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Learning about and with Generative AI

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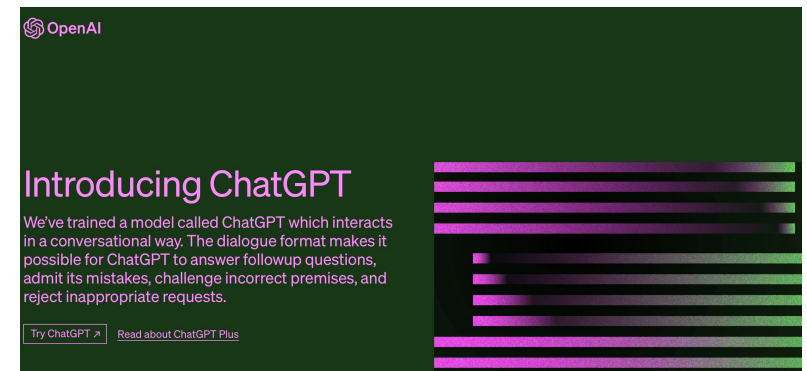
AI in Circle U.: Connecting Minds, Shaping the Future, online, May27-2025



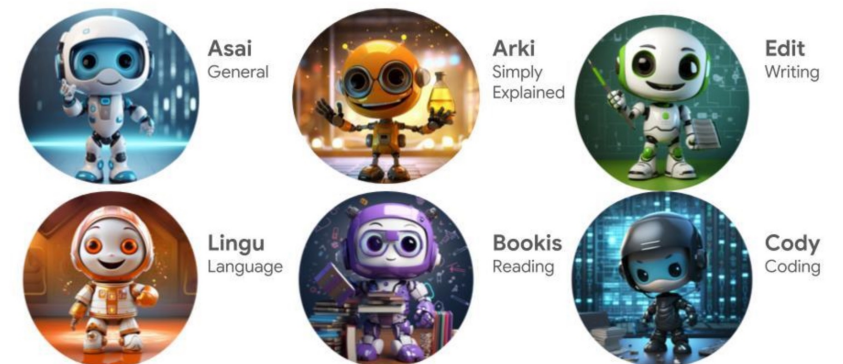
Educational use of AI – one example

- Learning in the Age of Algorithms (LAT)
- Project funded by Research Council of Norway (2023-26)
- Didactics for responsible use of AI, involving six lower secondary schools in a large municipality outside Oslo
- Methods for training teacher as competent AI practitioners and some to become end-user developers for subject–specific chatbot customization
- Classroom research methods
 - Case study, video observation, interview, log data
- Data excerpts from two case studies are shown

1) GPT 3,5 user interface og 2) visual appearance of customized chatbots building on a GPT model



1)



2)

Challenge and dilemma

- *Challenge:* Important to use AI in education a way that do not deprive pupils of important cognitive processes required for learning
- *On one hand:* It is easy for pupils to ask AI to provide answers to an assingment, but they do not learn much!
- *On the other hand:* Teachers ask pupils to develop generic skills such as to: simplify, explain, evaluate, identify sources, or elaborate texts. This tackles the challenge but may take time away from subject matter focus (math, history, language education, etc.)



<https://sloanreview.mit.edu/article/designing-ai-systems-with-human-machine-teams/>

Conceptual framework

- Autonomous vs. assistive AI
- Modes of interaction with GenAI

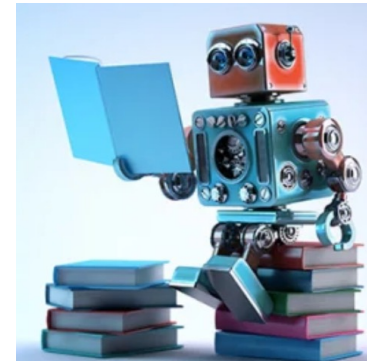
Adapted image from: <https://www.aunsec.org/news/impact-artificial-intelligence-ai-higher-education-and-why-non-engagement-not-your-option>



