

Professor
Rose Luckin



AI and Higher Education

1

AI tools:

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

2

Increasing our Human Intelligence:

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

3

Learning about AI:

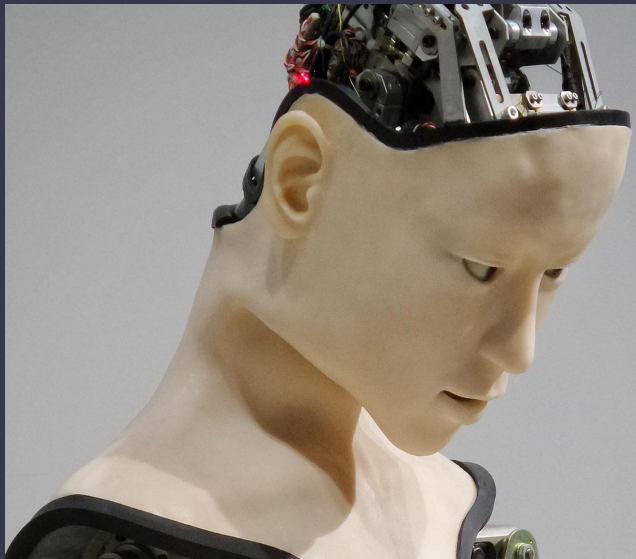
Educating People about AI so that they can use it safely and effectively

Artificial intelligence in Education



But first..
What is Artificial
Intelligence (AI)?

EC High-Level Expert Group on Artificial Intelligence definition within the European Commission's Communication on AI



https://ec.europa.eu/futurium/en/system/files/ged/ai_hleg_definition_of_ai_18_december_1.pdf

“Artificial intelligence (AI) refers to systems that display intelligent behaviour by analysing their environment and taking actions – with some degree of autonomy – to achieve specific goals.”

AI-based systems can be purely software-based, acting in the virtual world (e.g. voice assistants, image analysis software, search engines, speech and face recognition systems) or AI can be embedded in hardware devices (e.g. advanced robots, autonomous cars, drones or Internet of Things applications).”

And AI is not new!
And, AI in
Education is not
New



**But freely
available AI is
new**



But scaled
technology that is
freely available,
such as ChatGPT,
is new.



← Safari

DINA

Design a worksheet to practice the formation of the imperfect subjunctive in Spanish, include instructions on formation rules and examples of use

CHATGPT



Absolutely, here's a worksheet that focuses on the formation rules of the imperfect subjunctive in Spanish, along with examples of its use:

Worksheet: Formation and Usage of the Imperfect Subjunctive

Part 1: Formation Rules

Instructions: Complete the following sentences by conjugating the verbs in parentheses into the imperfect subjunctive tense. Follow the formation rules for each subject.

1. Yo quería que ella _____
(estar) feliz.
2. Ellos deseaban que tú _____
(venir) con nosotros.
3. Ella prefería que yo no _____
(decir) nada.

Message  



STABLE DIFFUSION XL

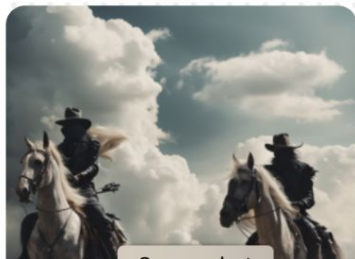
SDXL 1.0: A Leap Forward in AI Image Generation

Enter your prompt



Generate

TRY AN EXAMPLE



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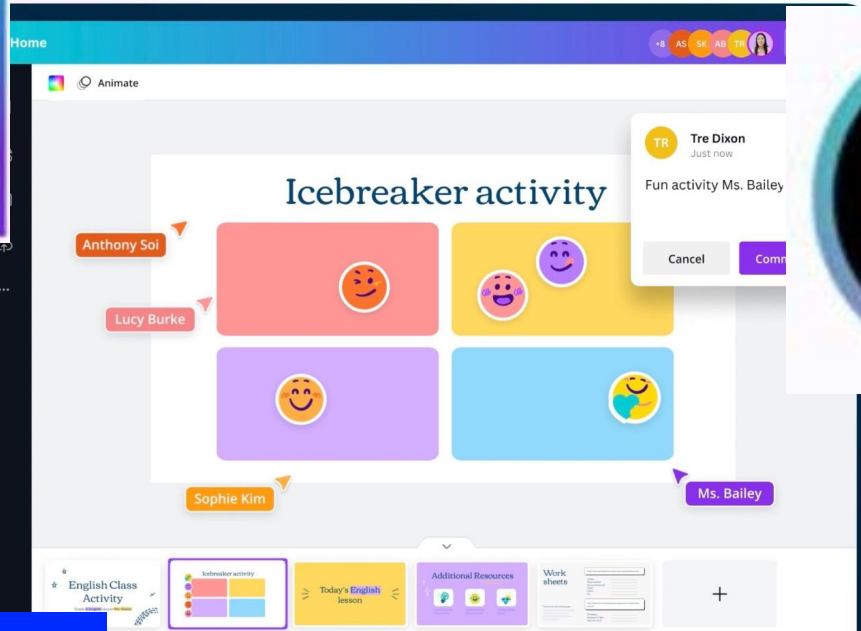
AI tools

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



Examples of AI tool functionality

- Adaptive or personalised learning paths
- Automated marking
- Personalised feedback
- Personalised next steps for learning
- Adaptive assessment
- Virtual classroom
- AI powered dashboards for learner analytics
- Content generation for students
- Content generation for educators
- Virtual tutors
- Chatbots
- Teacher assistants



Using the magic of AI to help educators with saving time.

It's a relief from teacher burnout and join thousands of teachers saving hours of time using MagicSchool to help lesson plan, differentiate, write assessments, write IEPs, communicate clearly, and more.

Check out how we do it!

For Teachers

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For Schools

Learn More

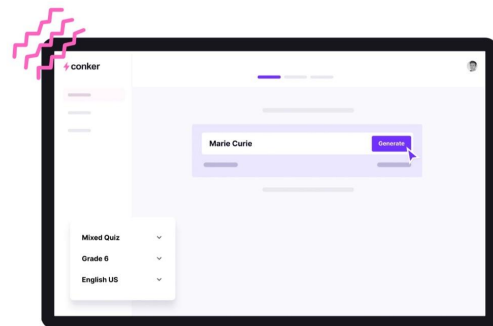
As seen on:



Create Awesome Assessments In a Flash

Powered by AI, and brought to you by Mote Technologies, Conker is your number one online quiz creator.

Launch Conker View features

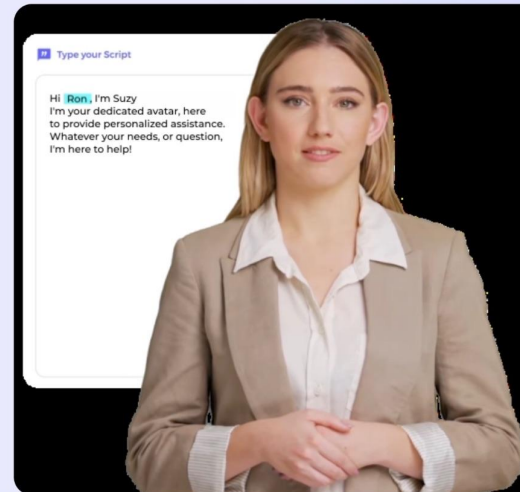


The Digital People Platform

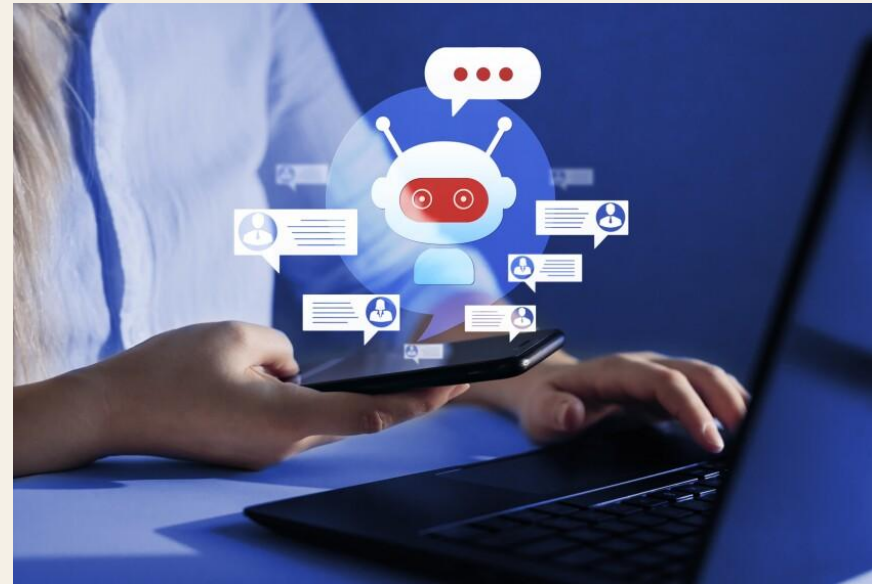
Create and interact with talking avatars using Generative AI via D-ID's API or Creative Reality™ studio.

Try now, it's free

Developer Hub



How can these tools
be used?



Educational challenges

Student and staff wellbeing

Time constraints on educators

Access to quality education

Educational inequality

Digital transformation

Student retention and completion

Student engagement

Funding and resources pressures

Arizona State University

Mind the Gap: From Typical LMS Traces to Learning to Learn Journeys

[\(2022\). Mind the Gap: From Typical LMS Traces to Learning to Learn Journeys. In: Trajkovski, Goran; Demeter, Marylee and Hayes, Heather eds. Applying Data Science and Learning Analytics Throughout a Learner's Lifespan. IGI Global, pp. 1–26.](#)



We helped Arizona State University to study student *behaviour patterns* to better understand which students were better at “Learning to Learn” and why, by *developing an ontology* that collated data signal about students’ self-regulated learning capability.

