Design Requirements for LTA on Artifical Intelligence and Digital Pedagogy

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Background: LTA Digital Pedagogy in the Age of AI

- LTA partnership is coordinated by the Estonian NA, to foster evidence-based Training and Cooperation Activities (TCAs) to enhance digital pedagogy and AI integration in School Education (SE) and Vocational Education and Training (VET)
- Target groups of this LTA:
  - **Micro** (classroom) level: teachers, educational technologists, digital educators, teachers/staff working with disadvantaged groups, newcomers to Erasmus+
  - **Meso** (institution/school) level: SE/VET institution leaders, teacher educators, project coordinators, education network organisations
- Planned Training & Coordination Activities (TCA):
  - National and international **trainings**, contact/thematic **seminars** and **webinars**;
  - **Study visits** on digital pedagogy and artificial intelligence (e.g. Finland–Estonia, Netherlands–Germany)

Policy context

- Horizontal Digital Priority: Digital Decade targets for 2030, skills development, digital infrastructure and services
- AI Act: legal requirements for the safe and ethical use of AI in high-risk areas like education, including strict data protection measures for student information
- Digital Education Action Plan (2021-2027), 2 priorities and 14 actions:
  - Fostering the development of a high-performing digital education ecosystem
  - Enhancing digital skills and competences for the digital transformation
- Digital Competence frameworks: DigComp and DigCompEdu
- UNESCO AI literacy framework, soon to be integrated in DigComp 3.0

Goals of LTA research

- **Research problem**: no systematic overview of existing national strategies, policies, initiatives, institutions, support activities and training needs for supporting uptake of digital pedagogy and AI in the school and VET systems of the partnership countries
- **Objective**: to identify national strategies, initiatives, and support activities for applying digital pedagogy and AI in School Education (SE) and Vocational Education & Training (VET) across partner countries, in order to map their training needs that can be then addressed by planned TCAs
- Research design combined:
  - Survey research based on Excel form, each NA filled in for their country (Ai related policies, programs and research)
  - Desk research, literature review and analysis of documents

Research questions for survey research

- What are the key national policies, strategies, and guidelines for implementing AI in SE and VET?
- What programs or training initiatives exist in partner countries to support: teachers with:
  - AI in teaching, learning and assessment
  - AI ethics in education
  - AI security and safety
- What other significant initiatives, planned or already implemented, relate to supporting AI in the educational context of partner countries?
- What support mechanisms and resources are provided to schools and teachers for implementing digital pedagogy and AI in schools across different countries?
- What recent research findings and analytics exist related to AI in SE/VET?
- What are the best/featured practices of implementing AI in SE and VET in partner countries, as well as including these topics in teacher education?

