The Future of Learning and Teaching: AI's Role in Education, Challenges, and Opportunities

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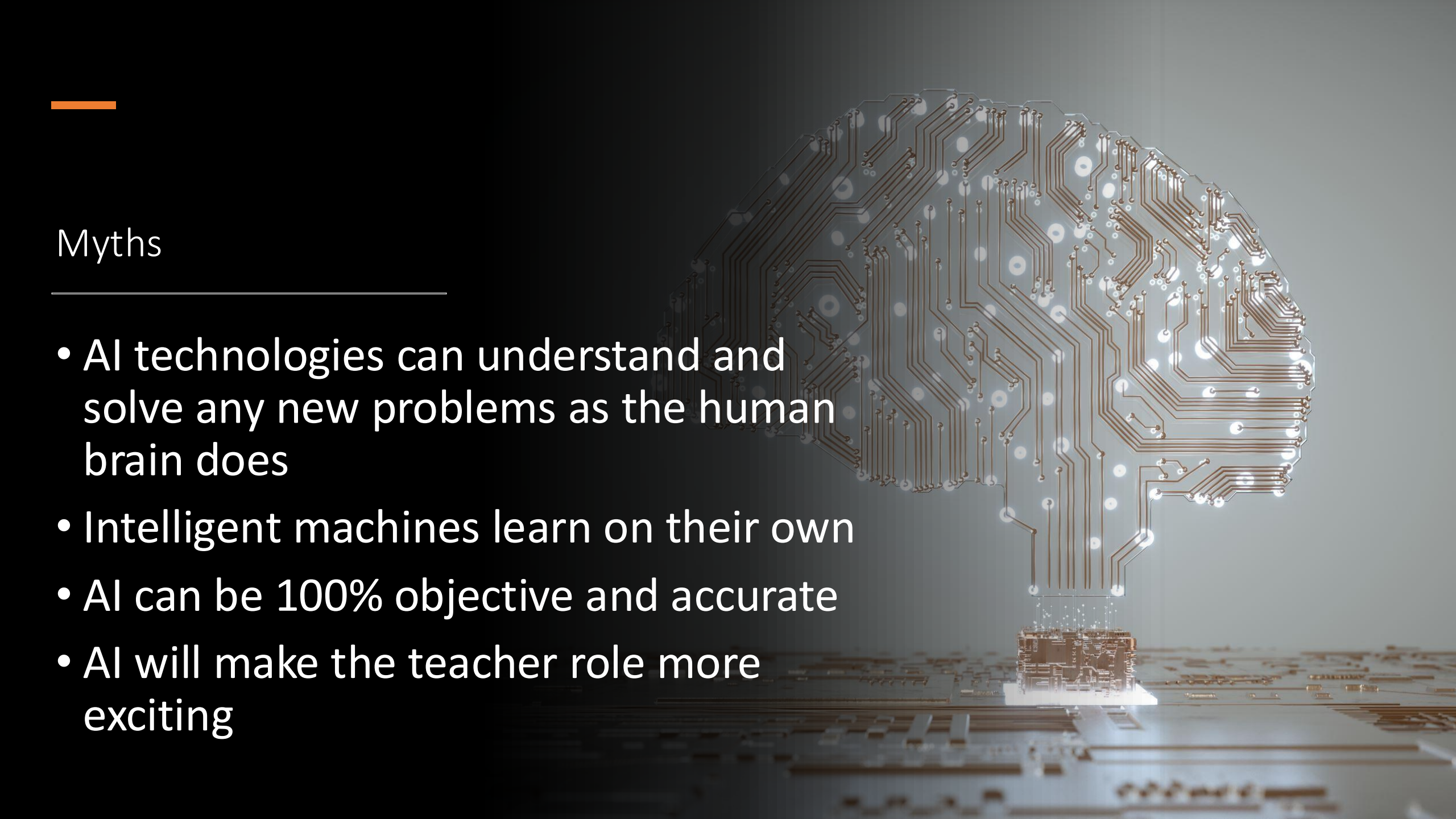
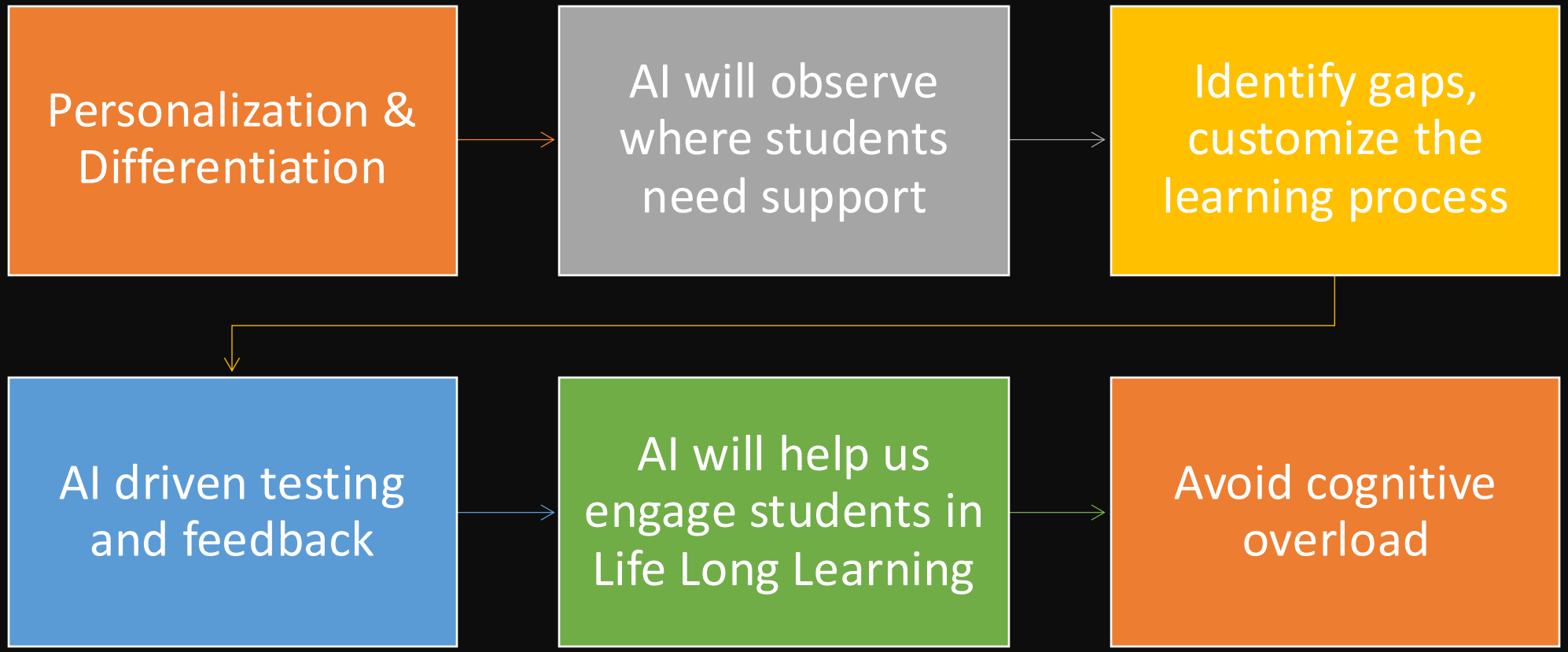
Myths

- AI technologies can understand and solve any new problems as the human brain does
- Intelligent machines learn on their own
- AI can be 100% objective and accurate
- AI will make the teacher role more exciting



Promises


Personalization & Differentiation
AI will observe where students need support
Identify gaps, customize the learning process
AI driven testing and feedback
AI will help us engage students in Life Long Learning
Avoid cognitive overload

Promises

Make education better for all (students, parents, teachers)

Give universal access to learning (to everyone, in any language, anywhere in the world)

Outsource knowledge transfer from teacher to AI

Give more time to the teacher for exciting work with students

Free up time for teachers; Outsource administrative tasks

Teacher dashboard lets you know everything that happens in your class during activities

Promises

- AI could read non-verbal signs and understand context of written text

AI is magical

Created by Microsoft Designer

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What do you expect from AI in Education?