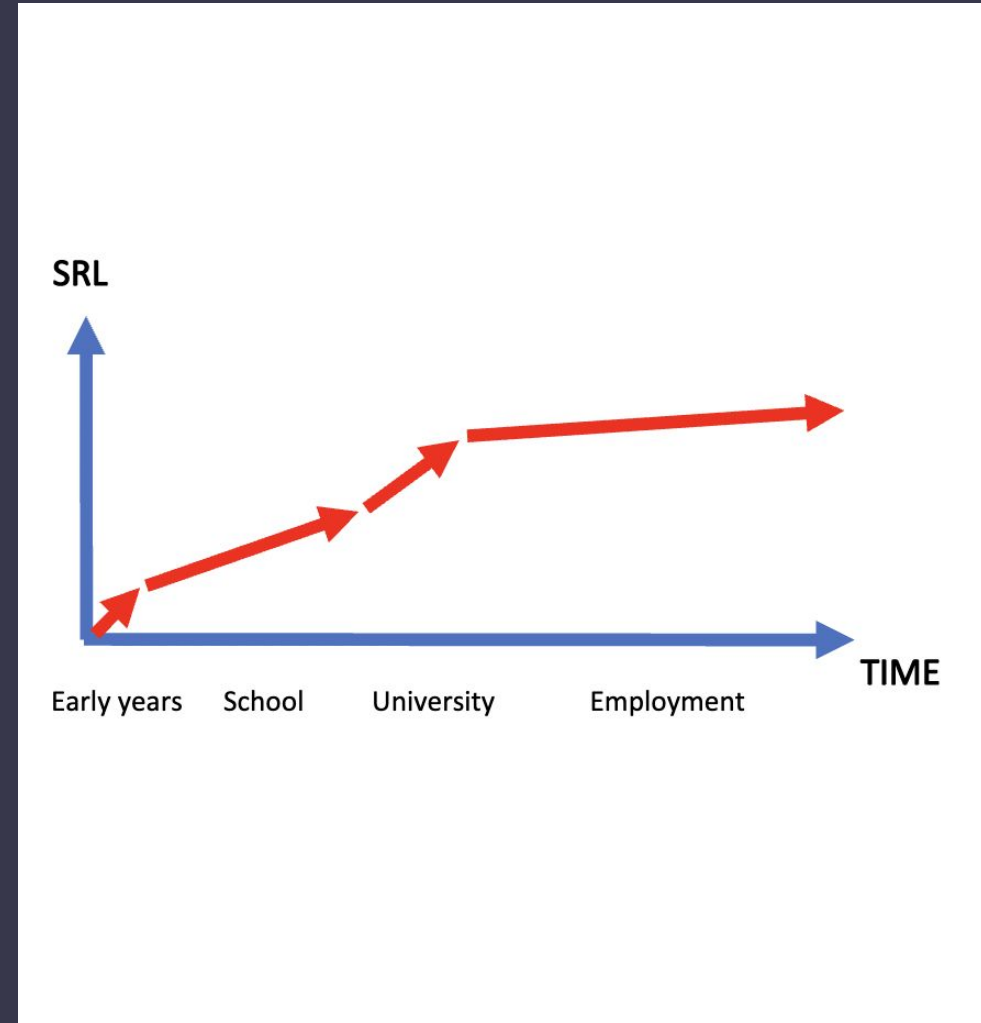


LTL

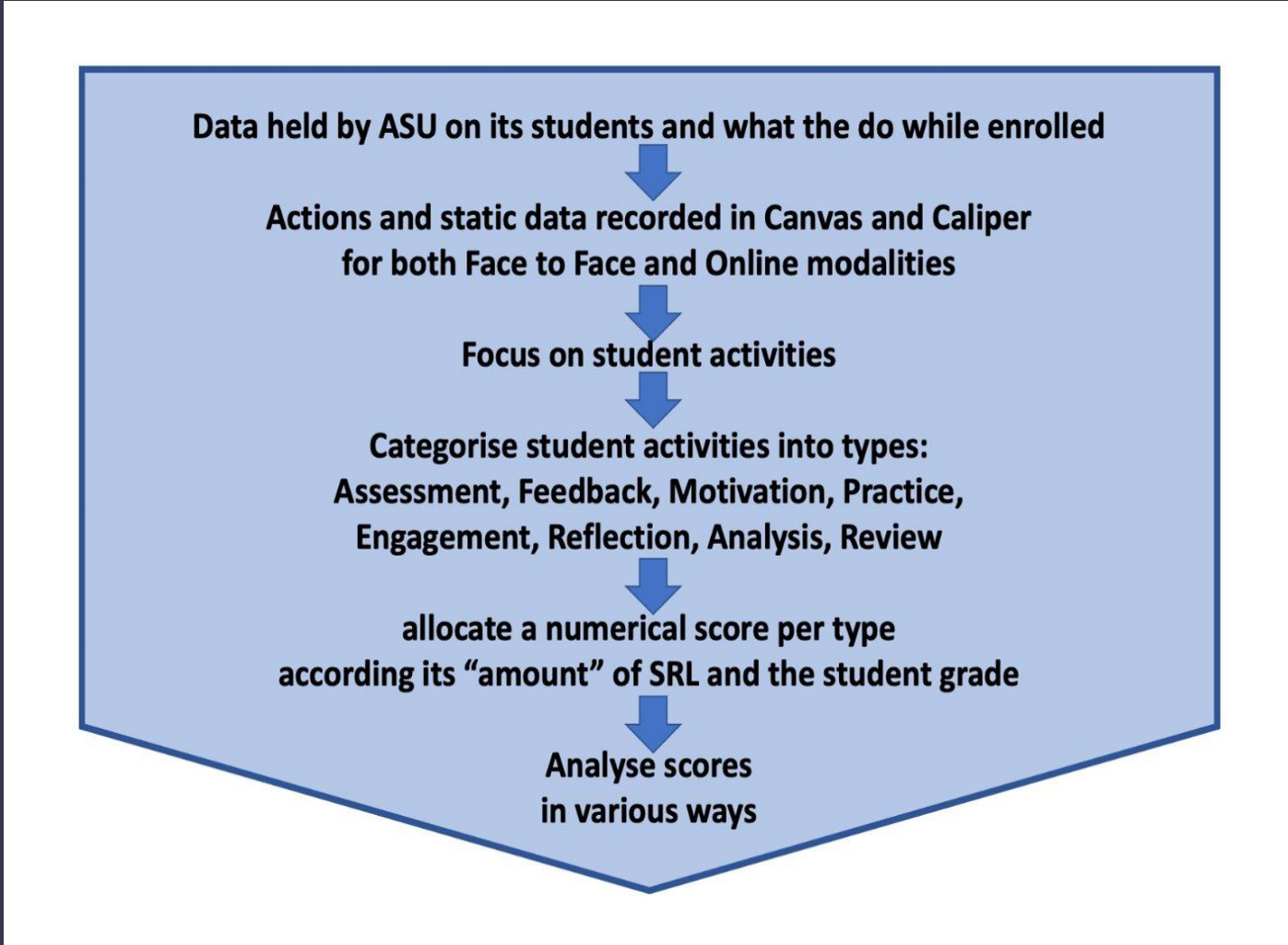
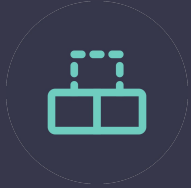


Learning to Learn is complex

- Learners' *understanding* of their own learning
- Learners' *ability to regulate* and manage their learning
- Learners' *ability to transfer* their learning skills to new areas



The data funnel

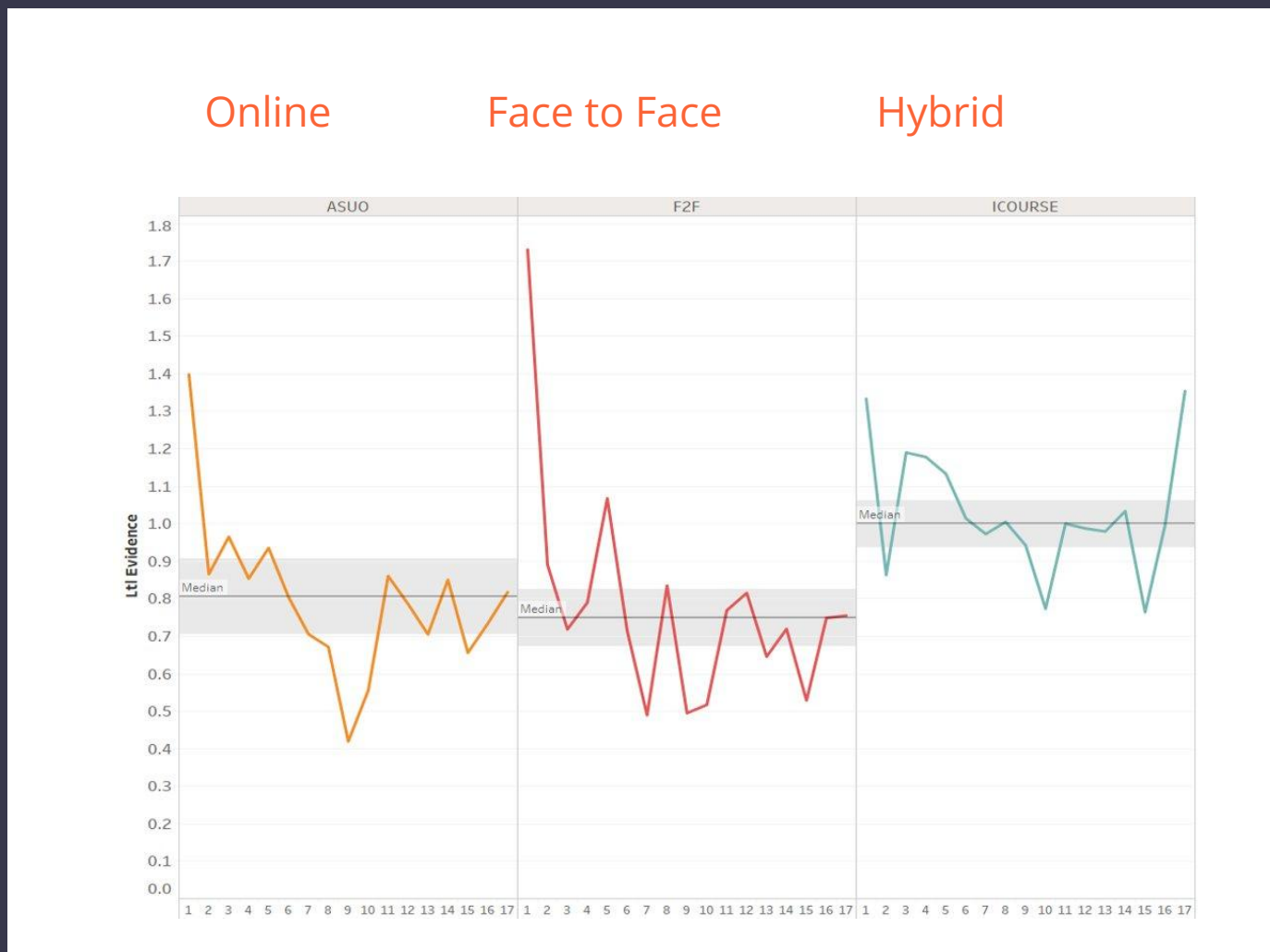


Findings



Different modalities

- *LTL* can be treated as a dimension in its own right
- Little difference between in-person and online, but hybrid program performed better
- *LTL* has a temporal component, it changes as the students progress through a term.



