Consultation Meeting on AI Competency Frameworks for Teachers
Tuesday, 25 October 2022; 13:00 – 14:30 (CET)

1. BACKGROUND

The 'AI and the Futures of Learning' project is centred on three strands of work: (1) a report with recommendations on AI-enabled futures of learning; (2) a guidance on ethical principles on the use of AI in education; and (3) a guiding framework on AI competencies for school students.

This online consultation meeting aimed to:

- inform experts and representatives about UNESCO's humanistic vision to AI and education;
- collect strategic advice and expert opinions on AI competency frameworks for teachers;
- share examples of AI competency frameworks for teachers; and
- synthesize recommendations on the development of Frameworks and follow-up actions.

2. INTRODUCTION

Mr Sobhi Tawil, Director, Future of Learning and Innovation Team, *UNESCO*

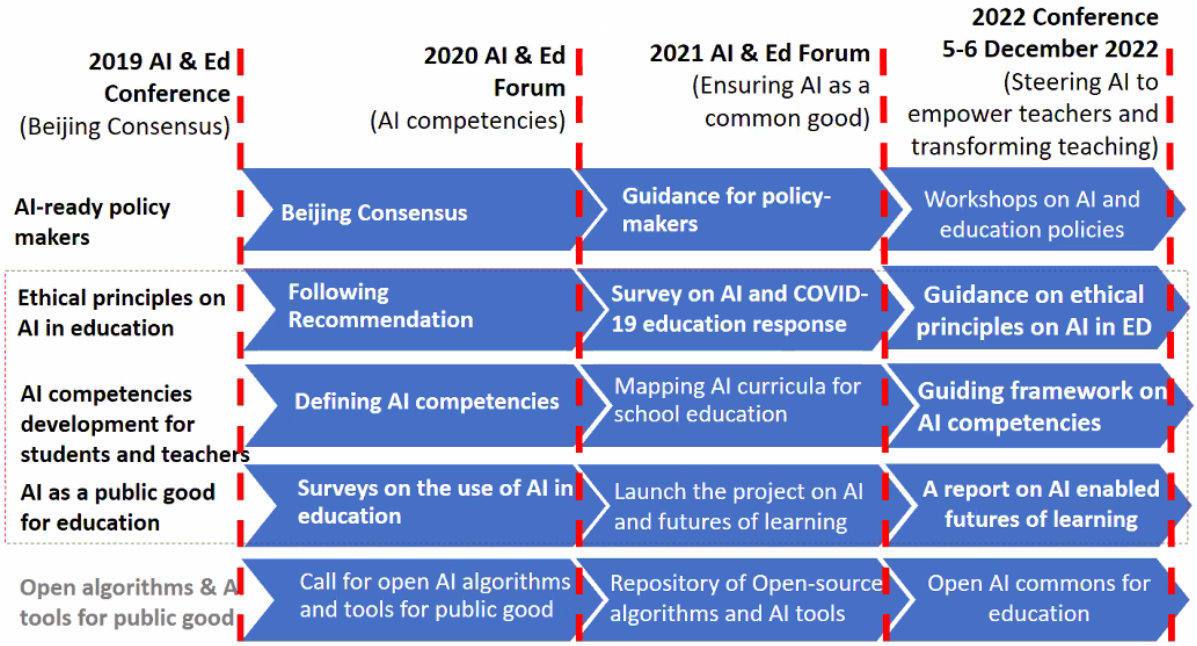
- The UN Transforming Education Summit, held in New York in September 2022, identified six actions including "Digital Learning: Assuring and improving quality public digital learning for all". Mr Tawil stressed the importance of the word "public" in digital learning for all.
- **Teachers** are central to the transformation of education. The task is to empower teachers, help them make choices (e.g. which decisions can be made by machines, and which need to be reserved for humans), foster learner-centred pedagogy, and ensure that ethical norms are applied. The development of **digital and AI competencies for teachers** needs to be addressed as well.

