

# Curriculum knowledge and AI as a critical friend: Teachers' challenges and opportunities using Moodle LMS

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# Abstract

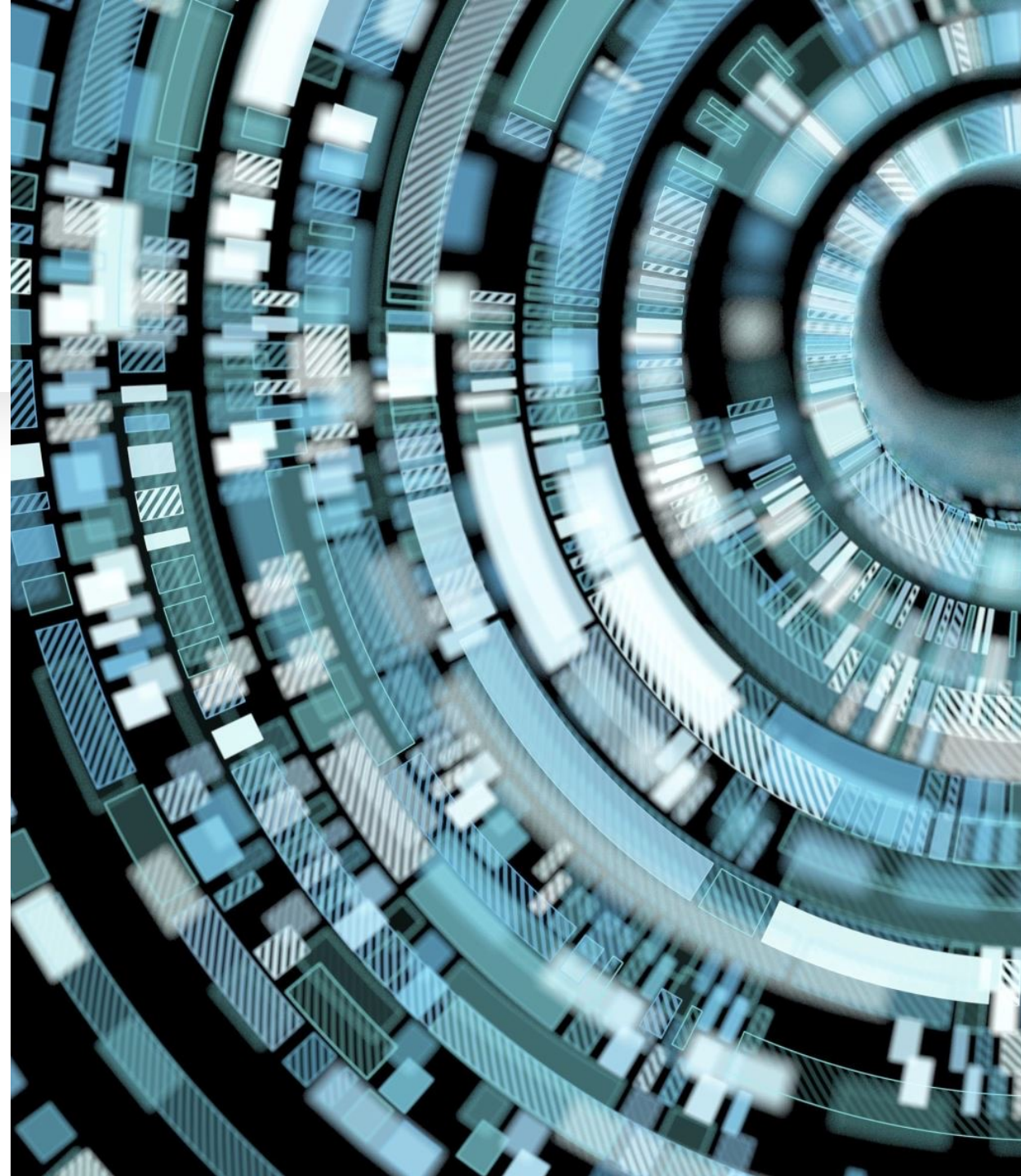
University teachers **design courses sometimes with little knowledge of the curriculum and of their students' prior knowledge of the course topics.** Nuanced understanding of students' prior knowledge is pivotal for curriculum development and personalised instruction, serving as a cornerstone in the pursuit of educational excellence. This workshop proposal outlines an approach focusing **on the integration of Artificial Intelligence (AI) as a Critical Friend for teachers,** using existing Learning Management Systems (LMS) data in order to create new solutions to enhance insights into students' learning backgrounds. **We discuss the capacity of AI algorithms in supporting teachers with designing course content, assignments and grading and analysing various components of LMS data, such as student performance, participation, and assignment submissions, mapping out individual learning trajectories.** Anchored in constructivist learning theories and the concept of adaptive learning, this workshop seeks to support teachers in focusing on individual learner needs by uncovering patterns, strengths, weaknesses, and gaps in understanding, supporting curriculum planning and instructional strategies. **We highlight AI's potential to revolutionize educational settings by providing teachers with a deeper comprehension of students' prior learning, thereby facilitating the design of more relevant, timely lessons, bridging learning gaps, and enhancing content delivery, leading to improved learning outcomes.**