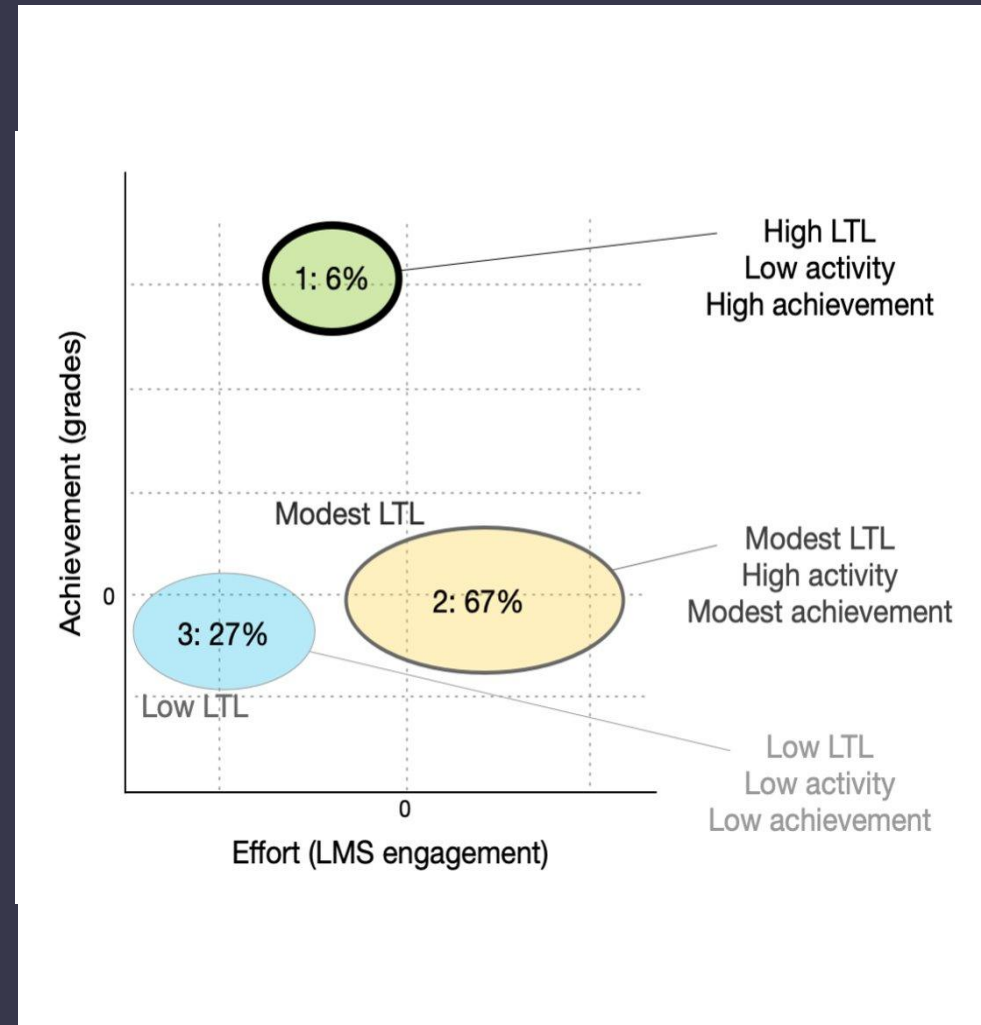
Findings



We identified *different student profiles*. Cluster analysis revealed 3 primary clusters:

- Efficient Achievers
- High-Activity
- Disengaged

The behaviour is different for each profile.



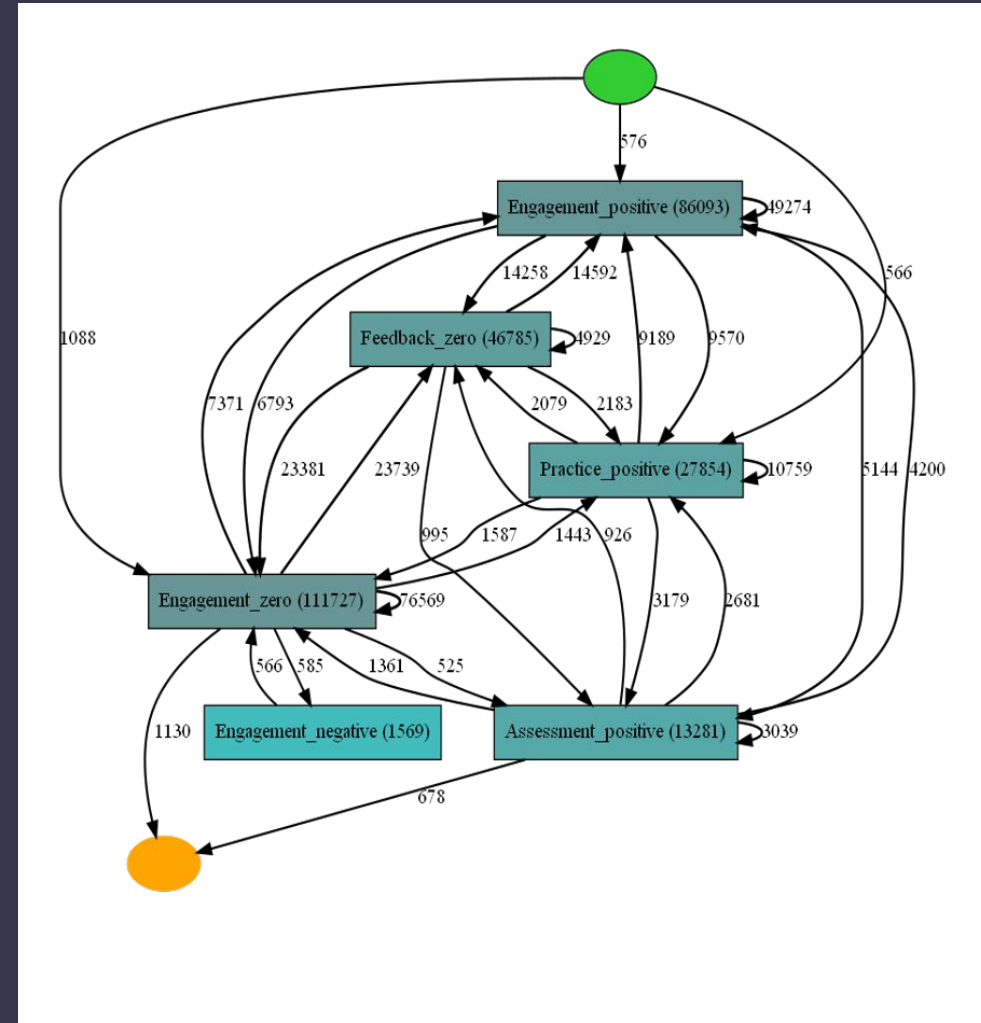
Findings



We identified and compared common patterns of behaviour in the different profile groups using process mining.

