

Human-centred use of AI in education: policies and competencies

Fengchun Miao, UNESCO

Outline

Part I: UNESCO's resources

Part II: A basic policy framework

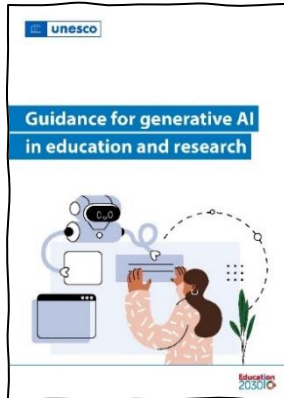
Part III: AI competency frameworks

UNESCO main publications on AI in education

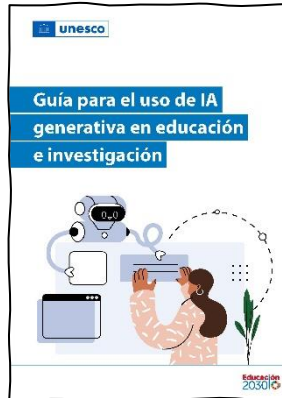
(Ranking by download in all UNESCO publications)

All available in Russian

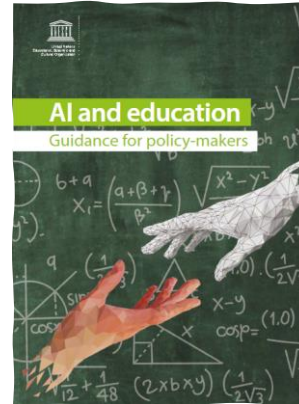
No 1



To 10



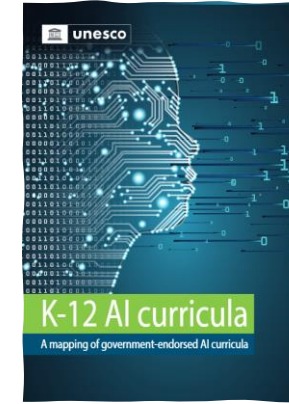
To 10



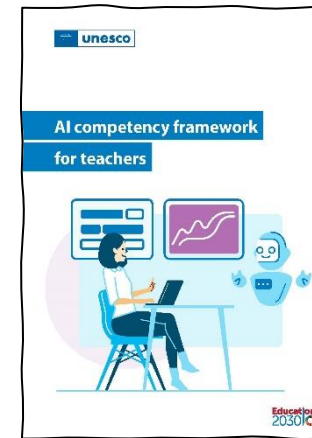
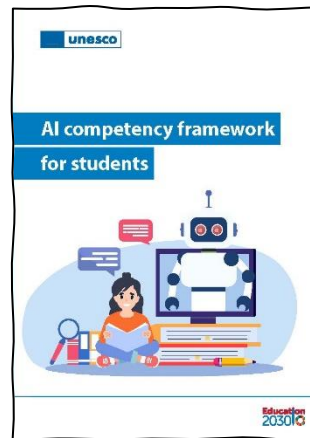
To 20