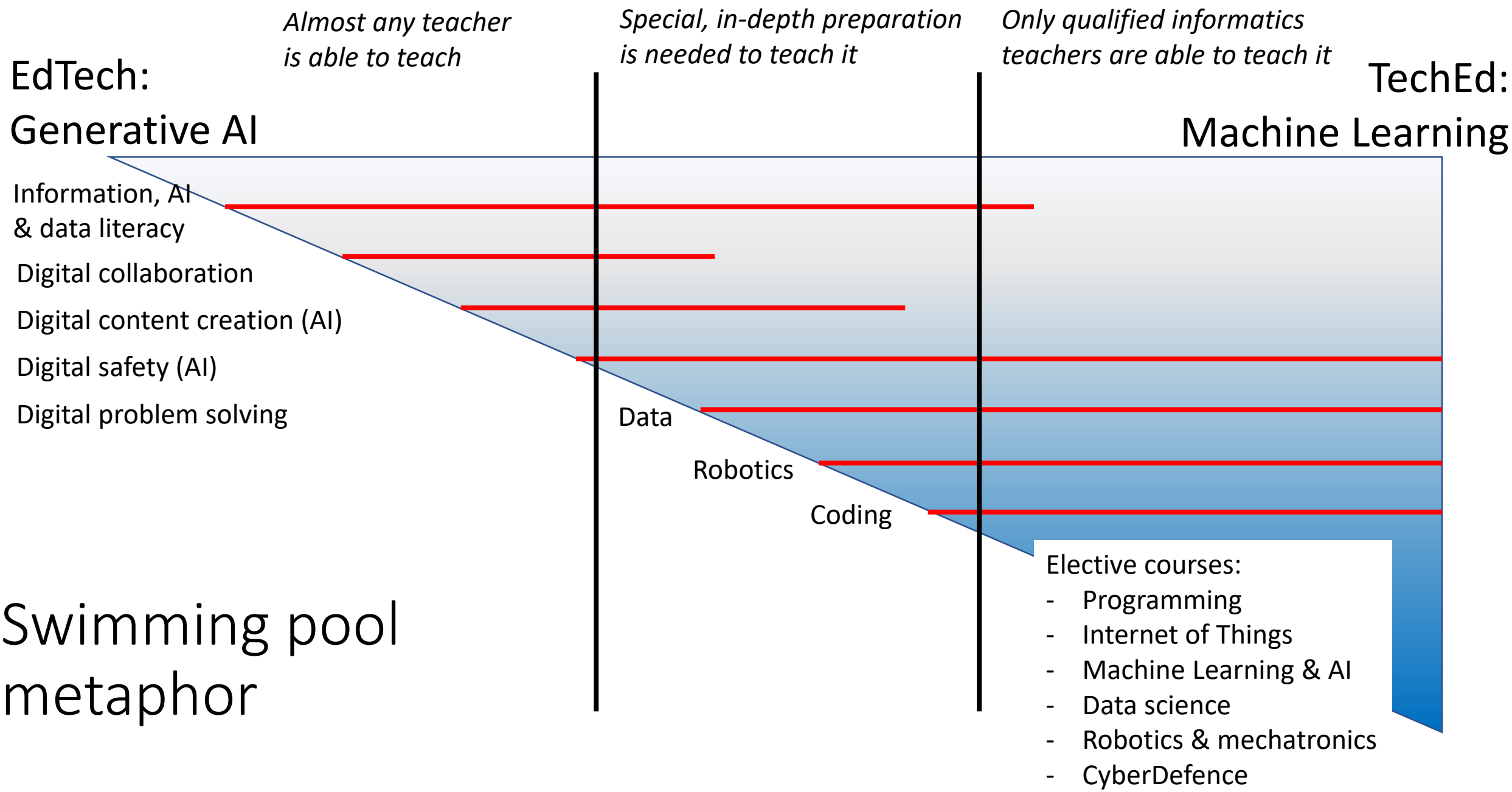
Research questions for desk research

- What are the main challenges & competence gaps in the target group regarding AI use in teaching and learning?
- How are schools' readiness for change, teachers' competencies, and students' AI literacy and ethics addressed by policy and training?
- How are curricula and assessment practices aligned with digital pedagogy and AI?
- What are the barriers to AI implementation in education (e.g. legal restrictions regarding learner and teacher privacy, data protection regulations, infrastructure)?
- What are the main challenges identified in previous LTAs and European studies related to the use of AI in teaching and learning in SE and VET?
- What types of support structures (e.g., training, policy, infrastructure, networks) are seen as critical for successful digital transformation at school and VET level?
- What recommendations can be drawn from the analysis to inform future Erasmus+ actions, policy development, or capacity-building in the context of digital pedagogy and AI?

Results

- Data collection:
  - 40+ sources collected and analysed for desk research
  - partner countries have submitted the survey data (CZ, FI, IT, LV, PL, NL, LU, LT, MT, ET)
- Innovative practices are emerging rapidly in almost all partner countries, policy development is lagging behind
- Research on AI-pedagogy is in its infancy, mostly case-based and descriptive, split between two perspectives:
  - educational technology – use of Generative AI in teaching & learning any subject
  - technology education – how AI works (data science, machine learning, coding)
- Generative AI is a "moving target" – today the existing support and training aims at basic prompt engineering skills, which might become irrelevant in 5 years (to be replaced by RAG, built-in workflows and other expert-level solutions)

Swimming pool metaphor



Introducing a new topic (e.g. AI) in schools

- New compulsory course (e.g. Computational Thinking in UK)
- New elective course (e.g. Coding in Estonia)
- New part of an existing course (Coding in Finnish maths curriculum)
- New cross-curricular key competence (e.g. Digital Competence)
- Regular wide-scale projects (e.g. DigiEduHack)
- Extracurricular program (e.g. Lego robotics)
- Regular competitions (e.g. Kangaroo, Bebras)
- Regularly repeated campaign day/week (e.g. Safer Internet Day)
- Learning resources for students and teachers (e.g. AI-leap in Estonia)

Multiple levels on educational innovation

- **Supra** level: EU level regulations, funding programs, frameworks
- **Macro** level: systemic changes in educational legislation & regulations, national curriculum reform, final examination, standards, certification
- **Meso** level: participatory change management on the school level, strategies, data-informed decision making, local projects
- **Micro** level: teacher training & professional development, guidelines for changing practices on classroom level, self-assessment

Design requirements for LTA

- Focus on common issues for EU countries: AI ethics, digital pedagogy, change management
- Clearly separate two perspectives: EdTech and TechEd
- Intervention levels: meso is priority
- Collecting and sharing best practice on the grassroot level
- Research-informed practices

Conclusions

- Defintion/conceptualisation of "AI" in existing policies and resources:
  - Prior to 2023 (machine learning & reasoning) vs post-ChatGPT (Generative AI)
  - Two competing perspectives: Technology Education vs Educational Technology
- Disconnection of AI-related initiatives from previous EU-wide attempts on standardisation, pedagogy and assessment of Digital Competence
- Caution regarding US-centric technology providers (GDPR)
- Potential contribution by LTA:
  - TCA training activities: on **AI-pedagogy**, **tools & ethics**; Contact/thematic seminars on **AI literacy development and assessment**, **AI change management** and **AI in teacher education**; **best practice distribution**
  - Study visits: to **leading national hubs** of AI in Education (such as NOLAI, GenerationAI in FI in NL or AI-Leap Foundation in Estonia); also **bilateral peer learning activities** based on matching interests (e.g. NL-DE, ET-FI)