# Outline of the workshop

- Introduction
- Challenges of being a new teacher – how AI can support new teacher?
- Curriculum knowledge
- Adaptive learning or should we say adaptive systems' support for learning
- Examples of using AI in designing a course
- Group works
- Conclusive remarks

# What are the large language models (LLMs)?

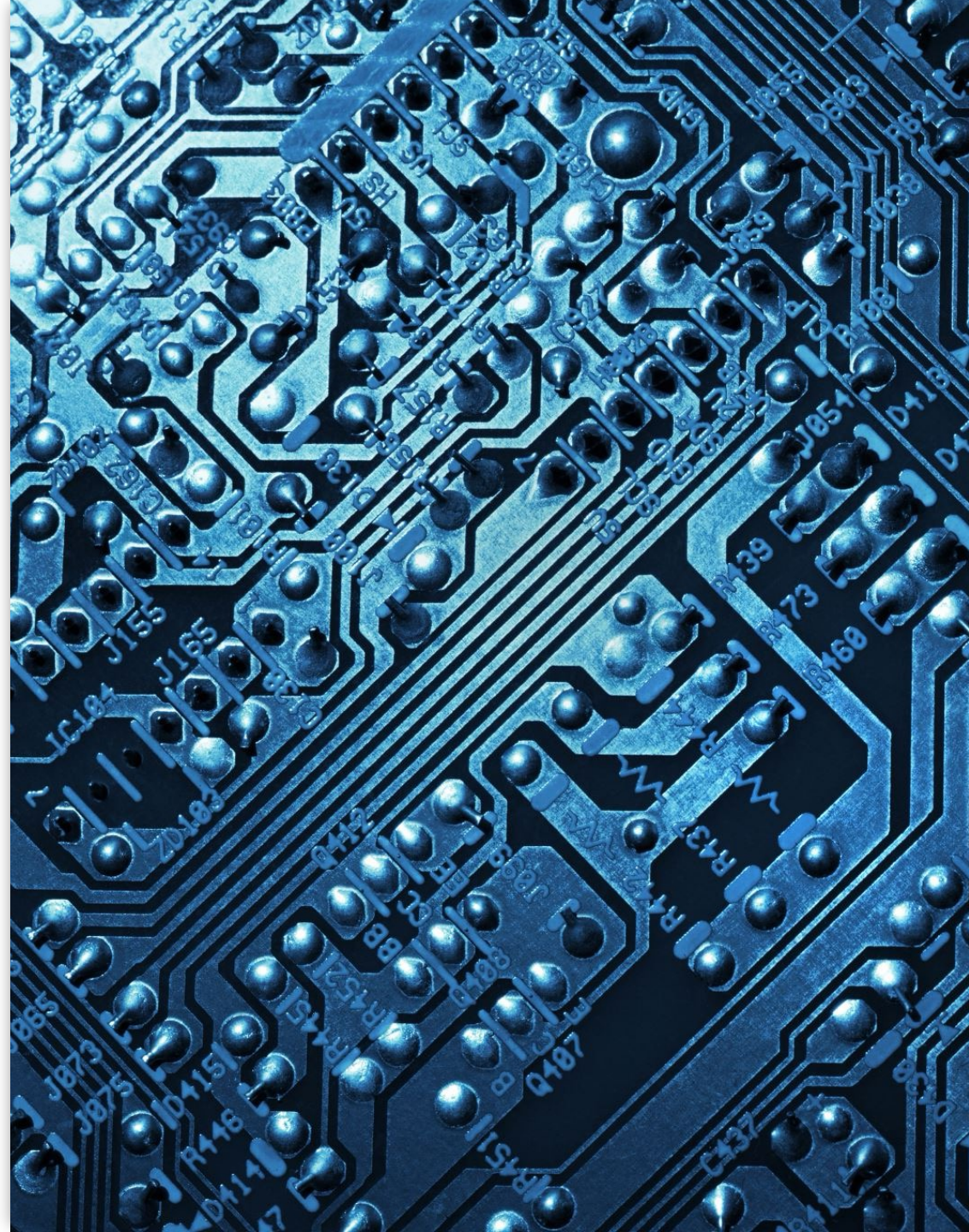
- **Large language models (LLMs)** are deep learning models (a subset of machine learning models) that are pre-trained using vast amounts of data.
- Analysing these massive datasets enables the LLM to learn probability relationships and become proficient in the grammar and syntax of one or more languages.
- LLMs generate coherent and context-relevant language.
- To put it simply, LLMs respond to human language by producing coherent text that appears human-like.
- Most recent LLMs such as OpenAI's GPT models are based on a neural network architecture called a transformer model.