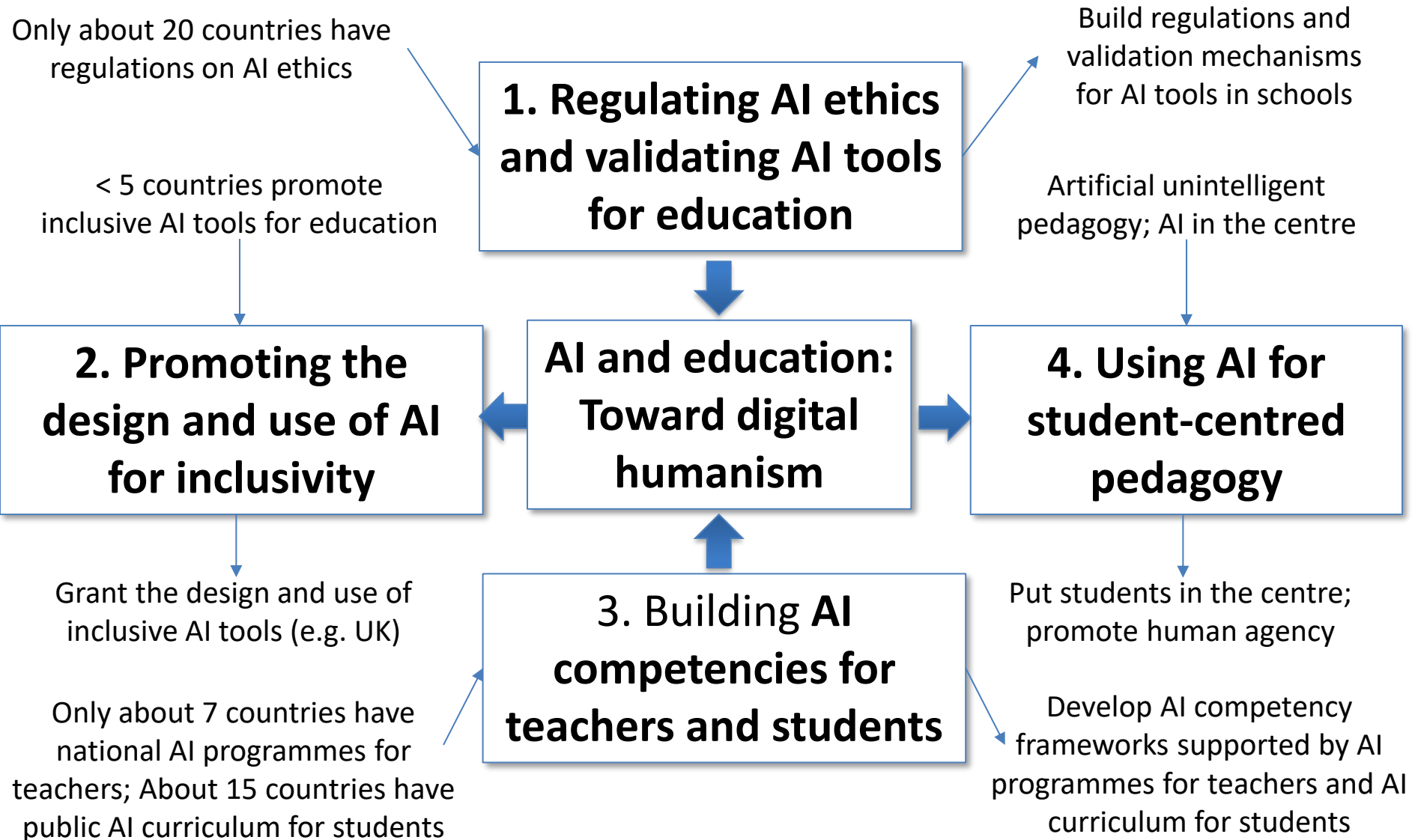
To 30



To 40



A basic policy framework on AI and education



A human-AI interaction model for examining appropriateness of AI for education

AI: from moving targets to proportionality

E.g. ChatGPT-3

- Data sources: Crawling webpages (61.75%), Social media (8.86%); Libraries(15.9%), wikipedia (3.49%)
- Languages: EN (92.647%), FR(1.819%), DE+ES +IT+PT+ NL (2.60%), ...CN (0.099%)
- Unexplainable methods to generate outputs
- Generative AI doesn't understand semantics and the real world