Mr Fengchun Miao, Chief, Unit for Technology and AI in education, Future of Learning and Innovation Team, *UNESCO*

- Based on UNESCO's international standards, guidelines, conferences and work with 60+ Member States, the emphasis has shifted in recent years from supporting ICT policies to supporting **digital learning** policies. This includes an

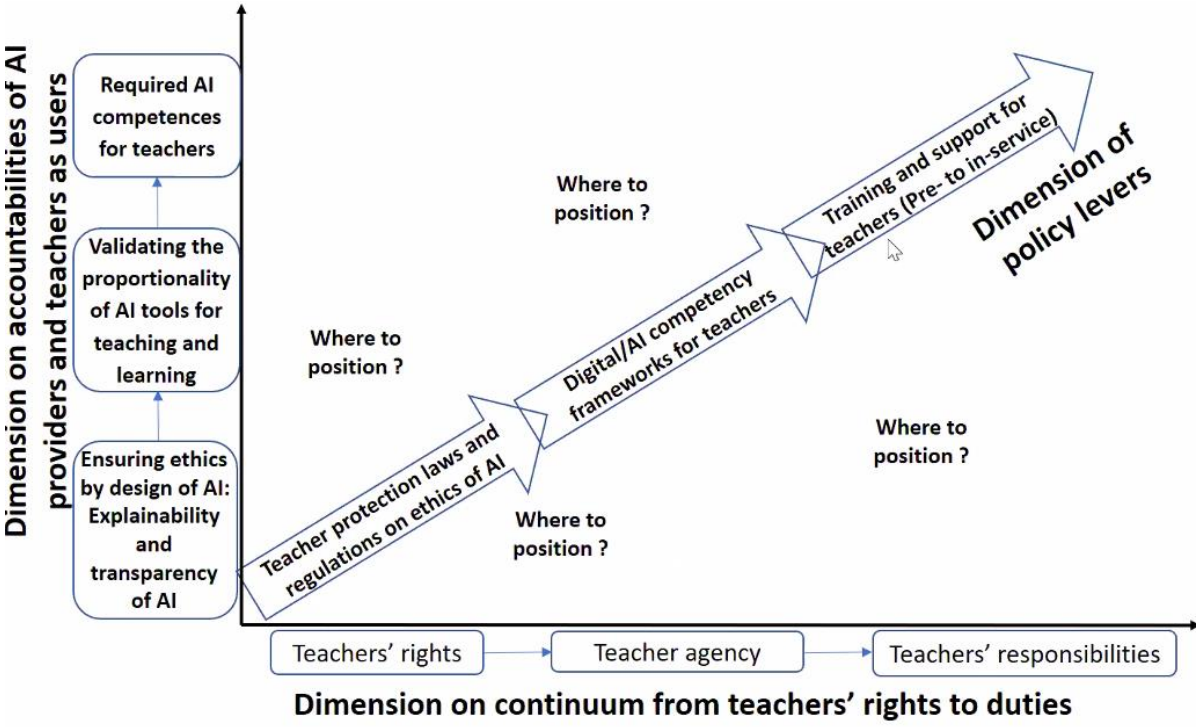
emphasis on **Open Educational Resources** (**OER**) and emerging technologies such as **blockchain** and **Artificial Intelligence** (**AI**).

- Key publications include: *Beijing Consensus on AI and Education*, *Qingdao Declaration*, *Recommendation on OER*, *AI and Education: Guidance for Policy-makers*, *Guidelines for ICT in Education Policies and Masterplans*, and *Guidelines on the Development of OER Policies*.
- There have also been many grassroot case studies (including compendiums, mapping of AI curricula, policy toolkits, and case studies on the COVID-19 response).
- Mr Miao outlined the progress and future plans for UNESCO's work on AI and Education:



- UNESCO's humanistic vision for AI competencies for teachers, towards digital humanism: ethics and social impact in education → AI foundations for teachers → understanding and applying domain specific AI tools → data-informed decision-making (for teaching, social caring and learning management) → digital humanism.
- Four components of digital humanism: '**learning to be**' (redefining digital humanity), '**learning to learn**' (learning is more than the digitalisation of knowledge – we need to rethink learning theory), '**learning to live together**' (new social relationships that emerge due to the new technologies), and '**learning to do**' (identifying the skills needed for solving emerging problems as well as for new jobs and entrepreneurship).