Example: Cluster 2

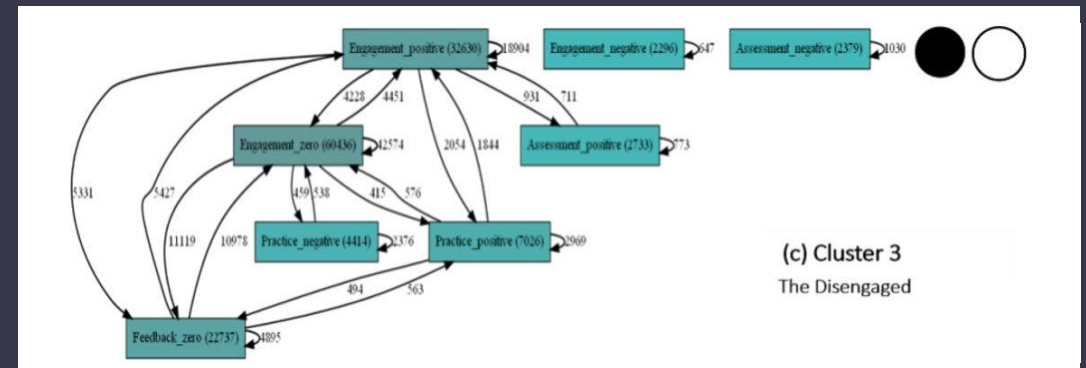
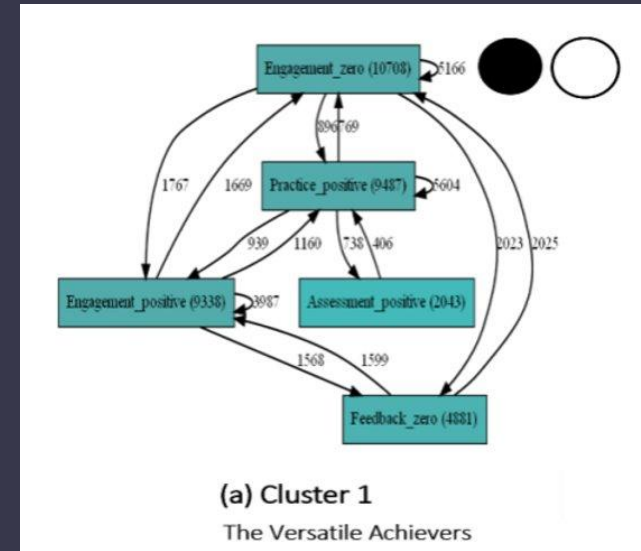
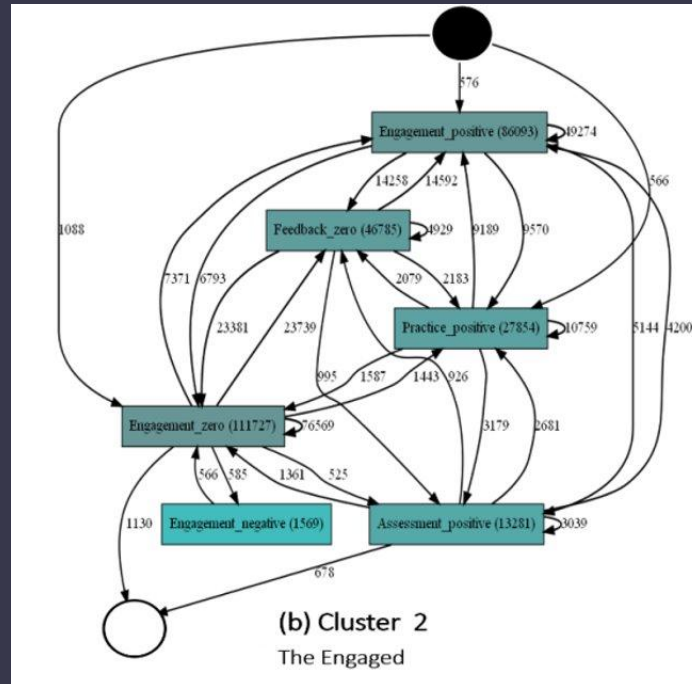
- Higher engagement than Cluster 1
- More positive practice instances than Cluster 1
- But their grades did not reflect their efforts



Findings



We compared common patterns of behaviour across different profile groups.



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Increasing Human Intelligence

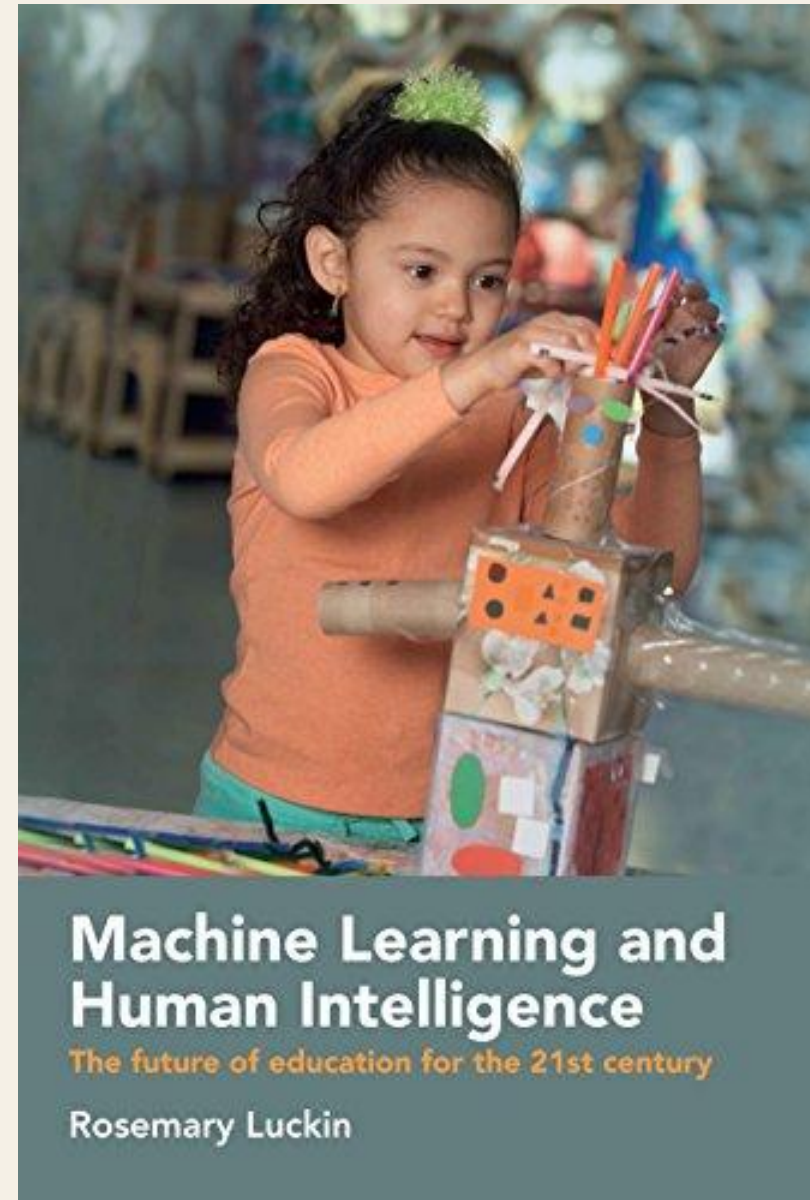
Changing Education so that we focus on human intelligence and prepare people for an AI world



Learning is Complex

Our ability to learn must continue to evolve to be ever more sophisticated

https://www.educateventures.com/files/ugd/c43582_3950bb11755d4306ba9dc33811bbfc25.pdf

