

Curriculum (re)design in times of GenAI: the voice of the teachers

Prof. dr. Annelies Raes
Peers & Prompts 17/03/2026

Meet the speaker

- Educational Scientist
- Teacher 'Educational Technology' and 'Leren in maatschappelijk betrokken onderwijs' (LIMBO)
- Supervising research on AI in education:
 - Kristina Krushinskaia: Towards teacher-GenAI complementarity in the teacher's role as a designer of learning environments: preserving agency
In collaboration with Jan Elen
 - Tine Keulemans: Human-centric Explainable AI in Higher Education
In collaboration with Fien Depaepe, Tinne De Laet, Wim Van Den Noortgate and part of ID-N on XAI
- Member of Educational Board
 - Involved in 'Nota Evaluatiebeleid'
- Member of GenAI expert committee
- LIVO Coordinator on track 'digitalisation in learning & education'
- Member of VLIR working group on AI

Agenda

- Educators' voices in Flemish universities: a survey on perceptions, motivations, and perceived changes in educational practices in the advent of GenAI
 - Selection of results
 - Link with current research on AI in education
- Call to reflection and action in education

Thank you so much to all 335 educators who participated in the survey study between February and June 2025

“Educators' voices in Flemish universities: a survey on perceptions, motivations, and changes in educational practices when integrating generative AI into teaching and assessment”



Generatieve AI in het Vlaamse universitair onderwijs

Gebruik, percepties en implicaties voor curriculumontwerp en beleid

Alle beschrijvende resultaten, alsook de vragenlijsten:
<https://survey-genai.my.canva.site/>

Ilse De Vos, Steven Huyghe, Kristina Krushinskaia, Annelies Raes



Onderzoek
van
Onderwijs

Jaargang 55 | nummer 1 | maart 2026

Themanummer!
AI

Verdeling van de respondenten volgens demografische variabelen (N=355)

Gender	Man	185 (55%)
	Vrouw	143 (43%)
	X / zeg ik liever niet	7 (2%)
Leeftijd	18-24 jaar	18 (5%)
	25-34 jaar	112 (33%)
	35-44 jaar	85 (25%)
	45-54 jaar	70 (21%)
	55-64 jaar	49 (15%)
	65 jaar en ouder	1 (<1%)
Onderwijservaring	0-3 jaar	76 (23%)
	4-6 jaar	68 (20%)
	7-10 jaar	37 (11%)
	11-15 jaar	40 (12%)
	Meer dan 15 jaar	114 (34%)

Rol / positie	Professor	139 (41%)
	PhD student	64 (19%)
	Educational assistant at the faculty	53 (16%)
	Postdoctoral researcher	30 (9%)
	Educational support	15 (4%)
	Policy officer with teaching	6 (2%)
	Research assistant	3 (<1%)
	Other	25 (7%)
Universiteit	KU Leuven	250 (75%)
	Universiteit Antwerpen	33 (10%)
	Universiteit Gent	30 (9%)
	Universiteit Hasselt	20 (6%)
	Vrije Universiteit Brussel	2 (<1%)
Wetenschapsgroep / domein	Wetenschap & Technologie	156 (47%)
	Humane wetenschappen	159 (47%)
	Biomedische wetenschappen	20 (6%)

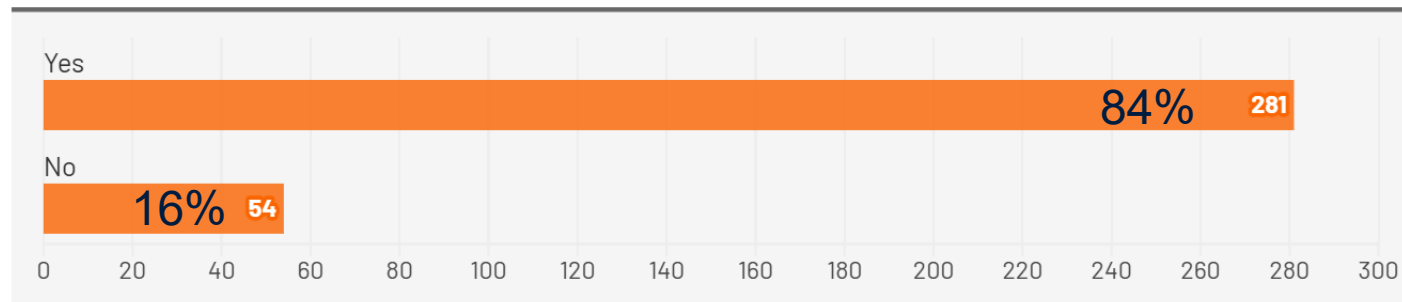
Research questions

1. How frequently is GenAI use (anno 2025) and for which purposes?
2. What is the perceived impact of GenAI on learning?
3. Which learning objectives, teaching methods, and assessment methods are perceived by university educators becoming less or more valuable for future education?