- Four key issues that AI competencies for teachers should address: the main areas of competence (e.g. AI literacy – values, knowledge and skills), protecting teachers' rights, professional development for teachers, and teachers as key participants in the development of the competencies.
- Teachers require different levels of knowledge about AI, as well as specific discipline knowledge, to move from being content curators to knowledge producers, and to replace low-skill tasks with high-skill tasks.
- The ethics of these issues are paramount (building on the *Recommendation for the Ethics of AI* agreed upon by Member States), including transparency, proportionality, do no harm and explainability.
- AI competencies for teachers throughout the life cycles of AI and teaching professions:



Ms Lidija Kralj, Education Analyst for EU European Schoolnet, member of the European Commission Expert Group on Artificial Intelligence and Data in Education, Croatia

- The EU Commission's *Ethical Guidelines on the Use of AI and Data in Teaching and Learning for Educators* published today. The *Guidelines* includes a chapter on teachers' competencies – helping teachers appreciate the opportunities and the challenges.
- This chapter starts with professional engagement to understand the emerging competencies, for example: AI and learning analytics, how to initiate and

promote ethical and effective AI, how data from sensors are used to train AI systems, who has access to data, and high-risk use cases under the proposed AI Act.

3. SPEAKERS

- Mr Colin de la Higuera, Professor, Nantes University, **France**
- Mr Ki-Sang Song, Professor, Korea National University of Education, the **Republic of Korea**
- Ms Hanbing Yan, Professor, East China Normal University and Mr Di Wu, Professor, Central China Normal University, **China**

4. THEMATIC RESPONSES

The current context

France: There is heavy investment in AI research and education; but coding (and not AI) is taught in teacher training, primary schools and secondary schools. AI is mentioned in late secondary, while there are many university courses. AI and education software has been developed for primary school students. The French MOOC on AI is Class'Code IAI. In fact, AI is already a part of education (e.g. GPT3 to write essays, Google translate in language learning, Photomath in mathematics), impacting homework, exams and motivation.

Korea: AI is being taught in teacher training (AI concepts and types, AI in daily life, AI and data, AI and machine learning, the effect of AI and ethical issues). In secondary schools, the emphasis is on machine learning (not on the impact of AI on life).

China: AI is being taught in teachers' professional development (using intelligent aids by means of data-driven systems, intelligent training programmes, empowering teachers with AI, nationwide online courses for teachers, and focus on ICT competence). 30 micro-credentials are applied for ICT competency evaluation (for teachers with and without Internet access).

Current Initiatives

France: AI4T (AI for Teachers) Erasmus+ project, involving ministries of education, evaluators and research labs from five countries (France, Ireland, Italy, Luxembourg and Slovenia). The aim is to build and test an AI training programme (using curriculum, books, videos, testing and dissemination) for teachers. A key challenge is that all five

countries have a different goal for the introduction of AI into education.

Korea: Building on the already extensive existing work to develop AI education capabilities of teachers and AI literacy for students, Korea focused on curriculum composition, teaching and learning design, teaching and learning execution, and teaching and learning evaluation.

China: China has several projects to empower teachers with AI (e.g. Shuishan Online Space for Computer Competency development for teachers, ECNU workshops for K-12 teachers, National Intelligent Education platform for Primary and Secondary Schools). The goal is to make full use of AI, big data, 5G and other emerging technologies. The country is working with 56 universities across 46 Chinese regions to build an Intelligent Learning Environment (Smart Classroom), online space for AI competency development for teachers, intelligent evaluation of teachers' competencies, exploring data-driven teaching and learning models, and developing AI competency framework and curriculum.