Please visit SLIDO.COM 1543674

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slido

Please download and install the Slido app on all computers you use

What do you expect from AI in Education?

ⓘ Start presenting to display the poll results on this slide.

Digital Services Act

Article 28 Online protection of minors
1. Providers of online platforms accessible to minors shall put in place appropriate and proportionate measures to ensure a high level of privacy, safety, and security of minors, on their service.

Recital 70 Consequently, online platforms should consistently ensure that recipients of their service are appropriately informed about how recommender systems impact the way information is displayed, and can influence how information is presented to them

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Digital Services Act

Algorithms for adapting task complexity or recommending learning content

Capture attention and keep users engaged within the platform

Reward systems

It would be a huge benefit for all education stakeholders if providers became more transparent and describe such systems and algorithms. Knowing more about how educational platforms work could help students gain a better understanding of their learning processes and at the same time give them the necessary agency.

Cyber Security Act

- The major aims of the Cyber Security Act (CSA) are achieving a high level of cybersecurity, cyber resilience and trust within the Union and increase citizens', organisations' and businesses' awareness of cybersecurity issues by organising the European Union Agency for Cybersecurity (ENISA) and offering information in a transparent manner on the level of security of ICT products, ICT services and ICT processes through creating a framework for the establishment of European cybersecurity certification schemes.
- CSA explicitly mention education, even dedicate a separate article to Awareness-raising and education. Article 10 ENISA shall: (a) raise public awareness of cybersecurity risks, and provide guidance on good practices for individual users aimed at citizens, organisations and businesses, including cyber-hygiene and cyber-literacy; …

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Data Act & Data Governance Act

Possible impacts on education:

- **Enhanced Data Access** because educational institutions often require access to diverse datasets for research and development, which can lead to improved access to educational resources and research data.
- **Encourages data sharing across** sectors, which can foster collaboration between educational institutions and other entities. **Data altruism**
- Requires **clear and transparent communication** about data practices. By sharing best practices and case studies, institutions can learn from each other's experiences and avoid common pitfalls. This can include successful strategies for data protection, innovative uses of data in education, and effective change management approaches.
- Promotion of **interoperability and standardization** of data formats as well as data altruism.

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Artificial Intelligence Act (AI Act)

- Emphasises the significance of utilising AI systems to update education systems, improve educational standards in both offline and online settings, and expand access to digital education for a broader range of people.
- Nevertheless, the utilisation of AI systems in the field of education, namely for making judgements related to admissions, evaluations, and selecting suitable educational levels, raises ethical concerns.
- These AI systems should be categorised as high-risk because of their capacity to influence an individual's educational and professional path, so affecting their ability to secure their means of living.
- Inadequately designed and utilised AI systems can intrude upon privacy, infringing upon the right to education, perpetuating prejudice, and fortifying longstanding prejudices against particular groups, such as women, specific age cohorts, individuals with disabilities, or those of specific racial, ethnic, or sexual orientations.

AI Act - Article 5 Prohibited AI practices

- (a)... AI system that deploys **subliminal techniques** beyond a person's consciousness or purposefully manipulative or deceptive techniques,...
- (b) ... AI system that exploits any of the **vulnerabilities of a natural person** or a specific group of persons due to their age, disability or a specific social or economic situation...
- (c) the placing on the market, the putting into service or the use of AI systems for the **evaluation or classification** of natural persons or groups of persons over a certain period of time based on their social behaviour or known, inferred or predicted personal or personality characteristics, with the social score leading to either or both of the following:
    - (i) detrimental or unfavourable treatment of certain natural persons or groups of persons in social contexts that are unrelated to the contexts in which the data was originally generated or collected;
    - (ii) detrimental or unfavourable treatment of certain natural persons or groups of persons that is unjustified or disproportionate to their social behaviour or its gravity;
- (f) ... AI systems to **infer emotions** of a natural person in the areas of workplace and education institutions, ...
- (g)... of **biometric categorisation systems** that categorise individually natural persons based on their biometric data to deduce or infer their race, political opinions, trade union membership, religious or philosophical beliefs, sex life or sexual orientation...

ANNEX III High-risk AI systems referred to in Article 6(2)

3. Education and vocational training:

- *(a) AI systems intended to be used to **determine access or admission** or to assign natural persons to educational and vocational training institutions at all levels;*
- *(b) AI systems intended to be used to **evaluate learning outcomes**, including when those outcomes are used to steer the learning process of natural persons in educational and vocational training institutions at all levels;*
- *(c) AI systems intended to be used for the purpose of **assessing the appropriate level of education** that an individual will receive or will be able to access, in the context of or within educational and vocational training institutions at all levels;*
- *(d) AI systems intended to be used **for monitoring and detecting prohibited behaviour** of students during tests in the context of or within educational and vocational training institutions at all levels.*

Possible scenarios

- AI systems used to determine access or admission analyse applications and make decisions on student admissions
- AI systems that evaluate learning outcomes, such as automated grading tools.
- AI systems used to monitor and detect prohibited behaviour during exams or in classrooms.
- AI-driven personalised learning platforms that adapt educational content based on individual student performance and behaviour.
- AI systems that predict student performance and provide insights into potential academic outcomes.

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Maybe not high-risk AI systems (Article 6)

- various situations in education which do not pose a significant threat to the health, safety, or fundamental rights of individuals, and they do not substantially impact decision-making outcomes.
- narrow procedural task - sorting files, calculating average, identifying identical copies
- improve the result of a previously completed human activity - language or grammar improvement, document styling if the document is previously written by human
- detecting decision-making patterns - comparing results of human grading with some standard grading patterns, for example in national or maturity exams
- preparatory task for an assessment - translation, linking or referencing to other data sources

Assess all AI systems intended to be used in education (criteria in Article 7)

(a) the intended purpose of the AI system; Is it appropriate for education
(c) the nature and amount of the data processed and used by the AI system, in particular whether special categories of personal data are processed; What kind of data is collected from minors, and what are those data used for?
(d) the extent to which the AI system acts autonomously and the possibility for a human to override a decision or recommendations that may lead to potential harm; Does a teacher have some option to manually adjust personalisation algorithm?
(g) the extent to which persons who are potentially harmed or suffer an adverse impact are dependent on the outcome produced with an AI system, in particular because for practical or legal reasons it is not reasonably possible to opt-out from that outcome; Students usually doesn't have opt-out option for any activity in education, and they very much

Assess all AI systems intended to be used in education (criteria in Article 7)

(h) the extent to which there is an imbalance of power, or the persons who are potentially harmed or suffer an adverse impact are in a vulnerable position in relation to the deployer of an AI system, in particular due to status, authority, knowledge, economic or social circumstances, or age; Students might be in vulnerable position in education

(i) the extent to which the outcome produced involving an AI system is easily corrigible or reversible, taking into account the technical solutions available to correct or reverse it, whereby outcomes having an adverse impact on health, safety or fundamental rights, shall not be considered to be easily corrigible or reversible; How teachers may correct or change AI system outcome?