Production and storage of data

Access to and control of data

Data and algorithm based decision-making

Human-AI interfaces and AI devices

Human-machine collaboration

Education: knowledge evolution

Individuals

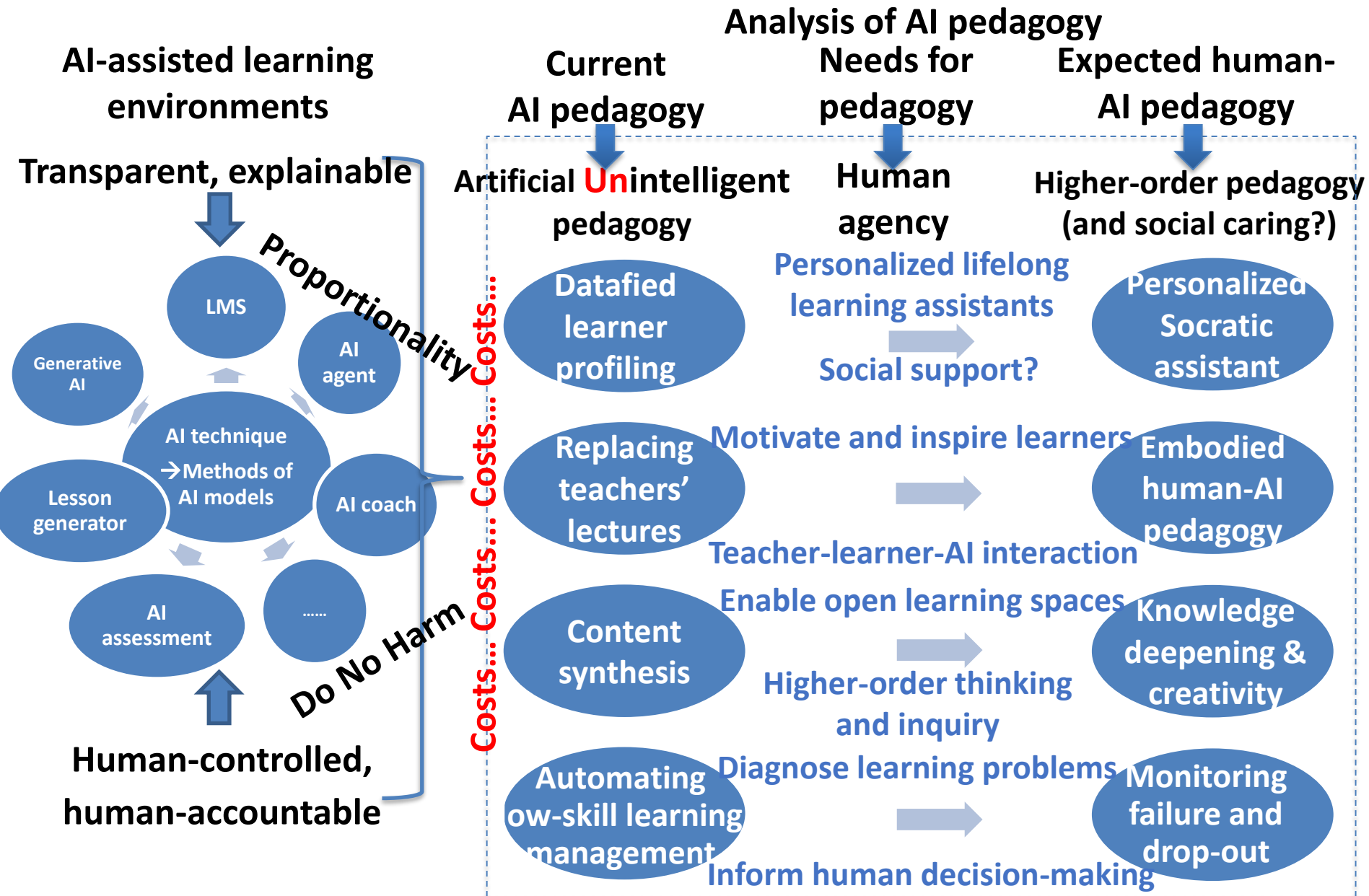
Human interaction

Sovereign states

Environment and ecosystems

1. Evolution of knowledge production
2. Projection social values
3. AI job skills; challenging learning outcomes

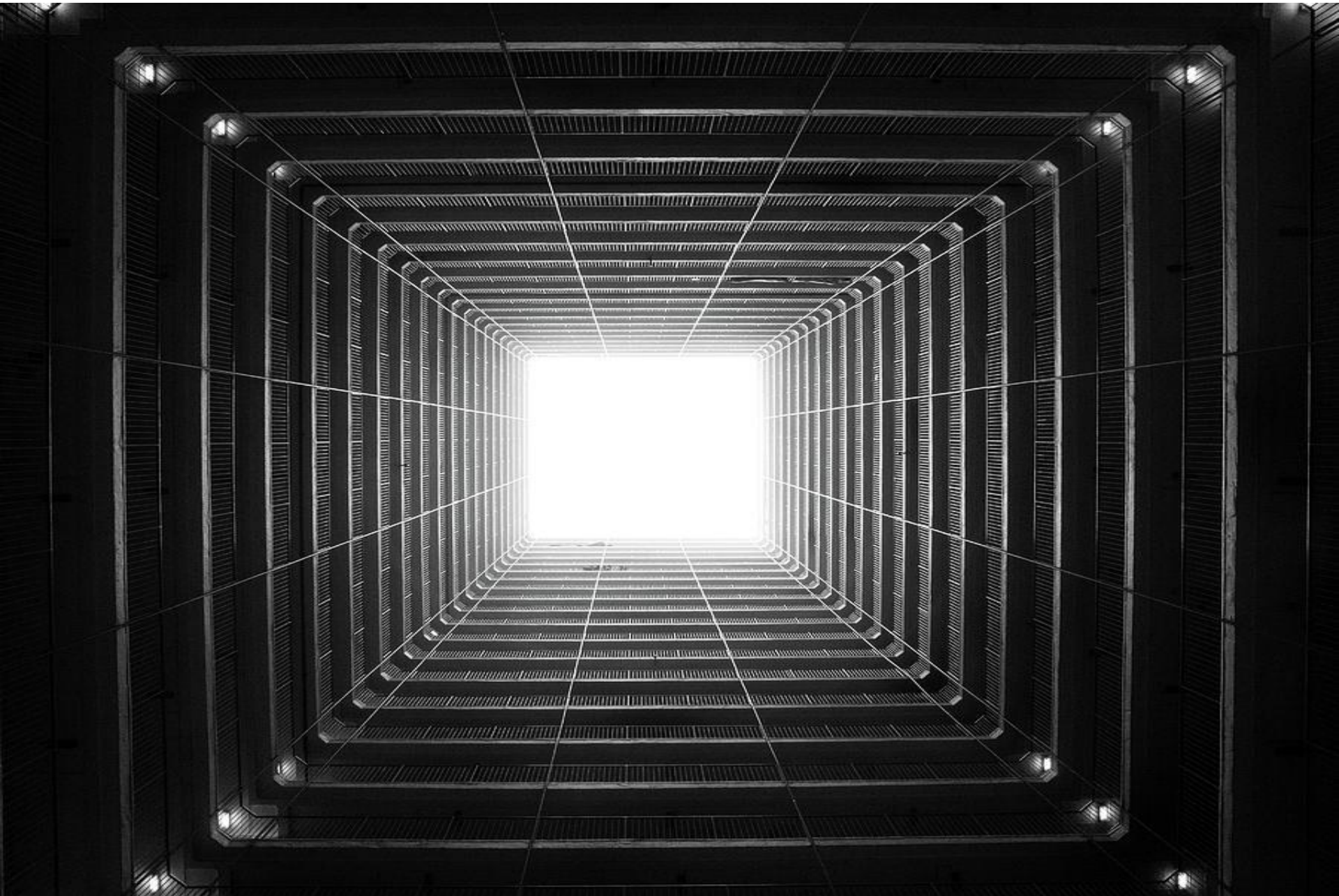
Basic thoughts on AI pedagogy



AI competency frameworks for students:
Preparing responsible and creative AI citizens



The real world in the upcoming AI era is a world to build ...



*What sort of **human societies** do we want to build in the AI era?*

*What sort of **human competencies** do we need to prepare for the desired human societies in the AI era?*

What sort of AI society citizenship?

- **Critical AI citizens, not AI addicts.**
- **Responsible users of AI, not deepfake distributors.**
- **Co-creators of AI tools, not only passive prompters.**
- **Leaders of next generations of AI, not only rote coders.**

AI CFS – A living document

Principles

The Framework

Specifications

Implementation

AI CFS: basic questions and definitions

Aspects	Progression Levels		
	Understand	Apply	Create
Human-centred mindset	Uphold human values when interacting with AI: what and how?		
Ethics of AI	Core ethical principles everyone needs to understand and practice: from users to designers?		
AI techniques and applications	Transferable AI knowledge and skills: foundational AI techniques and interdisciplinary AI foundation?		
AI system design	Insights into AI systems: when should not use AI solutions? authentic methods and decisions on AI systems?		