<u>AI Literacy</u>

France: Teachers need to be trained to understand the differences between science and magic, and the risks (e.g. is it democratic to allow AI to make/motivate decision-making if the population does not understand how those decisions are made?). AI literacy will involve re-examining some fundamental ideas (e.g. the difference between determinism and stochasticity). This requires debate: shallow learning vs in-depth learning, how to keep the teacher in the loop, and how to evaluate AI training courses.

Korea: AI education is needed for teachers, so that they can cultivate AI literacy in students. AI literacy is the "ability to know what AI can do and what it needs to do, and to use AI in everyday life and work environments, taking into account the ethical impact that AI can have on humans and society." It requires an agreed upon definition of AI, making connections between AI and other subjects (such as social sciences), and the four areas of teacher competence mentioned earlier. By 2025, the aim is that 1,000 teachers per year are trained in AI competencies, via masters programmes.

China: AI Literacy involves three operating levels: from understanding AI (core concepts, core algorithms, typical applications), to using AI, and to creating AI.

Developing teachers' AI competencies

France: Competencies need to address: what AI tools exist for teachers, what is the influence of AI on education, and how does AI change the relationship between teachers and learners, ethical and human-centred issues?

Korea: Need to look at the 'curriculum composition' and construct new education content by fusing AI with other subjects (AI convergence topic exploration, convergence education model, context reconstruction). This involves the ability to construct new educational topics, and to design classes with new teaching and learning methods for AI convergence. AI convergence classes must be implemented, while maintaining empathy with learners. Evaluation should include the performance of learners, the instructors' class designs and execution, and the use of data-based learning diagnosis (using big data). It requires incorporating AI into teacher training and into school curricula, infrastructure (e.g. EdTech in universities), and assessment of teacher competencies (e.g. via competitions). The MoE, MOPEs and KERIS drive this process.

China: Example training module is "Feel AI", AI Awareness and Social responsibility (covering what is AI, typical applications of AI, and impact of AI). Involves experiential activities to promote AI understanding and application (e.g. using WeChat to search for AI applications for exploration and evaluation). Online courses on concepts, knowledge, methods, tools and platforms, and subject based AI tools; with teaching methods including lecture videos, micro-courses, reports and case studies.

5. COMMENTS FROM OTHER PARTICIPANTS

Contributors: Agata Majchrowska, Amal El Fallah Seghrouchni, Di Wu, Kaushal Kumar Bhagat, Kelly Shiohira, Mutlu Cukurova, Salvador Sala and Wayne Holmes

How can teachers' rights and teacher agency be protected when introducing AI into classrooms and other education settings?

- AI competences are important for a democratic society. There is a need to embed human rights from the start.
- We need to empower and protect teachers and their agency, and to protect students – which is achieved by developing AI literacy and by giving teachers time.

What are the main areas of AI competency for teachers?

- AI literacy and competencies are important to incorporate both the technological and human dimensions of AI.
- The curriculum of competencies are needed to accommodate both national and international standards.
- We need to be careful that the AI competencies and curriculum for teachers avoid perpetuating AI myths and hyperbole.
- AI competencies need to incorporate pedagogical competencies beyond knowledge transmission (e.g. constructivist project-based learning, etc.).

How can training on AI for teachers be streamlined (being integrated into national standards or frameworks for teachers or standalone, and being streamlined from pre-service teacher training to in-service teacher training)?

- AI competencies are important to address in initial teacher education and for in-service training – essentially the same topics, but needing targeted curricula.
- We need to determine how to use AI to improve teaching (e.g. mobile apps for teachers in classrooms).
- There is a need to question what decisions AI should be allowed AI to make. The human teacher is always responsible despite what the computer suggests – a firm line needs to be held. It requires teachers to have a grounded understanding of how the decisions are made/recommended, developing trust, which in turn requires the AI itself to be trustworthy.

- How can teachers and key stakeholders be involved in the development of AI competency frameworks for teachers?

    - Developing an AI curriculum for teachers should involve the teachers (i.e. it should be co-created in a democratic process).