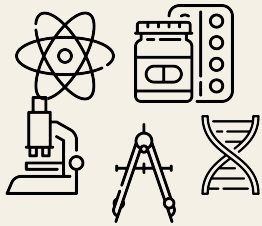




3. Social intelligence

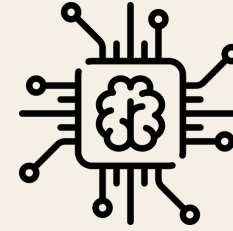


2. Meta-knowing intelligence



1. Interdisciplinary Academic intelligence

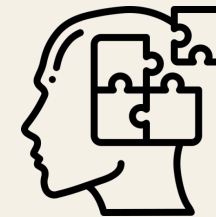
4. Meta-cognitive intelligence



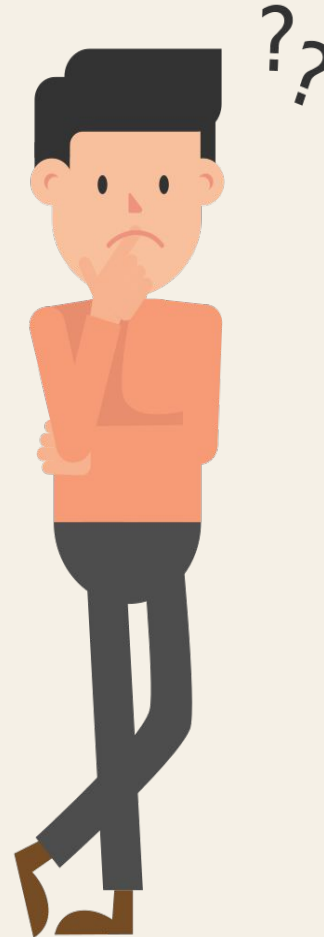
5. Meta-subjective intelligence



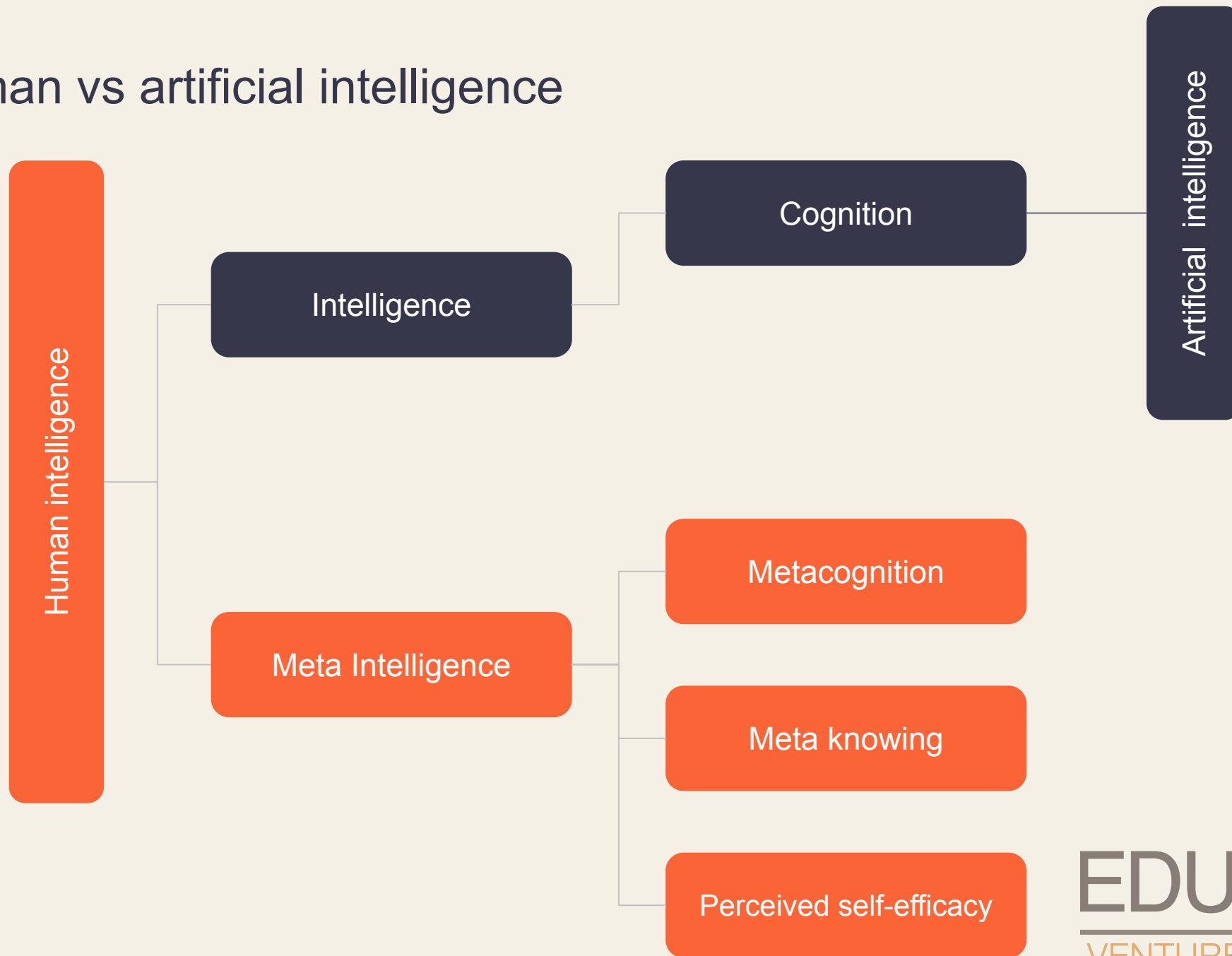
6. Meta-contextual intelligence



7. Perceived self-efficacy



Human vs artificial intelligence



Caution

“Unlike most non-human biological cognition, human cognition is changing: the average IQ in many countries is increasing (the Flynn effect), **our memory** (Sparrow et al. 2011) **is changing** due to the Google effect (digital amnesia), **navigation abilities** (McKinlay 2016; Milner 2016) **atrophied** because satnavs, cognitive rewards mechanisms are changing because of gamification, etc. This is a process that is **accelerated by technology**, and will be **magnified by the use of cognitive assistants and cognitive prosthetics**, especially for the elderly. AI itself and human-machine hybrids (either as individual cyborgs or as mixed collectives) are progressing in directions that we are not able to compare with the past or extrapolate, in order to understand where all this is leading, and the associated opportunities and risks (research priorities and safety concerns).”

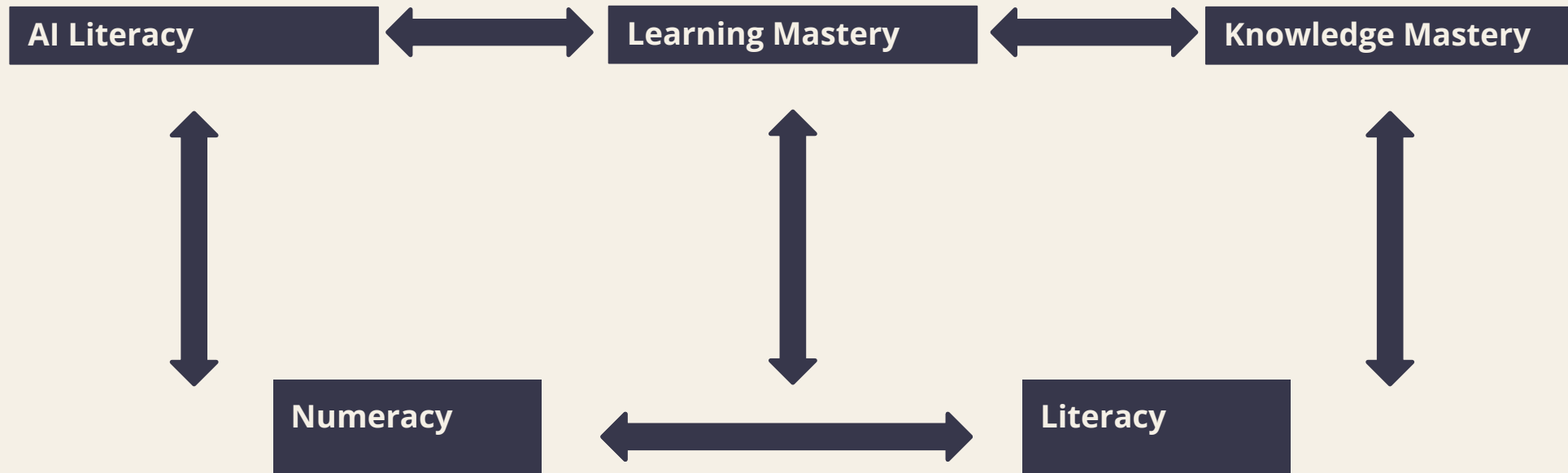
Bhatnaga et al., 2018

From schools to universities and the workplace people need to develop sophisticated thinking skills that are uniquely human and not automatable through AI. These have previously been considered unmeasurable.

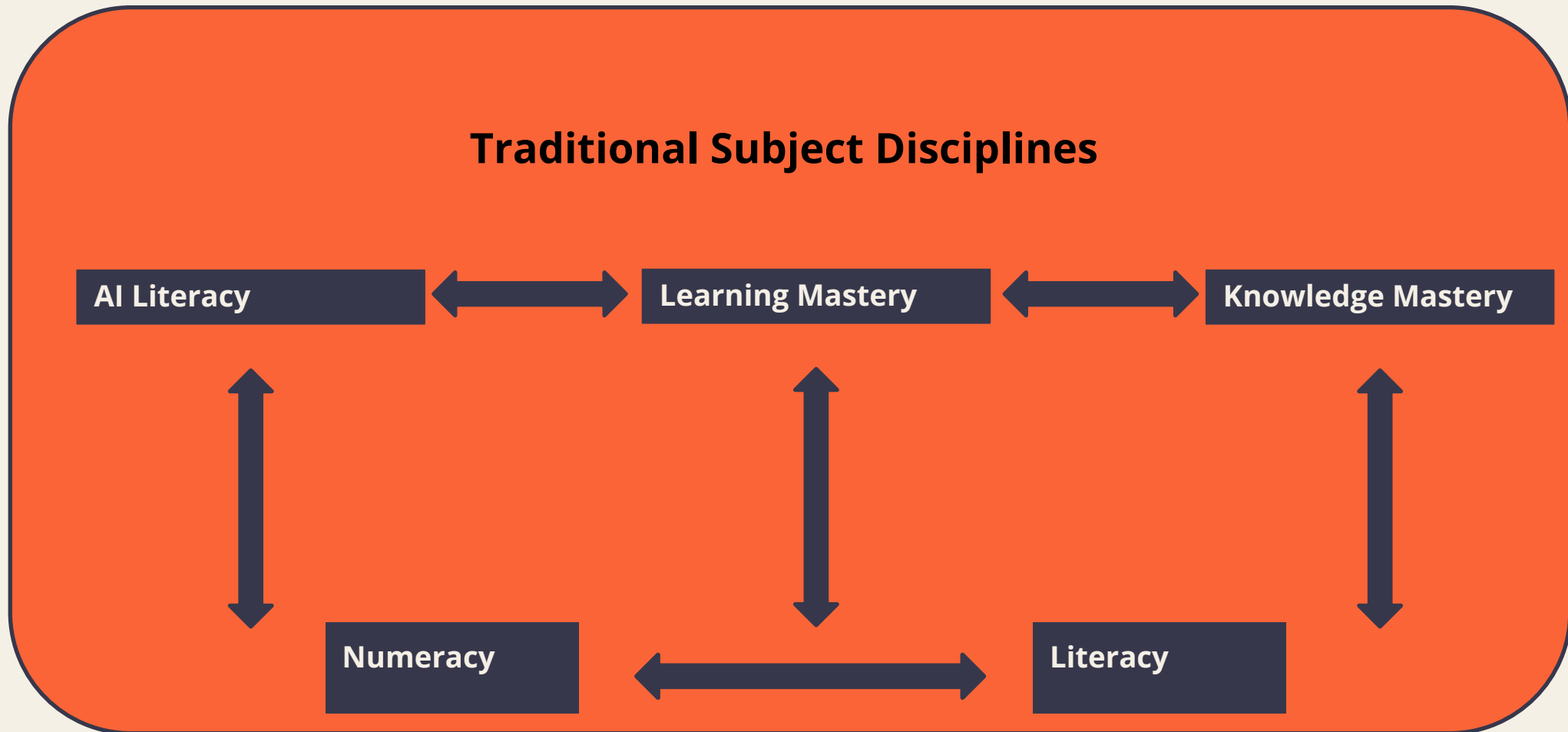
These skills, such as being good at learning, being able to plan, reflect and regulate your thinking and being able to build effective subjectively powerful relationships with others are and will continue to be at a premium in the workplace.

<https://www.weforum.org/agenda/2023/05/future-of-jobs-2023-skills/>

What do students need to learn?



What do students need to learn?