AI CFS: basic questions and definitions

AI literacy for citizens
and
foundation for students



Exit mastery level
for
all students



Extended outcomes
and
elective curricula



Aspects	Progression Levels		
	Understand	Apply	Create
Human-centred mindset	Human agency	Human accountability	AI society citizenship
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

Specifications: definitions

Level 1: Understand

	COMPETENCY	CURRICULAR GOALS	PEDAGOGICAL METHODS	LEARNING ENVIRONMENTS
Human-centred mindset	Human Agency (Definition)	<ul style="list-style-type: none"> ▪ “AI is human-led” ▪ Human control over AI ▪ Dynamic human agency vs. machine agency 	Conflict-based pedagogical methods	<ul style="list-style-type: none"> ▪ Unplugged learning settings ▪ Basic digital environments
Ethics of AI	Embodied ethics (Definition)	<ul style="list-style-type: none"> ▪ AI dilemmas and reasons behind ethical conflicts ▪ 6 ethical principles on AI ▪ Internalization of ethical principles 	Scenario-based understanding and internalization	<ul style="list-style-type: none"> ▪ Critical uses of open-source AI tools, programming libraries, and datasets
AI techniques and applications	AI foundations (Definition)	<ul style="list-style-type: none"> ▪ Definition and scope of AI ▪ How AI is trained based on data and algorithms ▪ Interdisciplinary foundation for AI 	Authentic task based “learning by doing”	
AI system design	Problem scoping (Definition)	<ul style="list-style-type: none"> ▪ When AI should not be used ▪ Scoping a problem to be solved by an AI system ▪ Assessing an AI systems’ need for data, algorithms, and computing 	Project based learning	<ul style="list-style-type: none"> ▪ Open-source AI datasets, programming libraries, and cloud computing