(j) the magnitude and likelihood of benefit of the deployment of the AI system for individuals, groups, or society at large, including possible improvements in product safety; Is it helpful for students? Is it better than some other pedagogical approach?

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Article 86 Right to explanation of individual decision-making

- *Any affected person subject to a decision …. shall have the **right to obtain from the deployer clear and meaningful explanations of the role of the AI system in the decision-making procedure and the main elements of the decision taken**.*
- AI Act points out that high-risk AI systems shall be designed, that they can be effectively overseen by natural persons. **It is imperative to have a "human in the loop" in all applications of AI systems in education.**
- Citizens (students & teachers) need to know their rights

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Are we intentionally deskilling ourselves by outsourcing tasks to AI? What risks/benefits of your overreliance on AI have you already identified and what other risks/benefits may arise?

https://padlet.com/lkralj15/AI09

Activities for teachers

Suradnici u učenju

Arjana Blažić
Helena Valečić
Sanja Janeš
Valentina Blašković
Kristina Slišurić
Darija Dasović
Darko Rakić
Nikolina Marinić
Lidija Kralj

[Educational handbook on the application of artificial intelligence] in learning and teaching for teachers, educators and experts in schools

Illustrations by O,ne radiona d.o.o.

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Creation of educational content and teaching materials using artificial intelligence

- To what extent can you rely on educational materials or preparation for AI-created classes?
- What are the most common mistakes in artificial intelligence materials? In which cases did you get excellent results?
- Is it worth spending time trying out various prompts in order to get the best material from artificial intelligence? Why?
- For what forms or types of educational content has AI proven to be a good tool?

Illustrations by O,ne radiona d.o.o.

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Assessment & Evaluation of students' work using artificial intelligence

- Are you going to tell your students that you used artificial intelligence to create rubrics? Why?
- What are the ethical challenges of automatic evaluation (via AI) of students' work?
- Which ways of using AI for assessment do you consider ethically and pedagogically appropriate? Why?
- Who is responsible for the assessment by AI?
- How can students react if they find that their work is valued not by a human but by a computer?
- Is AI sensitive to all aspects of living and working with students in the classroom?

Illustrations by O,ne radiona d.o.o.

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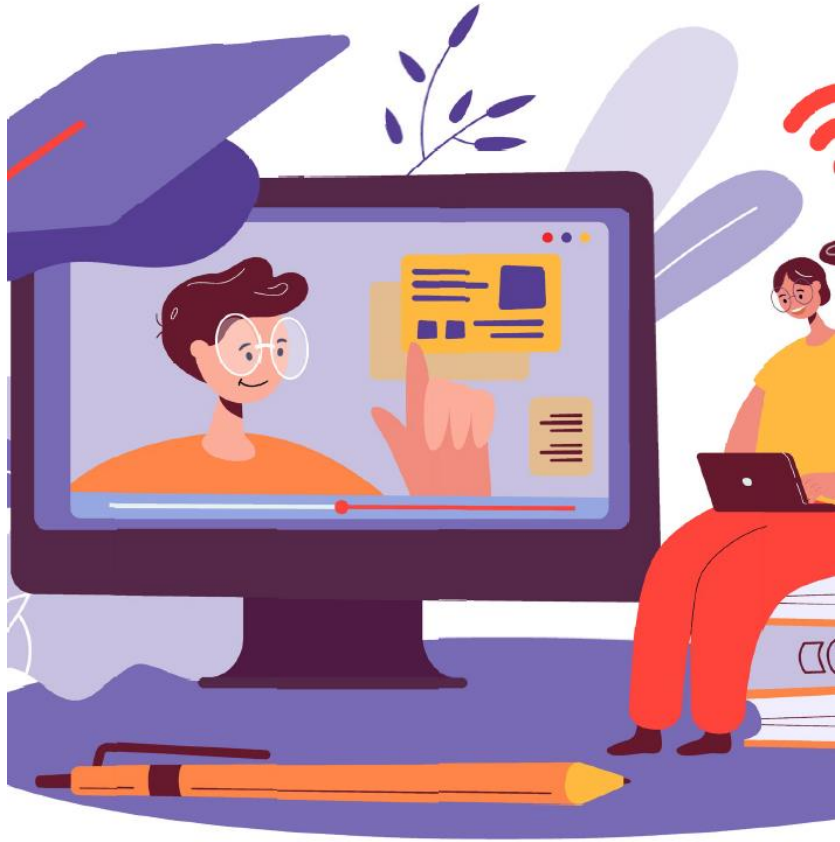
Artificial Intelligence to Support Adaptation

- How can we balance the usefulness of AI tools to create tailor-made content with the protection of students' privacy?
- How can we ensure that AI education tools are not used in a way that can lead to stigmatisation or discrimination of learners with special needs?
- What can we do to make the tools and content s needed to educate students with specific educational needs are fairly available?



Illustrations by O,ne radiona d.o.o.

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Artificial Intelligence as a Support for Better Teaching

- What is your opinion on automated monitoring and evaluation of teaching and teachers? What advantages and disadvantages would you highlight?
- Which of the possibilities of artificial intelligence to monitor and improve the teaching process seem most useful to you? Why?
- What benefits do the application of artificial intelligence bring for giving feedback to teachers about their work with students? What are the risks?
- What are ethical challenges of monitoring teachers' work by AI tools?

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Overreliance on Artificial Intelligence

- Which activities do you think artificial intelligence can do instead of a teacher?
- Do teachers reduce their impact on students by using artificial intelligence?
- What teacher tasks/jobs would you assign to AI, and which would you do personally? What activities, people or technologies deserve your time?
- Is there a danger that we're enfeebling ourselves by outsourcing jobs to artificial intelligence? Will we forget how things are done?
- What risks of overreliance on AI have you already identified and what other risks may arise?

Illustrations by O,ne radiona d.o.o.