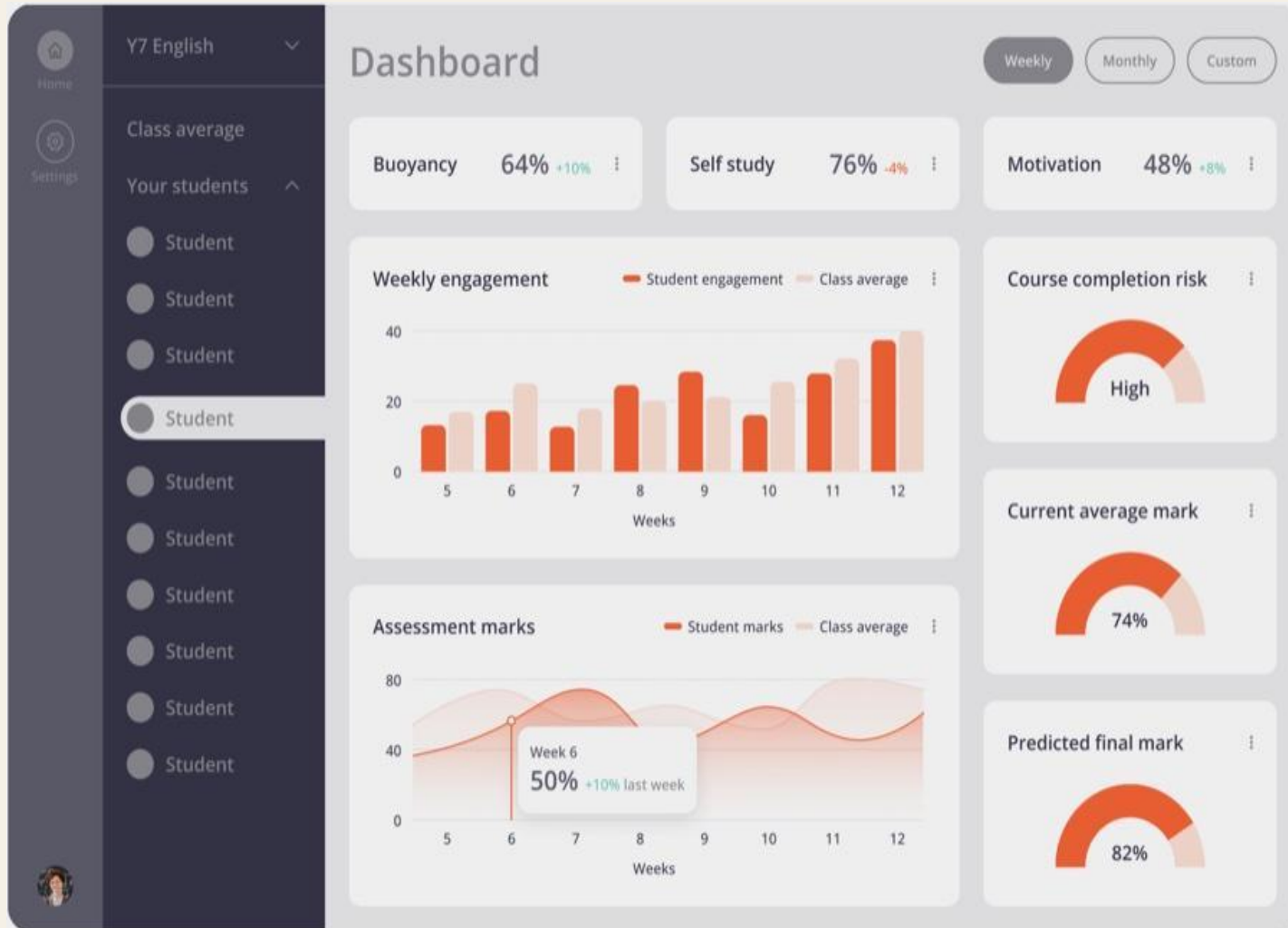


AI can help

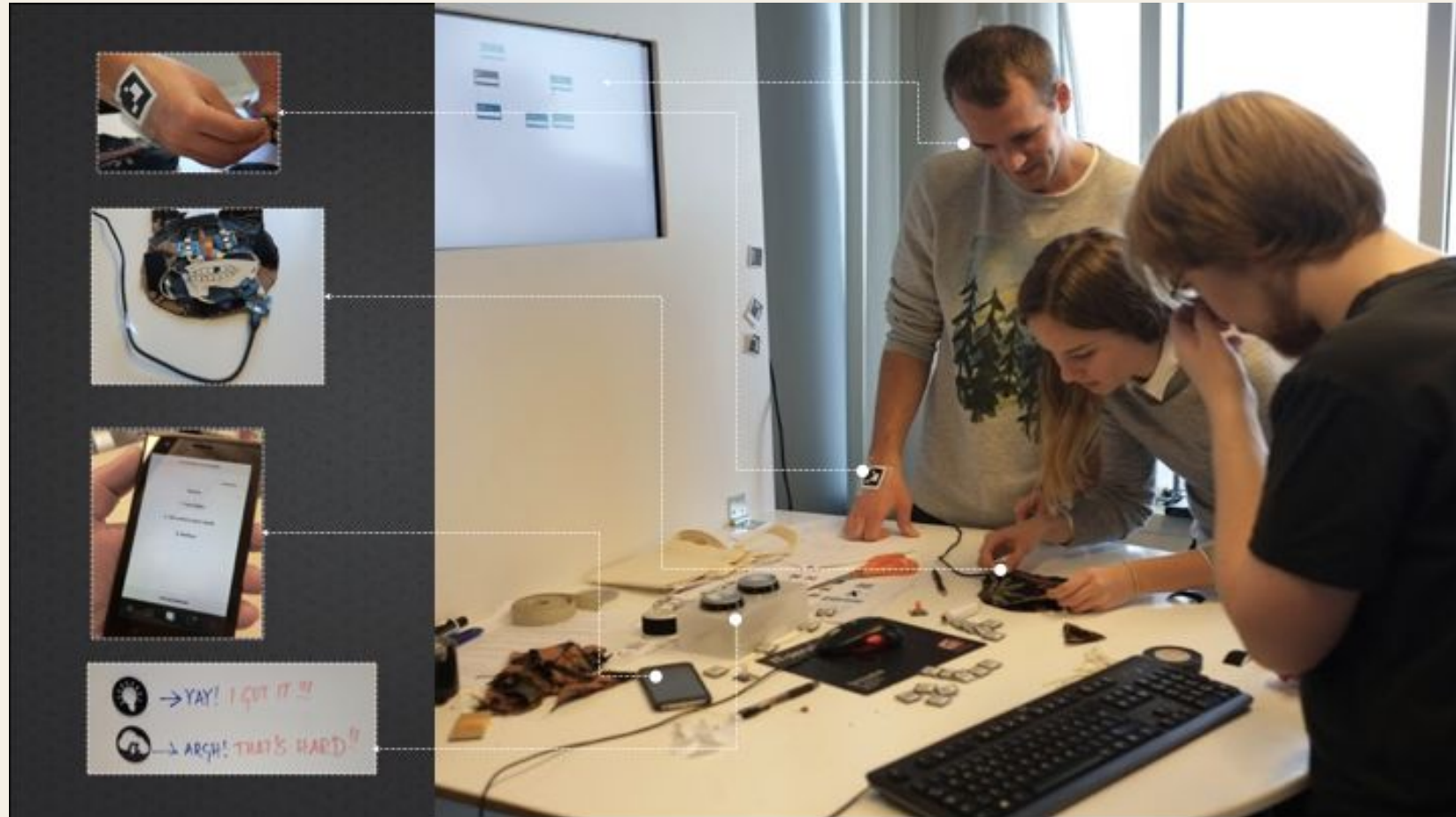


**AI can provide enhanced analytics
that can show the learning process
as it happens**

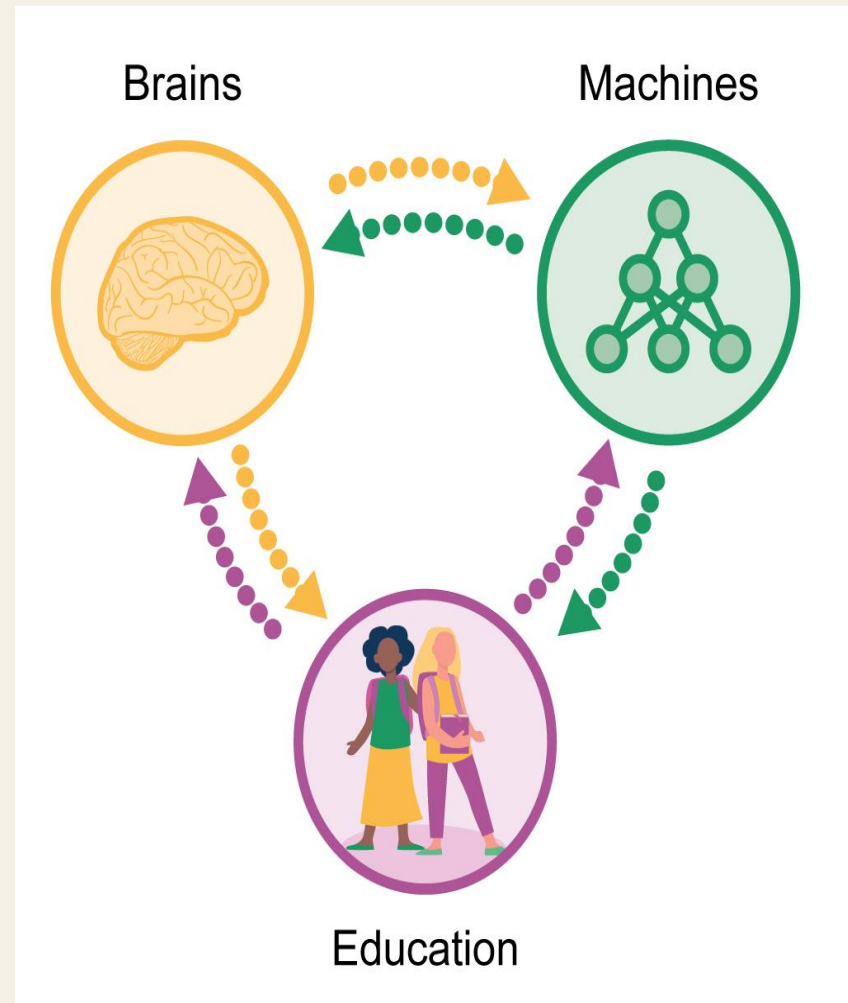
Dashboards



Multi-modal data



And add brain data ...