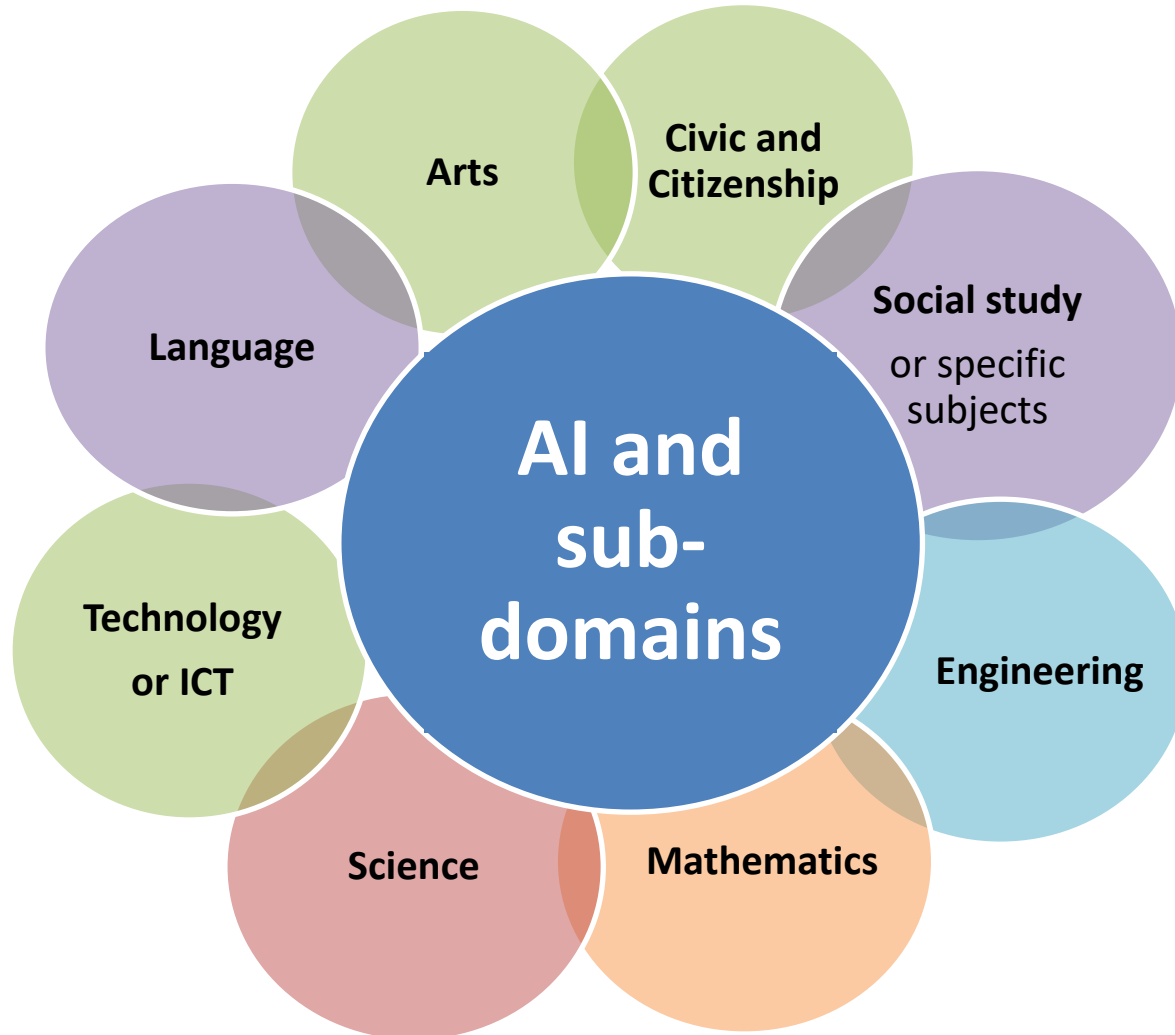
Implementation strategies



Explore the building of **AI curriculum systems**

Implementation strategies

1. Build interdisciplinary core and cluster AI curricula

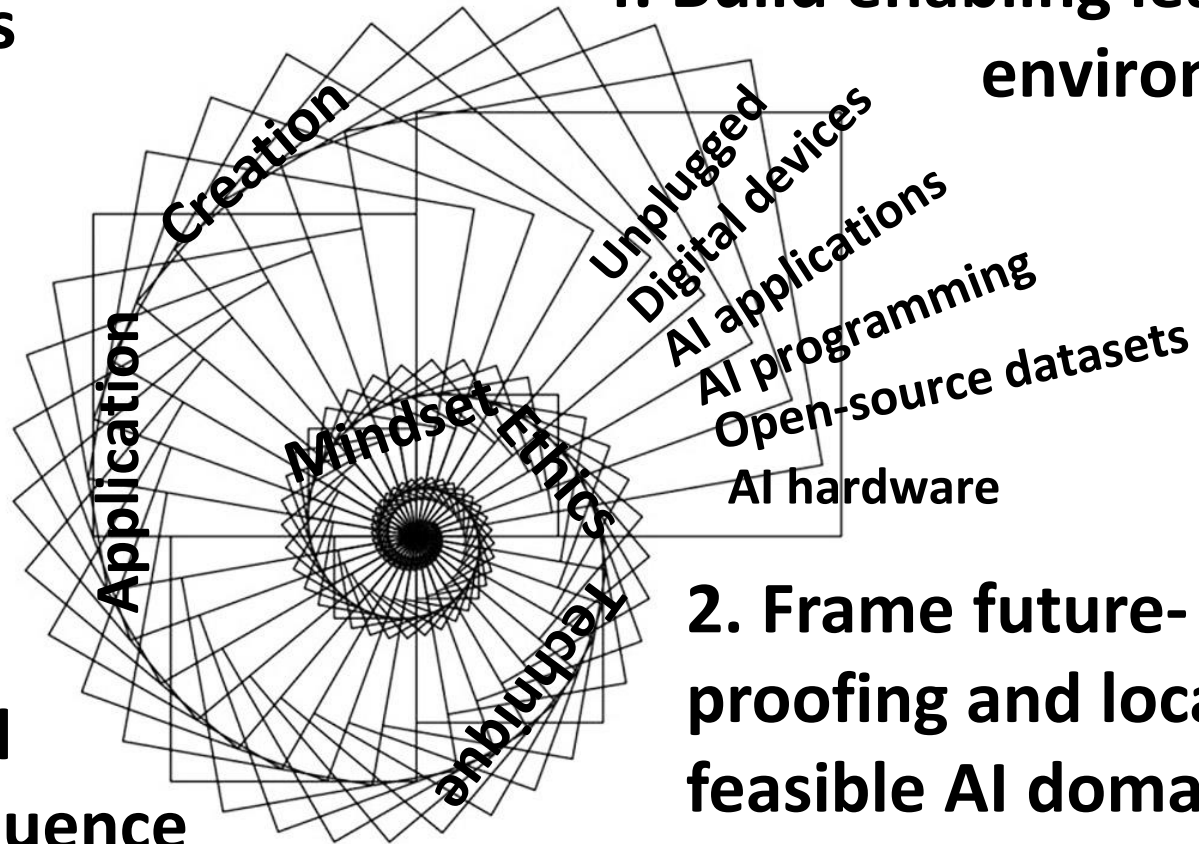


Implementation strategies

6. Guide cohort-based pedagogical activities