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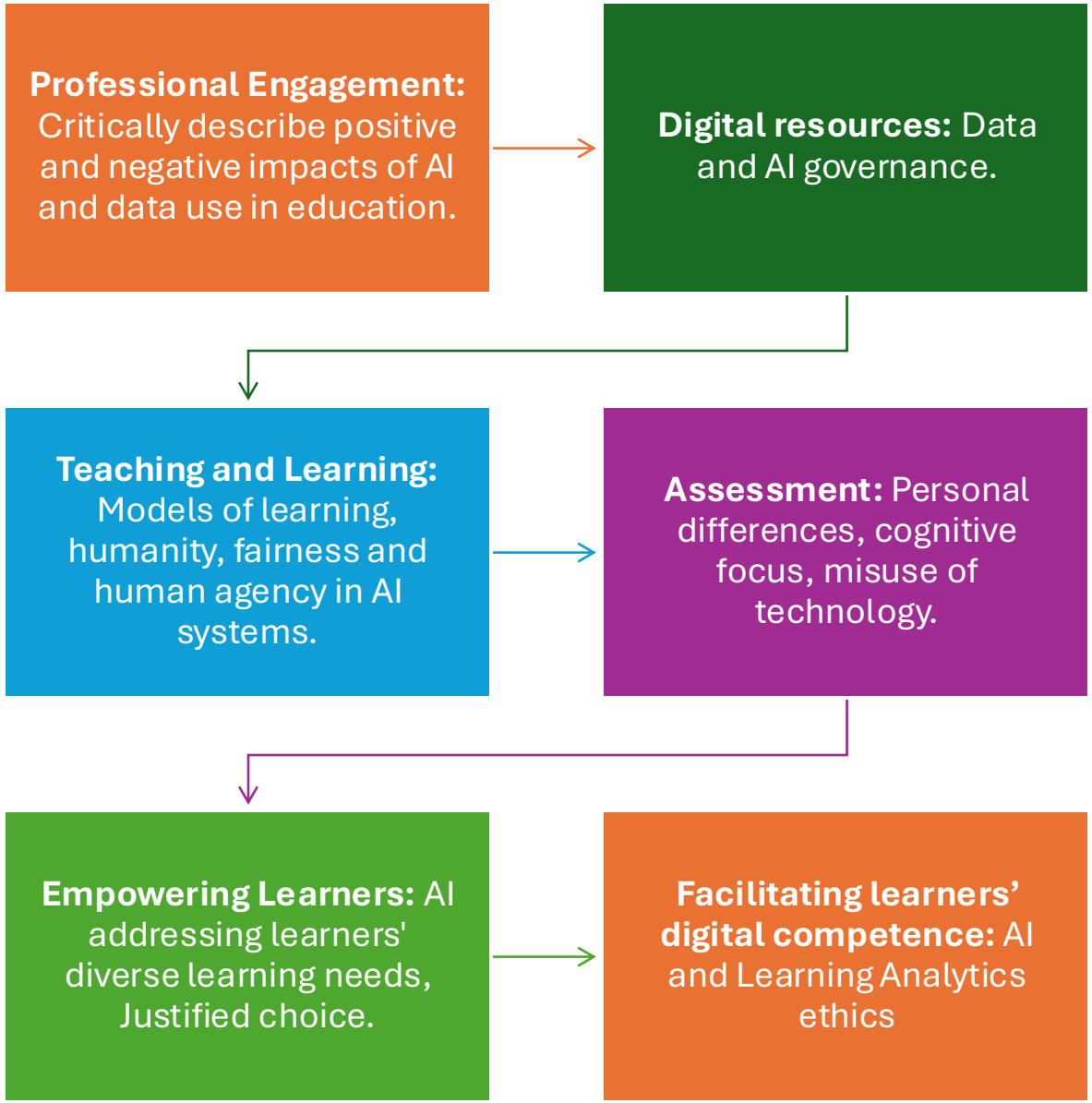
European Commission's Ethical guidelines on the use of artificial intelligence (AI) and data in teaching and learning for Educators (2022)



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What should we focus on?

- When comparing the requirements for teachers' competences in older frameworks that focus on ICT and digital technologies with newer frameworks that focus on the implementation of artificial intelligence technologies in education, it becomes evident that ethical considerations, human agency, and fairness are now given significant emphasis.
- In contrast, these aspects were previously assumed and not explicitly mentioned in older frameworks.
- One possible explanation for this phenomenon could be that the teaching profession places significant emphasis on ethics, human agency, and fairness, which were not jeopardised by information and communication technologies at the time but could be strongly negatively impacted by artificial intelligence today.

Cukurova, M., Kralj, L., Hertz, B. & Saltidou, E. (2024). Professional Development for Teachers in the Age of AI. European Schoolnet. Brussels, Belgium., 2024

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Ethics and humanity

Human agency encompasses an individual's capability to evolve into a proficient member of society, enabling them to make informed choices about their educational path and assume responsibility for their actions.

Fairness in education involves treating everyone fairly, ensuring equal access to opportunities through equity, inclusion, non-discrimination, and fair distribution of rights and responsibilities.

Humanity prioritizes people's identity, integrity, and dignity, focusing on well-being, safety, social cohesion, meaningful educational interactions, and respect.

Justified choice in educational settings involves using knowledge, facts, and data to justify collective decisions by stakeholders. This requires transparency in educational processes, participatory decision-making in policies, and the ability to provide explanations for educational choices and outcomes.

European Commission's Ethical guidelines on the use of artificial intelligence (AI) and data in teaching and learning for Educators (2022)

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Some examples of competences

1. Promoting and recommend-ing ethics as one of the core pillars when deploying AI systems in education in community.
2. Explaining how ethical principles and values are considered and negotiated in co-design and co-creation of learning practices that use AI and data
3. Actively contributing to the improvement of AI systems by reporting errors, risks, biases or misconcept-ions in data or outputs.
4. Comparing ethical principles built in AI tool with ethical principles teacher implement in teaching process.
5. Recognizing the high-risk AI use cases in education under the national or international regulations.
6. Advocating for the ethical use of AI tools, and actively participate in the development of a more ethically sound AI ecosystem in the field of education.

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Digital pedagogy

When we look at the use of artificial intelligence in education it is necessary to first answer questions **why** we would like to use such technology; is the use of that AI technology the **best way** to support teaching and learning processes, **how** we will use it to support efficient achievement of learning outcomes; is it **appropriate** for our students and educational context; will it ensure **equitable use** for all students; do we have all **necessary consents** and licences to use it.

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Some examples of competences

Discussing the best methods and criteria used for analysing and evaluating the AI tools, and their suitability for diverse users with peers.

Employing pedagogical methods in implementations of AI, ensuring a harmonious blend of human and AI supported teaching and learning.

Explaining key pedagogic assumptions that underpin a given AI learning system.

Evaluating existing AI tools and resources for teaching and learning purposes.

Responsibly using AI tools and resources to enhance teaching effectiveness, efficiency, and differentiation.

Critically assessing AI's role in teaching and learning processes and support those findings with arguments and evidence.

Organizing collegial observations and debriefings of some AI supported educational activity to collect students' and colleagues' impressions and feedback.

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How AI works

- Areas of **AI fundamentals** that teachers should be familiar with are probabilistic and statistical models which are base for more complex AI models, how automatization and decisions processes works and how AI systems use data.
- Learning analytics could offer valuable insights into teaching practices, enabling teachers to improve methods and strategies, identify struggling students, and provide necessary support. Data analytics and data visualisation are very important areas in the use of different AI tools, as teachers should be able to understand what AI tool is providing for them, usually as part of teacher's dashboards, what data is AI analysing, what conclusion could teachers make upon presented data visualisations.

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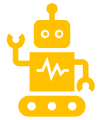
Some examples of competences







Demonstrating knowledge of good practices of protecting data and privacy when using AI tools.

Identifying and discussing the presence and impact of AI in educational context.

Recognizing various sources of bias in AI, from human inputs, data sets, or algorithms and understanding how automatic decision-making can be biased.

Explaining how a given system can benefit all students, independent of their cognitive, cultural, economic, or physical differences.

Researching about some of AI tools which are created for education, reading all documentations about it, contacting developers, and asking how their model is created and monitored.