**AI can help us
build a 'fitbit' for
the mind**



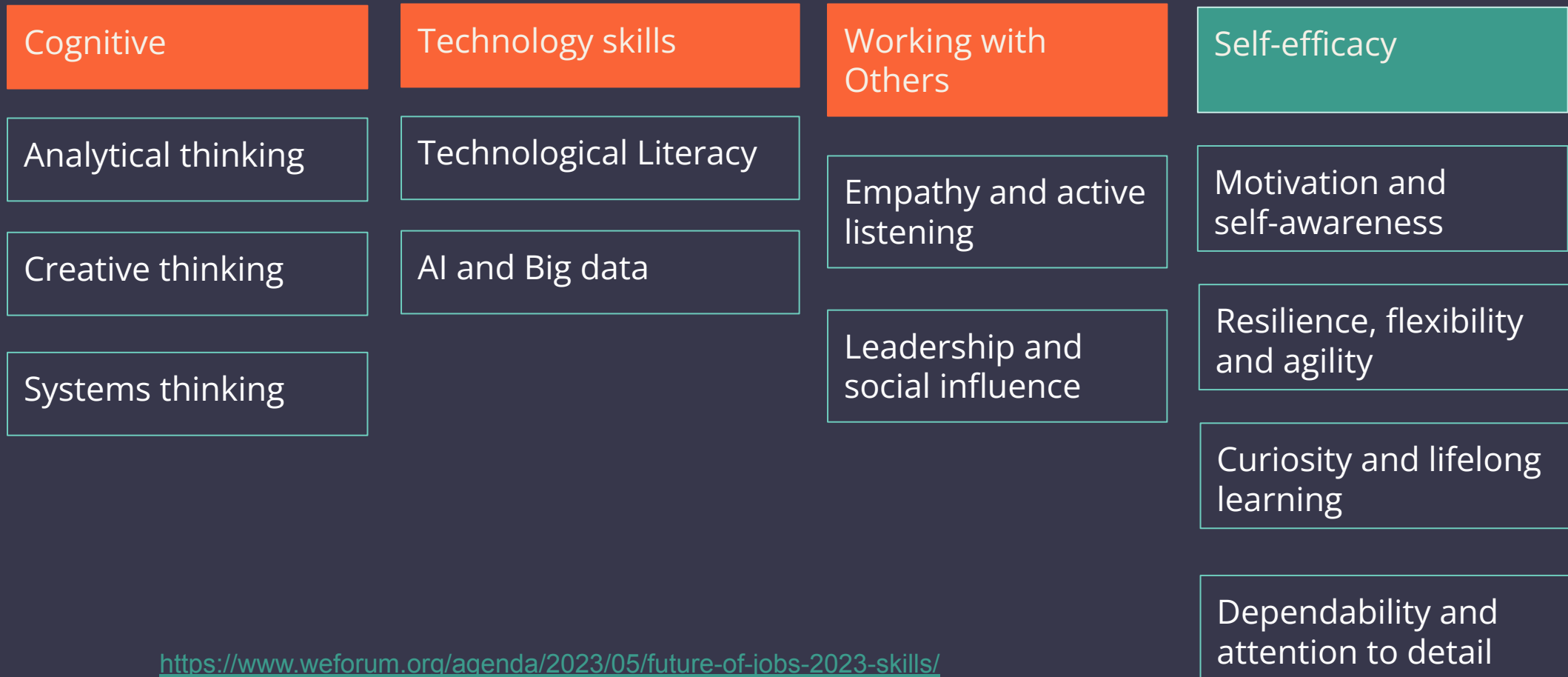
A 'Fitbit' for your mind

Step 1: Select your advanced thinking expertise from those identified by The World Economic Forum's Future of Jobs 2023

Cognitive	Technology skills	Working with Others	Self-efficacy
Analytical thinking	Technological Literacy	Empathy and active listening	Motivation and self-awareness
Creative thinking	AI and Big data	Leadership and social influence	Resilience, flexibility and agility
Systems thinking			Curiosity and lifelong learning
			Dependability and attention to detail

A 'Fitbit' for your mind

Step 1: Select your advanced thinking expertise from those identified by The World Economic Forum's Future of Jobs 2023



A 'Fitbit' for your mind

Step 1 Select your target expertise

Motivation and self-awareness

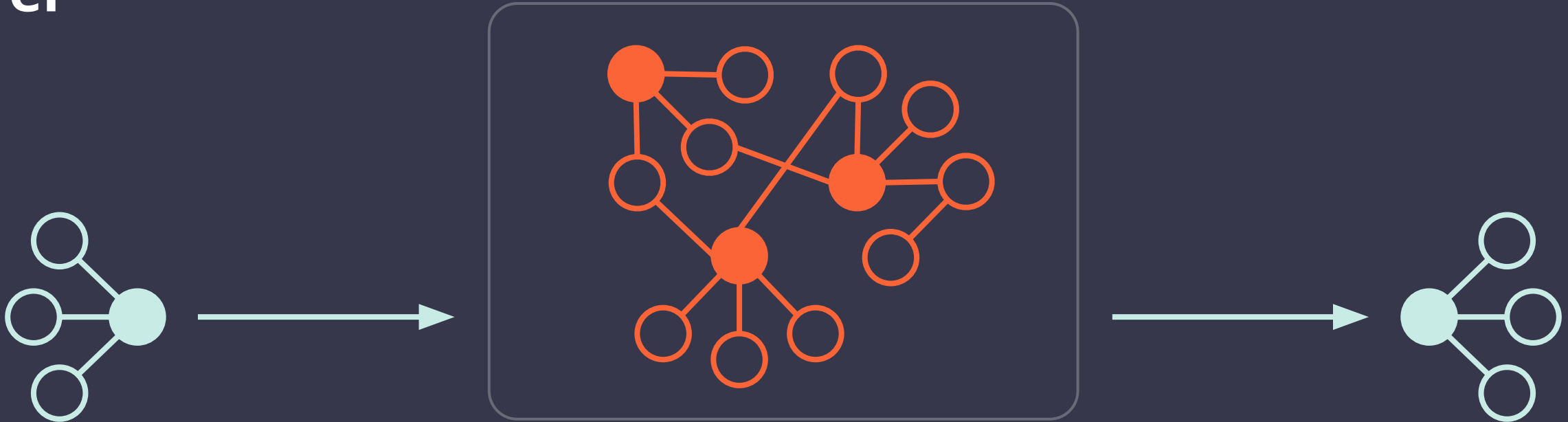
Step 2 Complete the diagnostic

Diagnostic completed

Step 3 Now upload your data

Upload

In A 'Fitbit' for your mind er



Data

↳ Data collected via data science diagnostics and a data ingestion engine

Analytics and AI

↳ Analysis conducted according to user preferences

Learning insights

Actionable insights about the selected thinking capabilities and how they could be improved

A 'Fitbit' for your mind insights report

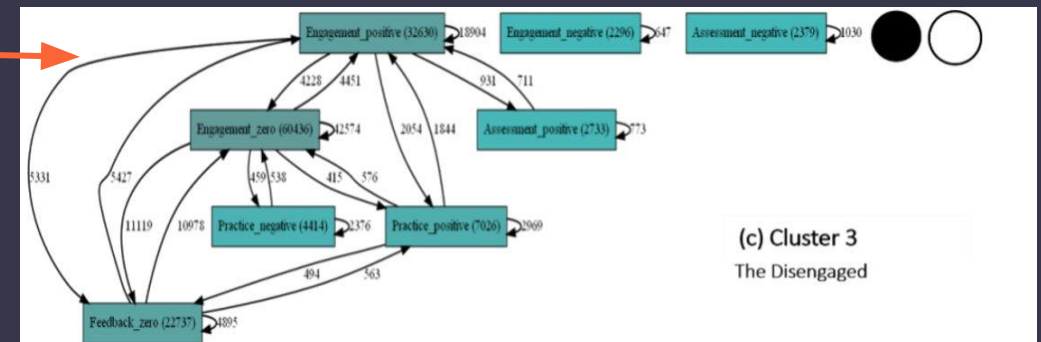
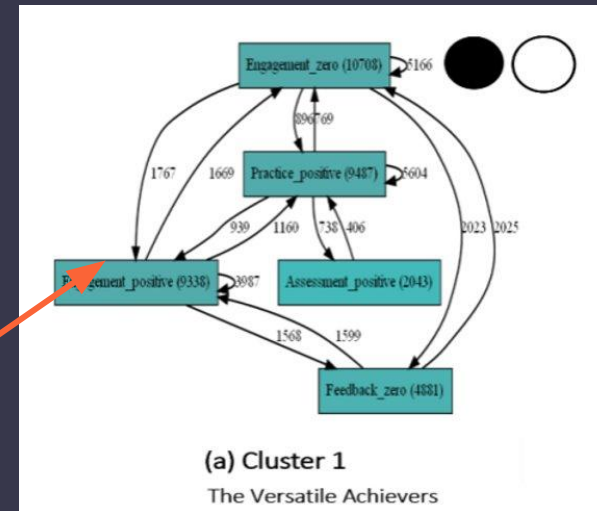
Your selected thinking capability

Motivation and self-awareness



You behaviour patterns look like this. People with more advanced self-awareness and consistent motivation exhibit patterns of behaviour look like this.

Read more to learn how to improve...



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Learning about AI

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How might we go about that?

Training for staff

- What is AI? What tools are available?
- How might you use it in your teaching?
- What are the risks?