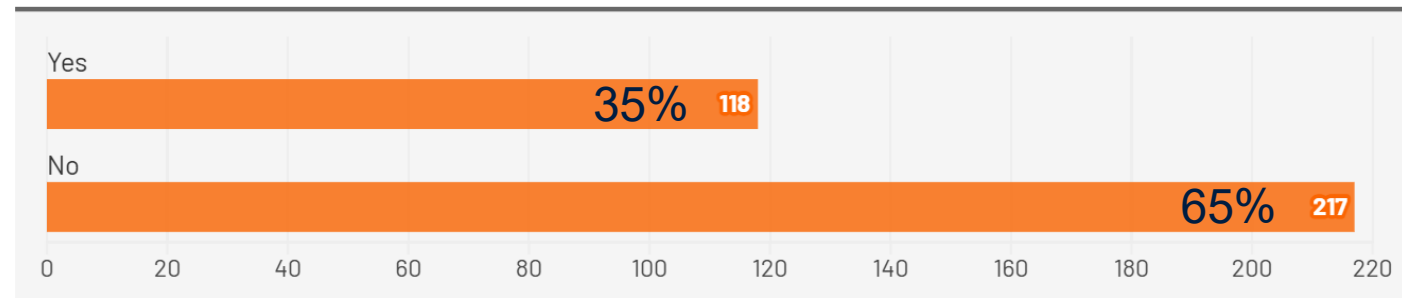
The UNESCO (2023) guidelines for educators state: “...*We therefore need to rethink what exactly should be learned and to what ends, and how learning is to be assessed and validated*” (p. 37).”

The use of GenAI tools

Do you use GenAI tools (regardless of the context; this includes both professional and personal use)?



Do you use GenAI tools in your teaching practices?



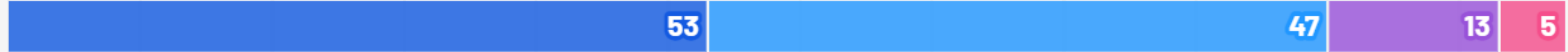
What GenAI tools do you use in your teaching practices?

■ Never ■ Once or several times a month ■ Once or several times a week ■ Once or several times a day

ChatGPT



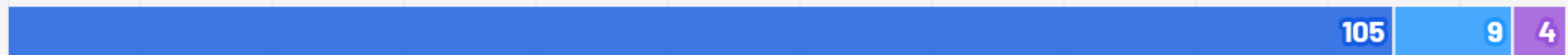
Microsoft Copilot



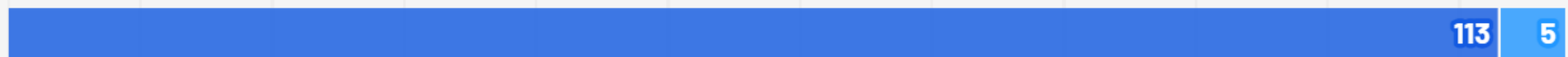
Google Gemini (previously Bard)



Claude



Poe Chatbot



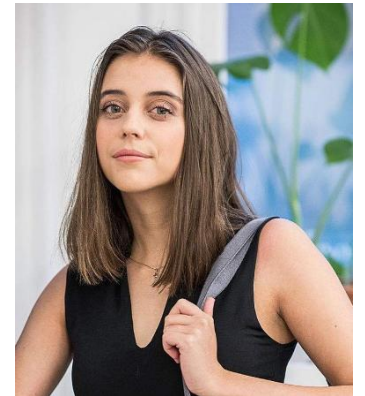
Perplexity



Before classroom activity	During classroom activity	After classroom activity
Translating materials to other languages (N=113)	Encouraging critical thinking (N=35)	Communicating with students (N=51)
Brainstorming to find ideas for a class (N=109)	Enhancing student engagement (N=17)	Providing feedback on assignments (N=24)
Generating questions for discussions (N=66)	Answering student questions (N=10)	Assisting with grading (N=19)
Designing learning tasks (N=63)	Conducting formative assessments or quizzes (N=9)	Generating reports on student performance (N=9)
Producing multiple explanations (N=50)		
...		
No use (N = 108, 32%)	No use (N = 274, 81%)	No use (N = 254, 76%)