5. Promote professionalization of AI teachers

4. Build enabling learning environment



3. Tailor spiral Curricular sequence

2. Frame future-proofing and locally feasible AI domains as carriers of curriculum

AI competency frameworks for teachers:

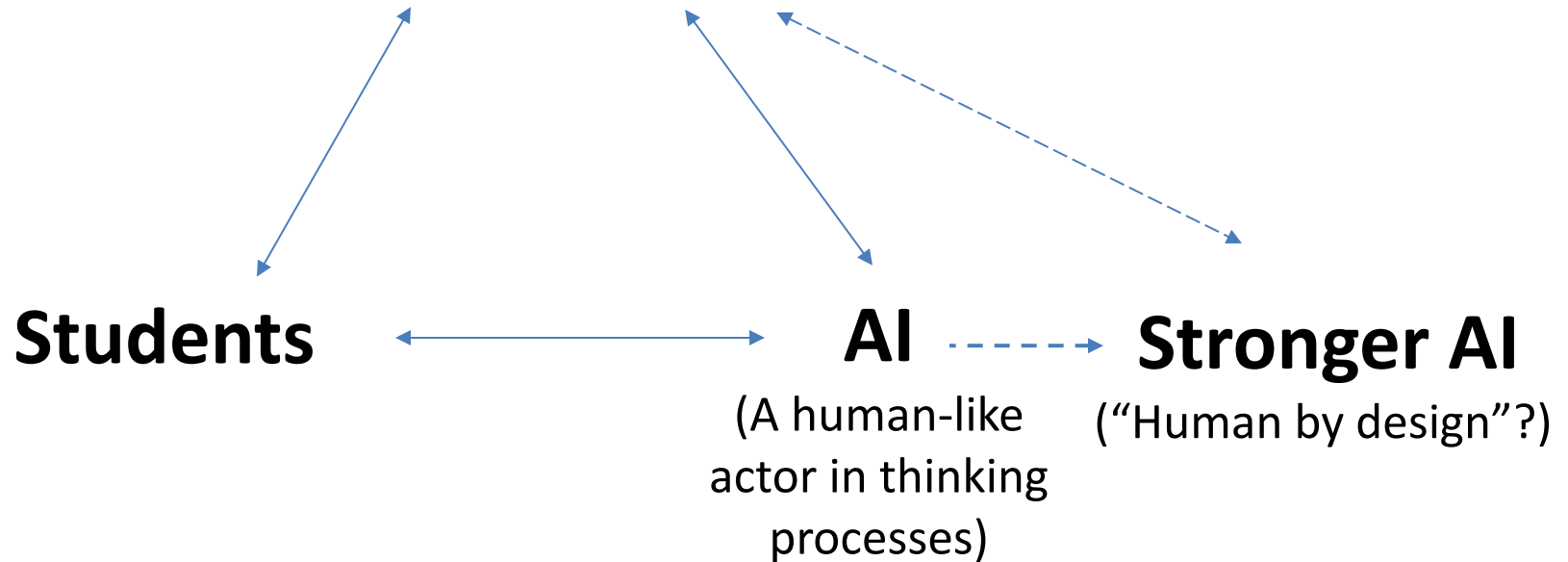
Towards rights-based autonomous use of AI in education



