEGY FRAMEWORK

GOVERNANCE & ETHICS:
WHAT ARE THE PARAMETERS IN WHICH AI WILL BE EXPLORED, TESTED, AND IMPLEMENTED?

ITERATIVE UNIT APPLICATIONS:
WHERE WILL AI BE APPLIED? FOR EXAMPLE: 24/7 TEACHING SUPPORT, ADMINISTRATION...

THE VISION: THE AMBITION FOR AI WITHIN THE ORGANISATION

TECHNOLOGY & DATA:
CAN THE ORGANISATION SUPPORT THE TOOLS AND PROCESSES OF AI AND EDTECH?

STAFF CAPABILITY:
WHAT ARE THE IMPLICATIONS OF THE AI STRATEGY FOR ALL STAFF WHEREVER THEY WORK?

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LEARN
FAST ACT
MORE SLOWLY

Many Thanks

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