AI-powered Scoring Platform: A Study on the Role of Explanations for University Educators

- Scoring exams and assignments is a challenging task, especially free text answers.
- AI offers **opportunities** to make the summative assessment process more efficient (Gobrecht et al., 2024; Seßler et al., 2024)
- The adoption of AI technologies in education is still limited, because educators do not always **trust** the suggestions provided by AI (Hoff & Bashir, 2015) (which is a good thing!).
- There is an inherent risk that the **generated scores may be inaccurate or even biased** (Gobrecht et al., 2024).
- The European Commission has explicitly classified education as **high-risk domain for AI applications**, requiring high standards of transparency and accountability (See AI-Act a first legal framework)



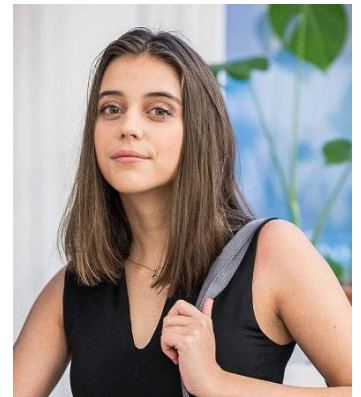
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AI-powered Scoring Platform: A Study on the Role of Explanations for University Educators

‘Explainability provides insight into the AI system decision to the **end-user** in order to build trust that the AI is making correct and non-biased decisions based on facts’. ([Ali et al, 2023](#))

‘Explainability in AI concentrates on providing clear and coherent explanations for specific model predictions or decisions. It aims to answer questions like “Why did the AI system make this particular prediction?” by offering **human-understandable** justifications or reasons for a specific out-come’. ([TechDispatch, 2023](#))

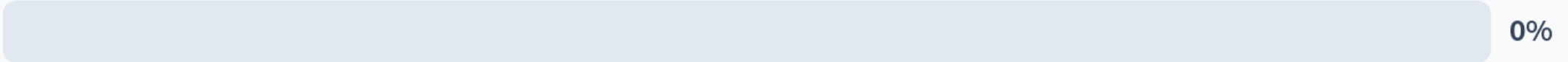
European Commission (2025): Explainable AI in education: fostering human oversight and shared responsibility



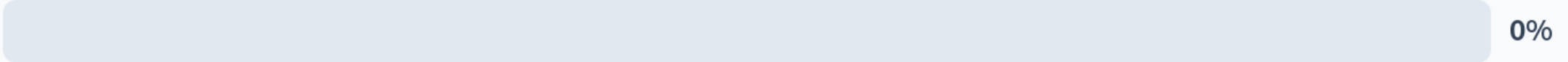
2. The perceived impact on learning?

Welk impact zal GenAI hebben op leren?