AI competency frameworks for teachers

Why

Teachers



Protect teachers’ rights.

Define teachers’ new roles and competencies.

Teachers' duties in AI societies

Teachers should be **trained and supported** to become:

- Critical reviewers of AI and AI society citizens
- Co-creators of ethical rules and role models for AI ethics
- Co-designers of AI-assisted learning settings
- Accountable designers and facilitators of AI-pedagogy
- Co-leaners of AI

AI CFT – A living document

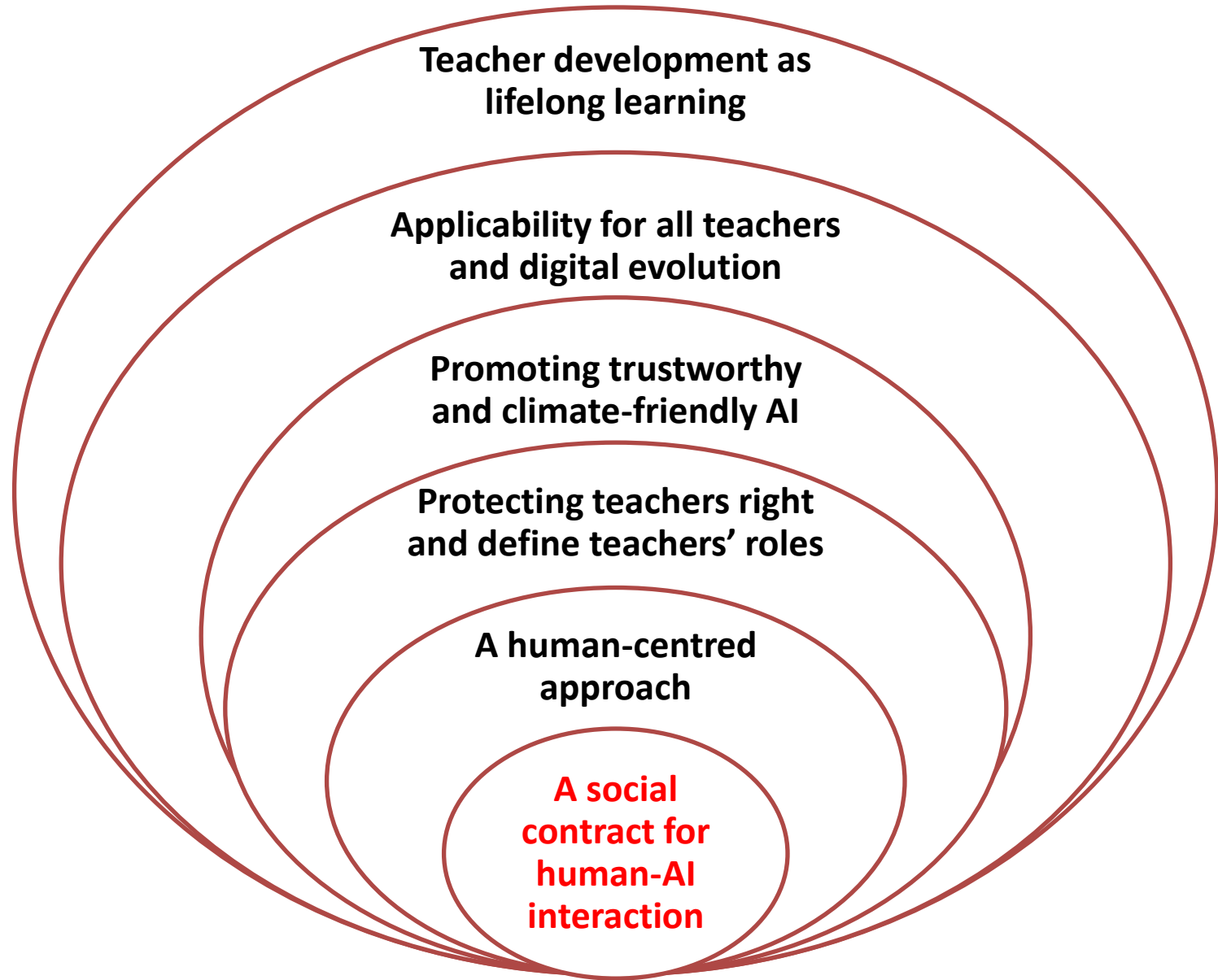
Principles

The Framework

Specifications

Implementation

Principles: a basic social contract for human-AI interaction



AI CFT: The framework matrix

Aspects	Progression Levels		
	Acquire	Deepen	Create
Human-centred mindset	Critical reviewers of AI and AI society citizens		
Ethics of AI	Co-creators of ethical rules and role models		
AI foundations and applications	Co-designers of AI-assisted learning settings		
AI pedagogy	Accountable designers and facilitators of AI-pedagogy		
AI for professional development	Co-leaners of AI		

AI CFT: The framework matrix

Training goals
or AI literacy for
all teachers



Training & support
goals of practices for
master teachers



Goals towards
transformation for
expert teachers



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

Specifications

Attitudinal & behavioural changes



Level 1: Acquire

COMPETENCY	CURRICULAR GOALS (Indicating training methods)	CONTEXTUAL ACTIVITIES
Human agency	<ul style="list-style-type: none"> ▪ Perspective-taking in AI dilemma; tool-based benefit-risk examination. ▪ Corporate and individual decisions of creators may affect AI. ▪ Overreliance on AI undermines thinking skills and human agency. ▪ Basic tips to help protect human agency when using AI in education 	<ul style="list-style-type: none"> ▪ Debunk AI hypes ▪ Why some AI tools should be banned ▪ Spotlight risks ▪ Know basic dos and don'ts
Ethical principles	<ul style="list-style-type: none"> ▪ Case-based controversies around AI ▪ Essential ethical principles based on use cases ▪ An association between ethical principles and AI regulations ▪ Inclusivity in the use of AI 	<ul style="list-style-type: none"> ▪ Evaluating ethical dilemmas ▪ Knowledge-map of ethical principles ▪ Personal observation of local regulations