Engaging in collaborative processes co-designing new products based on AI systems to support and enhance learning and teaching.

Being aware that AI is a rapidly changing area whose development and impact on education still remain unpredictable.

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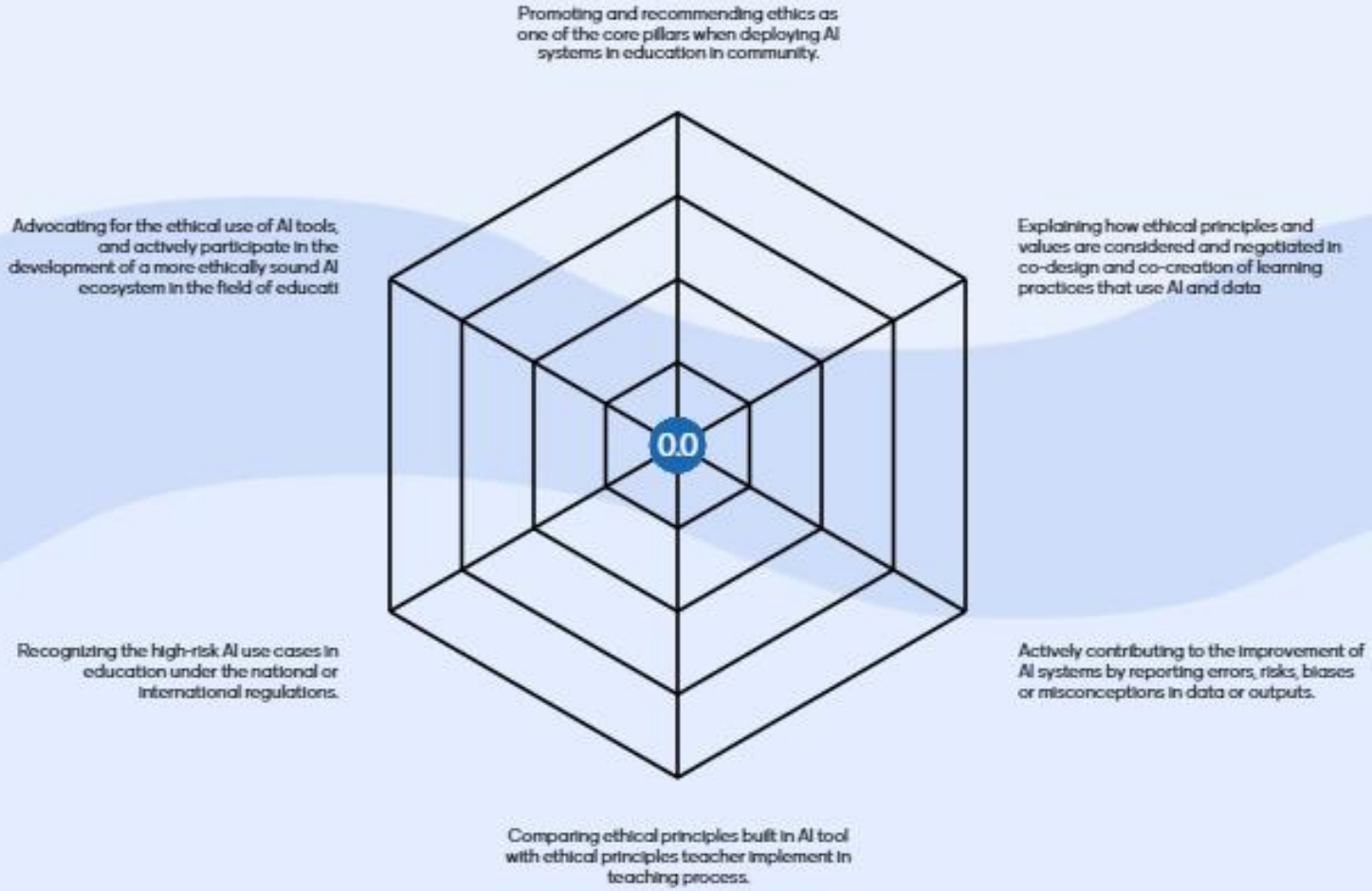
Ethics and humanity



https://www.mentimeter.com/app/presentation/n/al14ns5r7wo1rkbdbvaepkcsqk288chb/present

AI Literacy - AI Act

- ‘AI literacy’ means skills, knowledge and understanding that allow providers, deployers and affected persons, taking into account their respective rights and obligations in the context of this Regulation, to make an informed deployment of AI systems, as well as to gain awareness about the opportunities and risks of AI and possible harm it can cause;
- The deployment of AI systems in education is important to promote high-quality digital education and training and to allow all learners and teachers to acquire and share the necessary digital skills and competences, including media literacy, and critical thinking, to take an active part in the economy, society, and in democratic processes.

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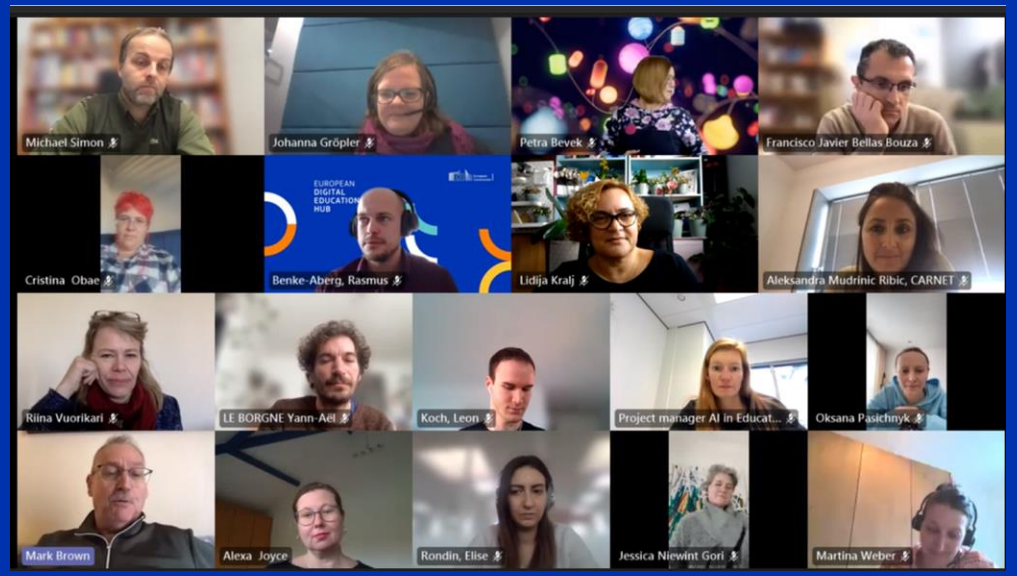
AI for Education EDEH Squad

February – June 2023



Biweekly meetings, discussion, search for and collect relevant resources, draft documents, comment and improve, very positive atmosphere, and synergy

EUROPEAN
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An initiative of the European Commission

AI for Education EDEH Squad
AI Report

1. Teachers' competences
2. How to support teachers to use AI in teaching
3. Use scenarios & practical examples of AI use in education
4. Education about AI
5. Influence of AI on governance in education
6. AI and Ethics, human rights, law, education data
7. Teaching with AI – assessment, feedback and personalisation

European Commission, European Education and Culture Executive Agency, AI report – By the European Digital Education Hub's Squad on artificial intelligence in education, Publications Office of the European Union, 2023, https://data.europa.eu/doi/10.2797/828281

Australian Framework for Generative Artificial Intelligence in Schools

- **Teaching and learning**: Generative AI tools are used to enhance teaching and learning.
- **Human and social wellbeing**: Generative AI tools are used to benefit all members of the school community.
- **Transparency:** School communities understand how generative AI tools work, how they can be used, and when and how these tools are impacting them.
- **Fairness**: Generative AI tools are used in ways that are accessible, fair and respectful.
- **Accountability**: Generative AI tools are used in ways that are open to challenge and retain human agency and accountability for decisions.
- **Privacy, security and safety**: Students and others using generative AI tools have their privacy and data protected.