# What are GPT systems?

- GPT systems are **general-purpose AI models** according to the definition laid down by Article 3(63) of the EU Artificial Intelligence Act (adopted, but not yet officially published as of 23 May 2024).





# Challenges of being a new teacher in a university

- When are you asked to teach a new course and do not know how the course is related to other courses of Bachelor's or Master's Programme?
- When do you not know what your students already know or have learned about the topic?
- What kind of curriculum knowledge do you have?



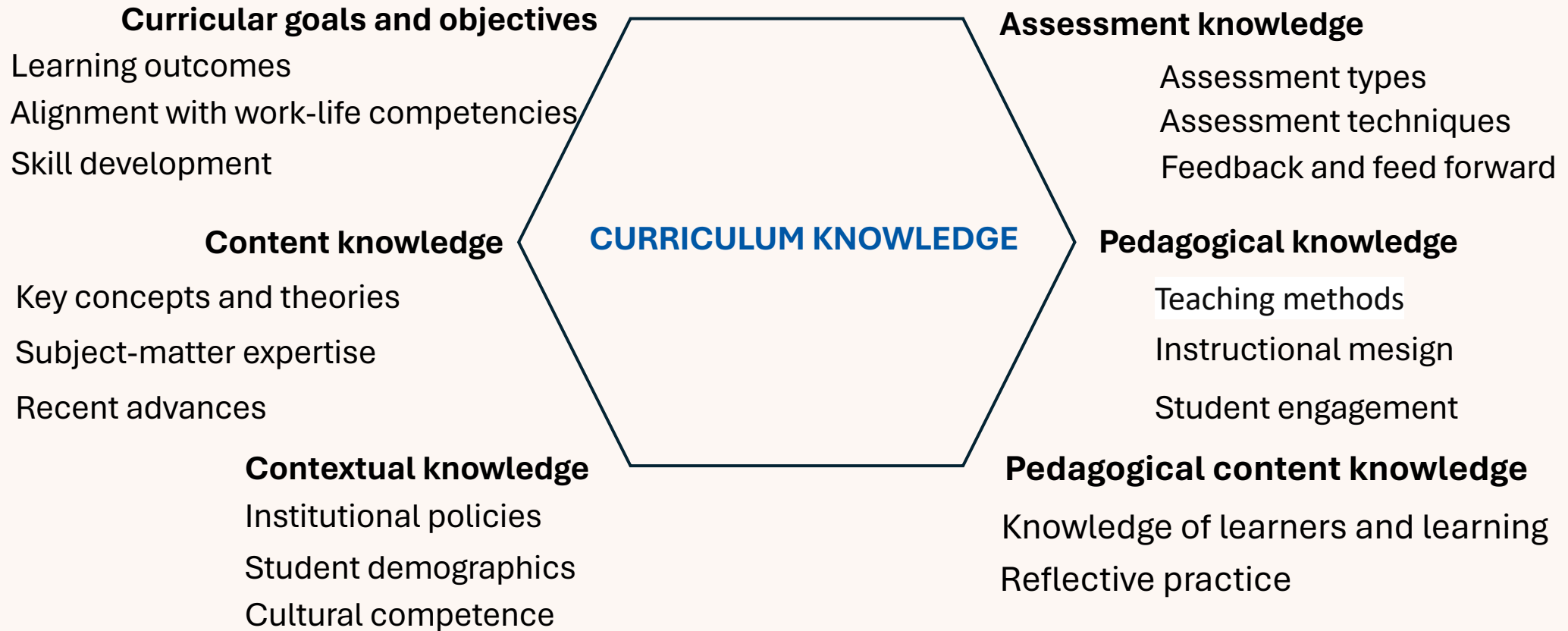
# What is curriculum knowledge?

- Curriculum knowledge is academics' understanding of the (basic) theories, concepts, skills and competencies that students are expected to learn while studying in a study programme.
- Curriculum knowledge is broader than just the knowledge required for the course you are teaching.

Definition of 'curriculum knowledge' developed by discussing with ChatGPT



# Dimensions of curriculum knowledge





# Curriculum knowledge, how to proceed with Moodle

- Moodle has a competence tool (not available in UH nor Aalto Moodle)
  - Needs a lot of manual work
- Any easy way to share the content of each course to other teachers?