Basic AI techniques and applications	<ul style="list-style-type: none"> ▪ Basic conceptual knowledge on AI; How an AI tool is developed based on data and algorithms ▪ Hands-on operation of different types of AI tools ▪ Users' testing of AI tools ▪ Teachers' basic collection of AI tools 	<ul style="list-style-type: none"> ▪ Conceptual map of AI ▪ 'Navigation compass' for selection of AI tools ▪ Collection of appropriate AI tools
AI-assisted teaching	<ul style="list-style-type: none"> ▪ Lesson analyses ▪ Being mindful of research on the use of AI in teaching ▪ Pedagogical validation of AI and instructional design on AI-assisted teaching 	<ul style="list-style-type: none"> ▪ Starting from teaching needs ▪ Iterative cycle of 'design-implementation-reflection' ▪ Evaluating effectiveness against needs
AI enabling professional learning	<ul style="list-style-type: none"> ▪ Teachers' motivation for professional learning in the AI era ▪ Self-assessment on teachers' AI readiness and competency gaps ▪ Awareness of teacher-facing AI tools ▪ Leveraging of AI for professional learning 	<ul style="list-style-type: none"> ▪ Awareness of teachers' basic rights and obligations in AI era ▪ Self-assessment of AI readiness ▪ Use of AI to open professional learning horizons

Implementation strategies

Teachers' **AI competencies** is **only the necessary condition** for effective use of AI in education.



Teachers should not be held accountable for building sufficient conditions beyond their duties.

Implementation strategies

1. **Regulate AI and ensure trustworthy AI** tools for education
2. Build **enabling policies and conditions** for AI in education
3. Formulate **local AI competency frameworks** for teachers
4. Design and streamline **training and support programmes**
5. Develop **contextual performance-based assessment tools**

Thanks!

f.miao@unesco.org

<https://www.unesco.org/en/digital-education>

<https://www.linkedin.com/in/fengchun-miao-5b999077/>