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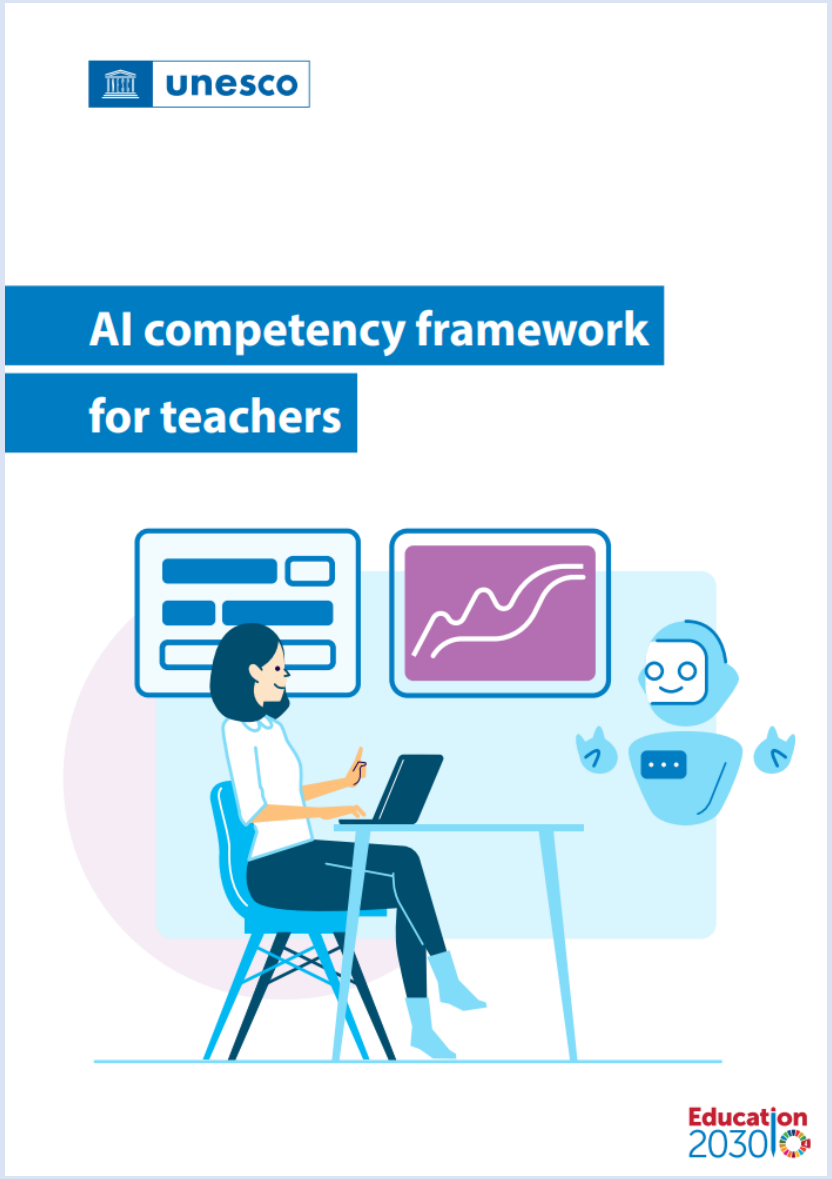
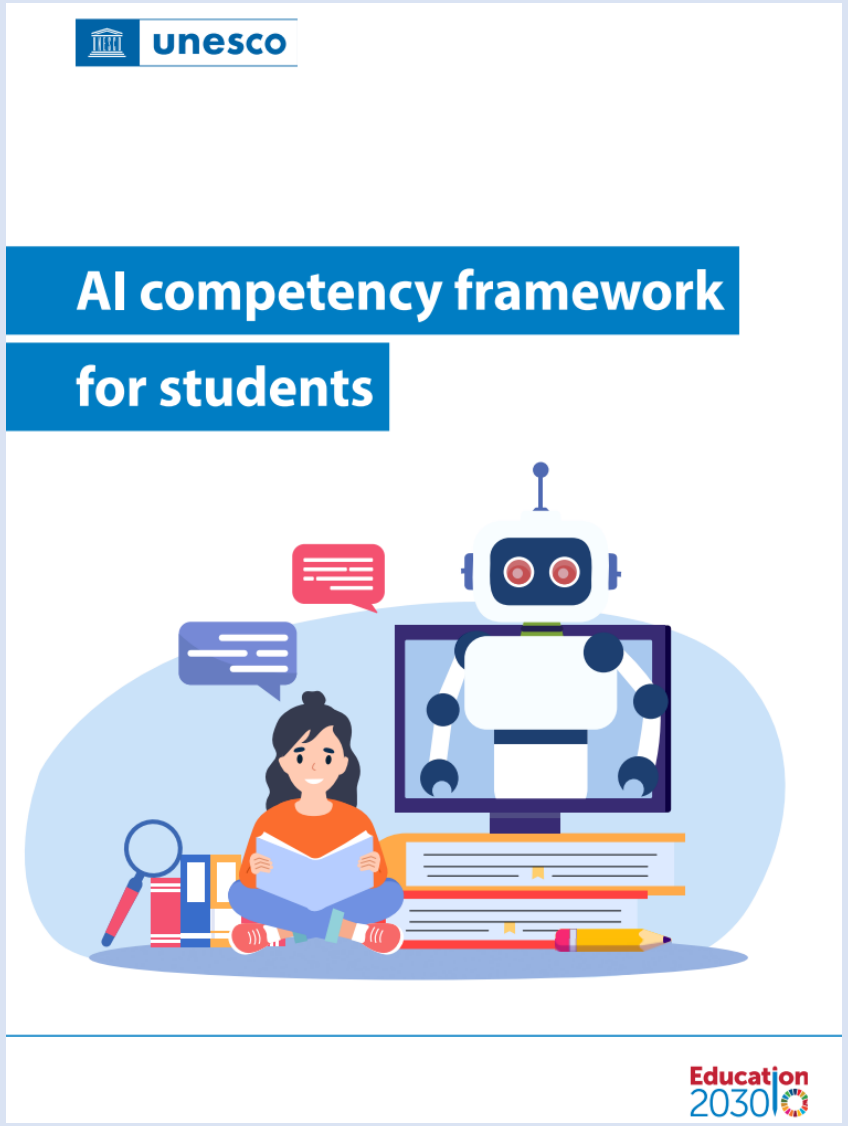
Public statement made by the Office of the Victorian Information Commissioner