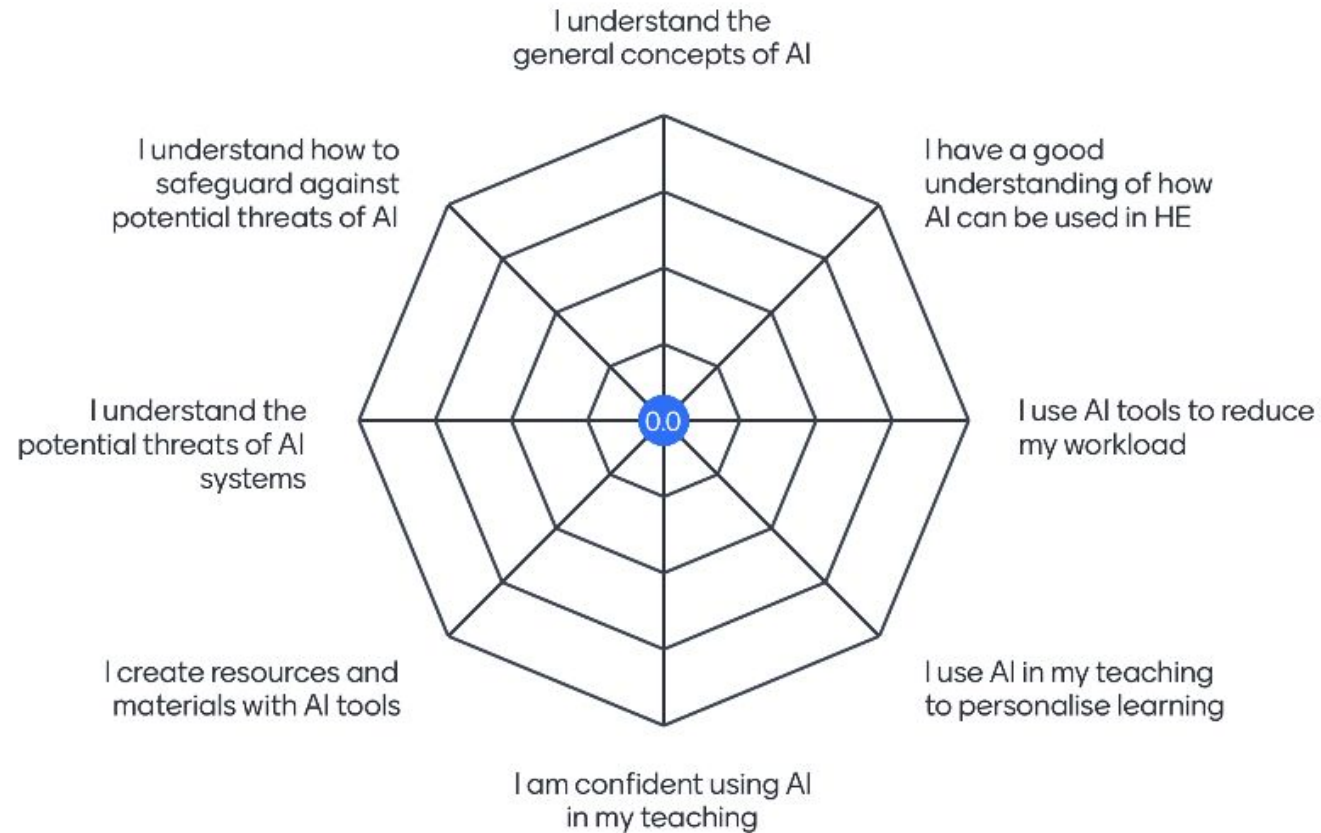
Awareness for students

- What is AI? What tools are available?
- How should you consider using it?
- Will this impact my future?

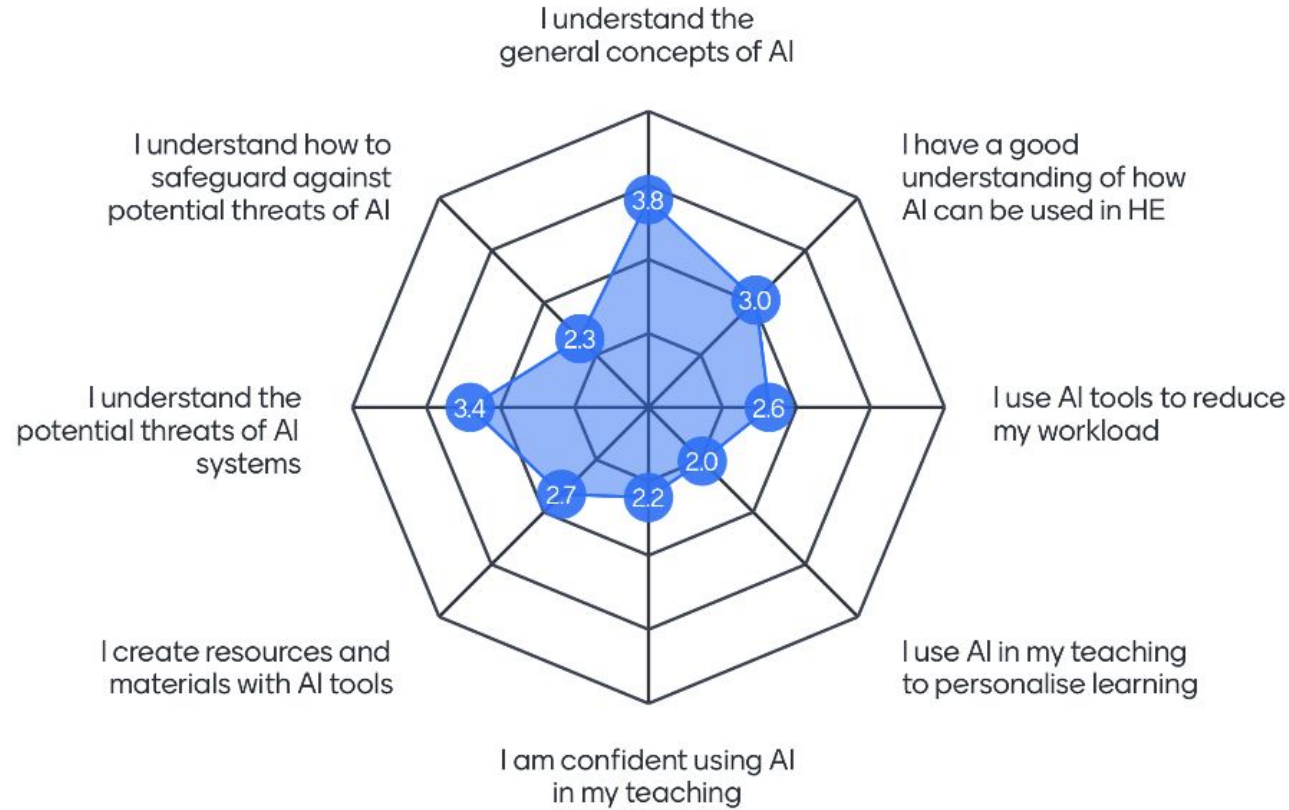
Policy

- What is our AI policy as an institution?
- How can we ensure equal access?
- Ethics – NB the IEAIED

AI awareness check



AI awareness check



IOE professor co-founds the UK's first Institute for Ethical Artificial Intelligence in Education

18 October 2018



conceived by Sir Anthony Seldon, Priya Lakhani OBE, and Professor Rose Luckin

The Institute for Ethical AI in Education

The Ethical Framework for AI in Education

The Institute for Ethical AI in Education has been kindly funded by:



FREE TO DOWNLOAD

<https://www.buckingham.ac.uk/wp-content/uploads/2021/03/The-Institute-for-Ethical-AI-in-Education-The-Ethical-Framework-for-AI-in-Education.pdf>

The Institute for Ethical AI in Education



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The Institute for Ethical AI in Ed



Objective	Criteria	Checklist
Transparency and Accountability. Humans are ultimately responsible for educational outcomes and should therefore have an appropriate level of oversight of how AI systems operate (See Annex Section 7 for justification)	7.1 Conduct a risk assessment to establish whether AI resources could undermine the authority of practitioners and disrupt accountability structures, and take action based on the risk assessment	Will implementing the actions arising from this risk assessment ensure that the authority of educators and/or other relevant practitioners is not undermined, and that accountability structures are not disrupted as a result of using AI? (Pre-procurement)
	7.2 Insist that suppliers make explicit whether there were any trade-offs between accuracy and explainability in the design of the AI resource, specifying where any compromises have been made and providing a justification	Have you received the relevant information from the suppliers? Where compromises have been made, are you satisfied with the justification you have received? (Pre-procurement)
Informed Participation. Learners, educators and other relevant practitioners should have a reasonable understanding of artificial intelligence and its implications (See Annex Section 8 for justification)	8.1 Teach students about artificial intelligence and its societal and ethical implications	Where in the curriculum, or when during extracurricular time, will students be taught about this? What content will they learn? (Implementation)
	8.2 Provide educators and/or other relevant practitioners with sufficient training to ensure that they are able to use AI resources effectively, discerningly and with confidence. As part of this training, educators and practitioners should be trained to scrutinise the decisions made and behaviours displayed by AI systems, in order to guard against undue deference	What will the content of this training be, and how much training will educators and/or other relevant practitioners receive? (Implementation)
Ethical Design. AI resources should be designed by people who understand the impacts these resources will have (see Annex Section 9 for justification)	9.1 Insist that suppliers provide relevant information to confirm that a range of stakeholders (e.g. learners, educators, careers advisers, youth workers) were consulted as part of the design process	What information have you received from the suppliers, and are you satisfied that a range of stakeholders (e.g. learners, educators, careers advisers) were consulted as part of the design process? (Pre-procurement)
	9.2 Insist that suppliers provide relevant information to confirm that a diverse range of people contributed to the design and development of the AI resource	What information have you received from the suppliers, and are you satisfied that a diverse range of people contributed to the design of the AI resource? (Pre-procurement)
	9.3 Ensure that the supplier can confirm that AI resources were designed by practitioners who have had training on the ethical implications of AI in education	What information have you received from the suppliers, and are you satisfied that AI resources were designed by practitioners who have had training on the ethical implications of AI in education? (Pre-procurement)

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Objectives:

1. Achieving Educational Goals
2. Forms of Assessment
3. Administration and Workload
4. Equity
5. Autonomy
6. Privacy
7. Transparency and Accountability
8. Informed Participation
9. Ethical Design

To conclude

- The rise in popularity and adoption of generative AI systems has challenged traditional beliefs about the capabilities of AI;
- This moment signals the need for a fundamental shift in the way we approach assessments in education.
- We need to assess self-awareness, self-regulation, metacognition, and the other essential sophisticated thinking capabilities required to future-proof careers.
- The irony of the situation is that AI is both a catalyst for change and a potential solution to the challenges posed by its presence.
- The judicious application of AI within education can enable formative assessments that contribute to the teaching and learning process and provide evidence of each student's level of understanding and skill.

Host of the EdTech Podcast

Professor
Rose Luckin



THE EDTECH PODCAST

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Thank You