Autonomous vs. assisted AI

1) Autonomous chatbot and 2) assisted chatbot

- *Autonomous AI*: The computer performs most of the intellectual activity; the student provides feedback/prompt
- *Assisted AI*: The student performs most of the intellectual activity; the computer provides help and hints through feedback/prompt
- We are researching various didactic approaches that combine autonomous and assisted AI in different ways



1)



2)

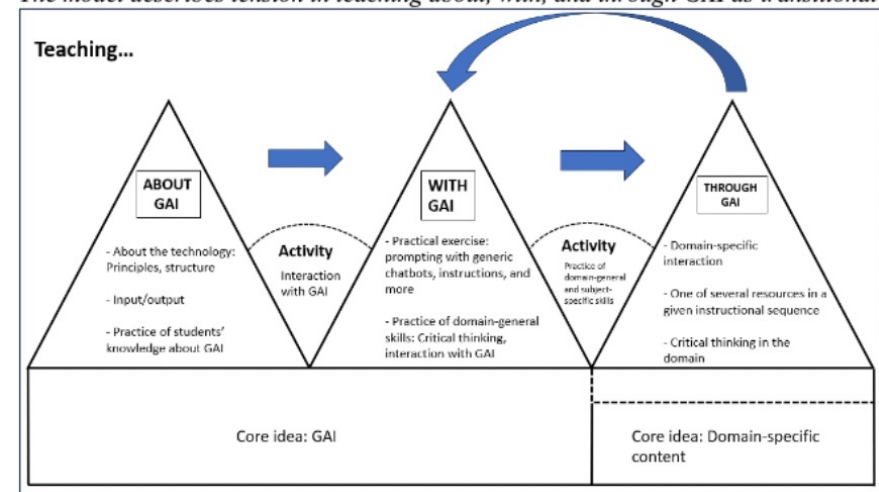
Modes of interaction with GenAI

Teaching about, with, and through GenAI

- *Learning about GenAI* : how to use GenAI
- *Learning with GenAI*: developing generic skills for mastering GenAI (e.g., students can critically assess its output and adjust direction of inquiry)
- *Learning through GenAI*: using GenAI seamlessly by interacting with the domain-specific content of your interest in chosen subject-domain (e.g., history, math, computer science)

Figure 2:

The model describes tension in teaching about, with, and through GAI as transitional processes



Teaching model for GenAI in education. Created by Henrik Tjønn, doctoral student

Data example 1: Generic skills

1. *Researcher*: How much emphasis did you place on the subject of history in this setup ((referring to last social studies class))? And how much emphasis did you place on critical source analysis as a generic skill?
2. *Teacher*: Critical source analysis was probably the most important part. That they should receive an introduction, a sort of crash course. (...) But being critical of sources is something they must do. It's not so important that they grasp the World War I part ((the course covers central aspects of WW1 history)).

Tjønn, H., Ludvigsen, A., & Mørch, A.I. (2025). Generative AI in Norwegian Classrooms: Differences in teaching about, with and through GAI. Proceedings CSCL-2025. Helsinki, June 2025, Accepted for publication.

Data example 2: AI as teacher's assistant

1. [Interviewer_01]

Do you think he could function as a sort of teacher? ((by “he,” is meant Cody, the chatbot the students used in the math class))

2. [Student_04]

But one other thing I'm a bit worried about.

He might not explain how to solve the math problem.

He may just give the answer.

Kjepso, A.B. (2025). KI i skolen: En framtid med muligheter og utfordringer for læring. Master's thesis. Institutt for pedagogikk, det Utdanningsvitenskapelige fakultet, UiO.

Example 2: Interpretation

- Having a chatbot as scaffolding enables tasks that may not otherwise be possible
- Effective use of the chatbot is crucial for realizing its potential
- Problems with AI can lead to student frustration
- It's essential for students to have sufficient knowledge and experience to use the tool effectively
- Lack of understanding may result in frustration, negatively impacting learning quality and outcomes

Lessons learned so far, identifying a new dilemma

Students' use of AI

- Focused on domain specific skills when using GenAI, but may take shortcuts that deprive students important learning opportunities
- Require training in the proper use of GenAI

Teacher's use of AI

- Focused on generic skills when using GenAI because teachers are confronted with advanced technology demanding new skills, and they do not want their students to take shortcuts