- Can personal information be used with ChatGPT (or similar GenAI tools)?
- VPS organisations must ensure staff and contracted service providers do not use personal information with ChatGPT.
- ChatGPT must NOT be used to formulate decisions, undertake assessments, or used for other administrative actions that may have consequences for individuals, for example, evaluations, assessments, or reviews.
- Doing so is a contravention of the Information Privacy Principles (IPPs), and may cause significant harm to individuals whose information is used with ChatGPT.
- If an organisation becomes aware that personal information has been used with ChatGPT it should treat the occurrence as an information security incident and notify OVIC immediately.

https://ovic.vic.gov.au/privacy/resources-for-organisations/public-statement-use-of-personal-information-with-chatgpt/

UNESCO AI competency frameworks for teachers and students





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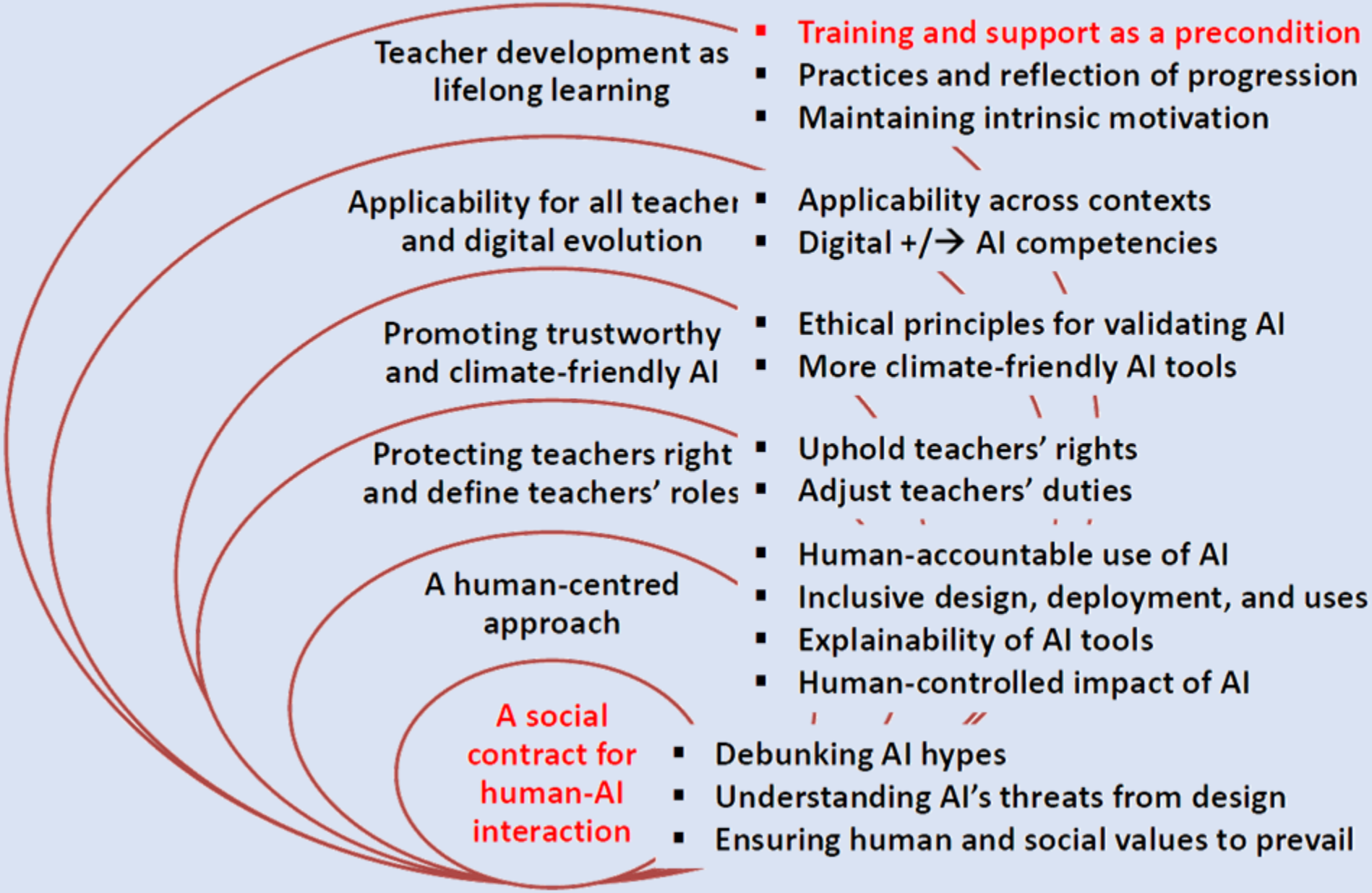
Principles



F. Miao, UNESCO

UNESCO AI Competency Framework for Teachers

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

UNESCO AI CFT aspects

- **Human-centred mindset** defines the values and critical attitudes teachers need to develop towards human–AI interactions based on the aforementioned principles. This aspect encourages teachers to always put human rights and needs for human flourishing as the focus of AI in education. Teachers are encouraged to nurture critical methodologies to evaluate the benefits and risks of AI, while ensuring human agency and human accountability, and understanding AI's societal impact and implications for citizenship in the era of AI.
- **Ethics of AI** delineates the essential ethical values, principles, regulations, institutional laws and practical ethical rules that teachers need to understand and apply, drawn from the rapidly expanding body of knowledge on the ethics of AI and their implications for education. This aspect defines teachers' progressively deeper understanding of fundamental ethics of AI, skills to make safe and responsible use of AI, and comprehensive competencies to participate in the adaptation of ethical rules.
- **AI foundations and applications** specifies the conceptual knowledge and transferable operational skills that teachers need to understand and apply in order to support their selection, application and creative customization of AI tools to build student centred AI-assisted teaching and learning environments. Teachers are expected to gain appropriate understanding of the definition of AI, basic knowledge about how AI works, as well as about the main categories of AI technologies; the skills necessary to evaluate appropriateness and limitations of AI tools based on specific needs in specific domains and contexts; and the skills to operate validated tools for real-world tasks; progressively, it involves skills to adapt or customize AI tools to build human-centred and age-appropriate learning environments.

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UNESCO AI CFT aspects

- **AI pedagogy** proposes a set of competencies required for purposeful and effective AI–pedagogy integration, covering comprehensive competencies to validate and select appropriate AI tools and integrate them with pedagogical methods to support course preparation, teaching, learning, socialization, social caring and learning assessment. This aspect implies that teachers need to develop the ability to critically assess when and how to use AI in teaching and learning in an ethical and human-centred manner, as well as to plan and implement inclusive AI-assisted teaching and learning practices. Progressively, teachers need to enhance their capacity to critically adapt and creativity explore innovative practices in the context of advancing capabilities of emerging AI iterations.
- **AI for professional development** outlines the emerging competencies teachers need to build in order to use AI to drive their own lifelong professional learning and collaborative professional development in view of transforming their teaching practice. In response to the rapid development of AI, teachers need guidance on how to continue their professional development in educational settings characterized by growing human–AI interaction. This includes the ability to leverage AI to assess professional learning needs and nurture motivation for lifelong learning and professional collaboration. Progressively, teachers are expected to enhance their ability to adapt and create when using AI tools and data analytics to support transformative professional development.