1. **Central Repository:** Use Moodle's built-in repository system to create a shared space for documents. Sites such as 'Private files' or creating a specific course category for teachers can be helpful.
2. **Creating a Dedicated Course:** Create a course that is specifically aimed for teachers. Enroll all teachers into this course and use this course to share materials, documents, announcements, etc.
3. **File Sharing Activity:** Inside the dedicated course, use an activity module like "File" to upload and share documents. You can organize files in folders for better management.
4. **Permissions:** Ensure you set the appropriate permissions so that only teachers can access and edit the documents as necessary. In Moodle, this is usually handled through roles and capabilities which can be adjusted by the administrator.
5. **Forums for Collaboration:** Utilize forums for discussions, allowing teachers to talk about the shared documents, make suggestions, and collaborate on projects.
6. **Database Activity:** Another efficient way is to use the Database activity to collect, organize, and share files. Teachers can add entries and upload files which can also be searched and commented on by other teachers.
7. **Workshop Activity:** In situations where you want teachers to review each other's documents or work collaboratively on files, the Workshop activity can be a great tool to use.
8. **Regular Backups:** Ensure that the documents and the entire Moodle site are regularly backed up. Losing important educational documents can be a severe issue.
9. **Training and Support:** Make sure all teachers are adequately trained on how to use Moodle for accessing and sharing documents. Provide continuous support to answer any queries or troubleshooting.
10. **Use External Integrations:** If Moodle's built-in functionalities are insufficient, consider integrating other document management tools like Google Drive, OneDrive, or Dropbox into Moodle through plugins or LTI tools.

• By implementing these steps, you can efficiently manage and share documents among a large number of teachers in the Moodle LMS, fostering a collaborative and organized educational environment.

# Adaptive learning or adaptive systems supporting learning

- AI can significantly enhance adaptive learning by providing personalized educational experiences tailored to individual student needs.
  - Personalized study plans
  - Real-time feedback and assessment
  - Content recommendations
  - Predictive analytics
- **Learning Management Systems (LMS):** Systems like Moodle and Blackboard incorporate AI to adapt content delivery based on student interactions.



## OUTLINE of a European EfD Curriculum Deliverable 4.1

**Democrat**

Education for Democracy

# Future competencies

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<https://democrat-horizon.eu/>



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A group of business professionals in an office setting. A woman in a grey blazer is pointing at a tablet held by another person. A man in a dark suit and tie is also looking at the tablet. There are coffee cups on the table. The scene is brightly lit, likely from a window in the background.

# Group work tasks

# Abstract

University teachers **design courses sometimes with little knowledge of the curriculum and of their students' prior knowledge of the course topics.** Nuanced understanding of students' prior knowledge is pivotal for curriculum development and personalised instruction, serving as a cornerstone in the pursuit of educational excellence. This workshop proposal outlines an approach focusing **on the integration of Artificial Intelligence (AI) as a Critical Friend for teachers,** using existing Learning Management Systems (LMS) data in order to create new solutions to enhance insights into students' learning backgrounds. **We discuss the capacity of AI algorithms in supporting teachers with designing course content, assignments and grading and analysing various components of LMS data, such as student performance, participation, and assignment submissions, mapping out individual learning trajectories.** Anchored in constructivist learning theories and the concept of adaptive learning, this workshop seeks to support teachers in focusing on individual learner needs by uncovering patterns, strengths, weaknesses, and gaps in understanding, supporting curriculum planning and instructional strategies. **We highlight AI's potential to revolutionize educational settings by providing teachers with a deeper comprehension of students' prior learning, thereby facilitating the design of more relevant, timely lessons, bridging learning gaps, and enhancing content delivery, leading to improved learning outcomes.**

# Group work tasks

- 1. Task using Curre, ChatGPT or Copilot:** Analyse the content of a pertinent webpage (relevant to your discipline). Create a prompt for your chosen AI: ***What do you want the AI model to do?*** Add the address of the webpage after the prompt. Repeat if needed. Examine and discuss the results.
- 2. What ethical and data protection issues do you identify in relation to the analysis of course and student data **of the Moodle Learning Platform?****



# CONCLUSIONS

- Moodle as LMS needs some development towards open sharing and to enhance AI
- AI as a critical friend as such already applicable
- [Curricula for Education](#) for Democracy based on a framework of responsible democratic competences
- Educator's Forum (disciplinary based) for sharing learning materials and earning credits:  
[forum4edu.com](http://forum4edu.com)



 **Democrat**  
EDUCATION FOR DEMOCRACY



# May Moodle be with you!

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