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UNESCO AI Competency Framework for Students

Competency aspects	Progression levels		
	Understand	Apply	Create
Human-centred mindset	Human Agency	Human accountability	AI Citizenship in the era of AI
Ethics of AI	Embodied ethics	Safe and responsible use	Ethics by Design
AI techniques and applications	AI foundations	Application skills	Creating AI tools
AI system design	Problem Scoping	Architecture design	Iteration and feedback loops

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UNESCO AI CFS - Human-centred mindset

Understand Human agency	Apply Human accountability	Create Citizenship in the era of AI
Students are expected to be able to recognize that AI is human-led and that the decisions of the AI creators influence how AI systems impact human rights, human–AI interaction, and their own lives and societies. They are expected to understand the implications of protecting human agency throughout the design, provision and use of AI. Students will understand what it means for AI to be human-controlled, and what the consequences could be when that is not the case.	Students are expected to be able to recognize that human accountabilities are the legal obligations of AI creators and AI service providers, and understand what human accountabilities they should assume during the design and use of AI. They should also foster an awareness that human accountability is a legal and social responsibility when using AI to assist decisions on that affect humanity and uphold the principle that humans should not cede the determination to AI when making high-stakes decisions. They are also expected to enhance their judgement on, and attitudinal resilience to, the illusive claims on about the use of outputs and as well as predictions that AI can usurp humans' thinking and decision-making.	Students are expected to be able to build critical views on the impact of AI on human societies and expand their human-centred values to promoting the design and use of AI for inclusive and sustainable development. They should be able to solidify their civic values and the sense of social responsibility as a citizen in an AI society. Students are also expected to be able to reinforce their open-minded attitude and lifelong curiosity about learning and using AI to support self-actualization in the AI era.

UNESCO AI CFS - Ethics of AI

Understand Embodied ethics	Apply Safe and responsible use	Create Ethics by design
Students are expected to be able to develop a basic understanding of the ethical issues around AI, and the potential impact of AI on human rights, social justice, inclusion, equity and climate change within their local context and with regard to their personal lives. They will understand, and internalize the following key ethical principles, and will translate these in their reflective practices and uses of AI tools in their lives and learning: Do no harm, Proportionality, Non-discrimination, Human determination, Transparency	Students are expected to be able to carry out responsible AI practices in compliance with ethical principles and locally applicable regulations. They are expected to be conscious of the risks of disclosing data privacy and take measures to ensure that their data are collected, used, shared, archived and deleted only with their deliberate and informed consent. They are also expected to be conscious of typical AI incidents and the specific risks of certain AI systems, and be able to protect their own safety and that of their peers when using AI.	Students are expected to be able to adopt an ethics-by-design approach to the design, assessment and use of AI tools as well as the review and adaptation of AI regulations. Students are expected to be aware that the assessment and ratification of the intent of the AI design should start from the conceptualization stage and cover all steps of the AI life cycle. Student should be able to apply parameters to assess the compliance of an AI tool with ethical regulations and use an ethical matrix of multi-stakeholders to review AI regulations and inform adaptation.

UNESCO AI CFS - AI techniques and applications

Understand **AI foundations**	**Apply** **Application skills**	**Create** **Creating AI tools**
Students are expected to develop basic knowledge, understanding and skills on AI, particularly with respect to data and algorithms, and understand the importance of the interdisciplinary foundational knowledge required for gradually deepening understanding of data and algorithms. Students should also be able to connect conceptual knowledge on AI with their activities in society and daily life, concretizing a human-centred mindset and ethical principles through an understanding of how AI works and how AI interacts with humans.	Students are expected to be able to construct an age-appropriate knowledge structure on data, AI algorithms and programming, and acquire transferable application skills. Students are expected to be able to critically evaluate and leverage free and/or open-source AI tools, programming libraries and datasets.	Students are expected to be able to deepen and apply knowledge and skills on data and algorithms to customize existing AI toolkits to create task-based AI tools. Students are expected to integrate their human-centred mindset and ethical considerations into the assessment of the existing AI resources and the test of self-created AI tools. They are also expected to foster social and emotional skills needed to engage in creation with AI including adaptivity, complex communication and teamwork skills.

UNESCO AI CFS - AI system design

Understand Problem solving	Apply Architecture design	Create Iteration and feedback
Students are expected to be able to understand the importance of 'AI problem scoping' as the starting point for AI innovation. They are expected to be able to examine whether AI should be used in certain situations from legal, ethical and logical perspectives; students are able to define the boundaries, goals and constraints of a problem before attempting to train an AI model to solve it; students are also expected to acquire the knowledge and project-planning skills needed in order to conceptualize and construct an AI system, including by assessing the appropriateness of different AI techniques, defining the need for data, and devising test and feedback metrics.	Students are expected to be able to cultivate basic methodological knowledge and technical skills to configure a scalable, maintainable and reusable architecture for an AI system covering layers of data, algorithms, models and application interfaces. Students are expected to develop the interdisciplinary skills necessary to leverage datasets, programming tools and computational resources to construct a prototype AI system. This includes the expectation that they apply deepened human-centred values and ethical principles in their configuration and construction.	Students are expected to enhance and apply their interdisciplinary knowledge and practical methods to evaluate the humanistic appropriateness and methodological robustness of an AI model and its impact on individual users, societies and the environment. They should be able to acquire age-appropriate technical skills to improve the quality of datasets, reconfigure algorithms and enhance architectures in response to results of tests and feedback. They should be able to apply human-centred mindset and ethical principles in simulating decision-making on when an AI system should be shut down and how its negative impact can be mitigated. They are also be expected to cultivate their identities as co-creators in the larger AI community.

Wellbeing in digital education methodological framework

- The philosophical bases of this project entail the deconstruction of the concept of well-being. Well-being does not derive as a result of a linear path but from the multidirectional journey of practising it in companionship.
- Three main phases were devised:
  - Influential Inquiry
  - Humans Set Essentials
  - Lov-e & Car-e-osity model

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Wellbeing in digital education

- The Humans Set Essentials encompass four dimensions: the technical (Toolset), the pedagogical (Skillset), the intellectual (Mindset), and the emotional (Heart-set) competencies. The seamless integration of all four "sets" lead to the optimal learning experience, not only as a learner or student but also as a human being.
- Regarding its practical implementation, some examples are analysed: an emotional approach to lessons (check-ins and check-outs), techniques to prevent losing the attention of learners (body-related activities), diversified exercises to ensure a good working atmosphere, etc.
- The Lov-e & Car-e-osity model revolves around the humanization of the e-learning process, that is, fostering the relationship between learners and teachers while cherishing the education experience. For that, a 7-step plan was formulated: use stories as a beacon, apply gamification, leverage Behavioral Economics, implement the Gestalt Process Phenomenon, search for the Flow Experience, provide continuous feedback and celebrate the journey.

Are we intentionally deskilling ourselves?

- Outsourcing to AI?
- Deskilling of teachers – cognitive atrophy?
- Are teachers enfeebling their impact by using AI ?
- Who and what deserves our time and effort?
- Who decides what will AI do instead of teachers?

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Are we intentionally deskilling ourselves by outsourcing tasks to AI? What risks/benefits of your overreliance on AI have you already identified and what other risks/benefits may arise?

https://padlet.com/lkralj15/AI09

Just because we could
doesn’t mean we should.

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