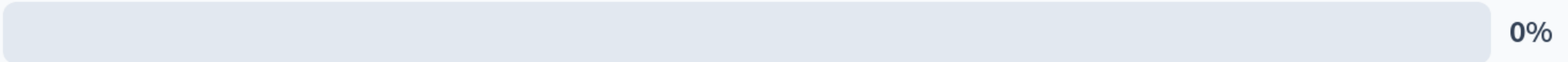
Een positieve impact



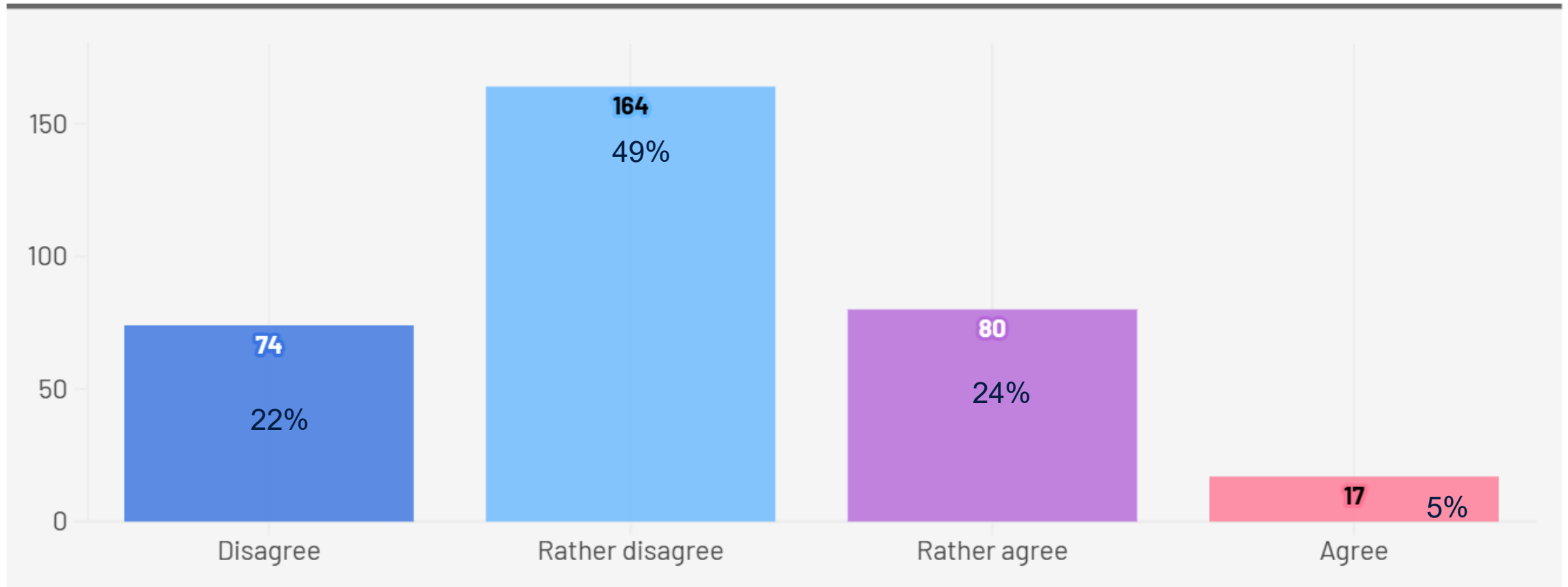
Een negatieve impact



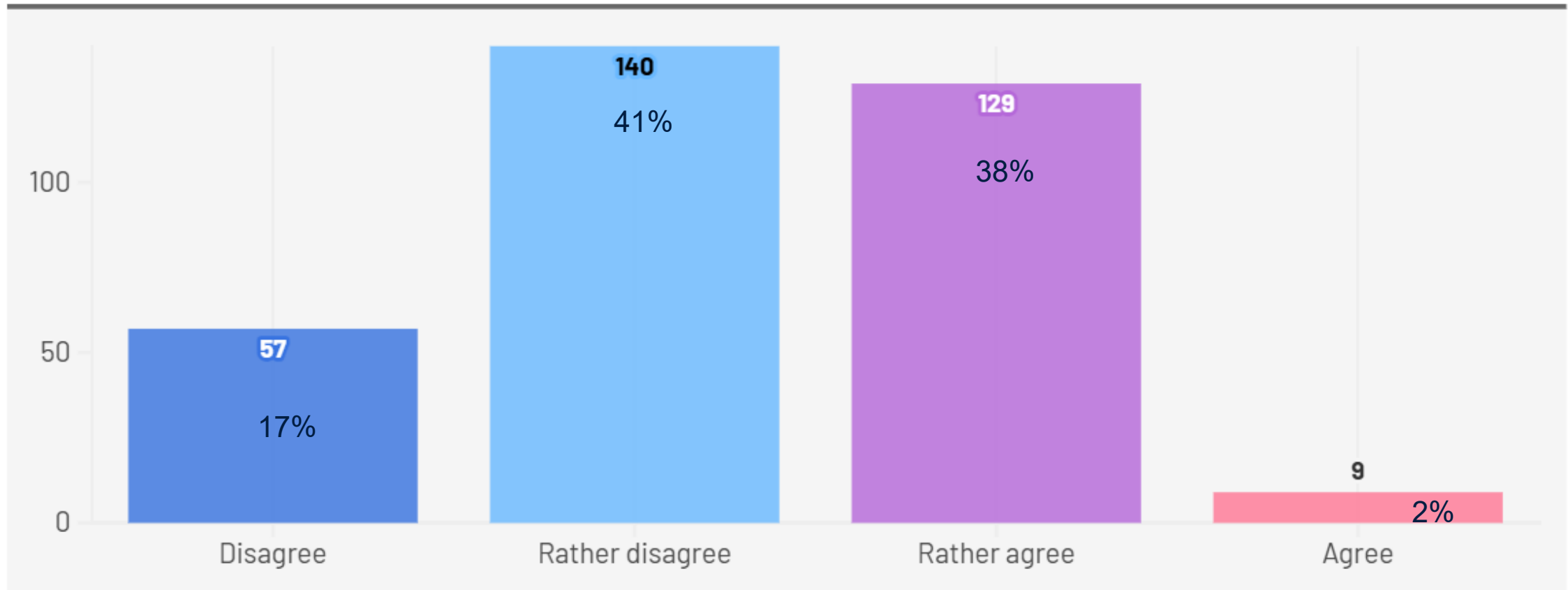
Afhankelijk van het gebruik



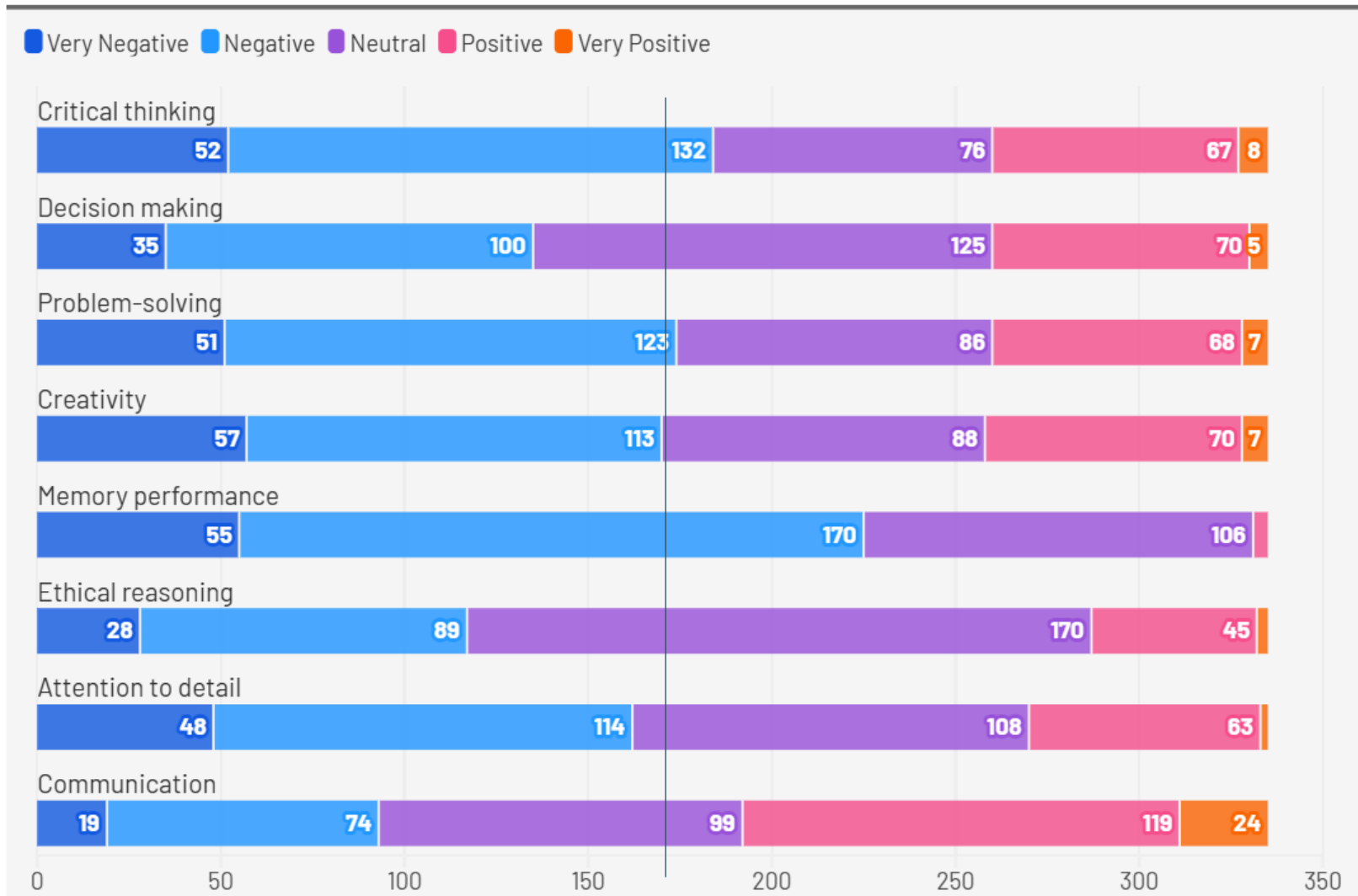
“In the future, the majority of students will stop investing effort in learning because they will become completely dependent on GenAI tools” - Which option best applies to you?



“By using GenAI for new tasks, students are likely to learn how to perform them by internalizing the process” - Which option best applies to you?



If students continue using GenAI tools for a long period (e.g., 10 years), what impact do you expect on the following aspects?



GenAI, better or worse for learning?

Important to question: What does learning require?

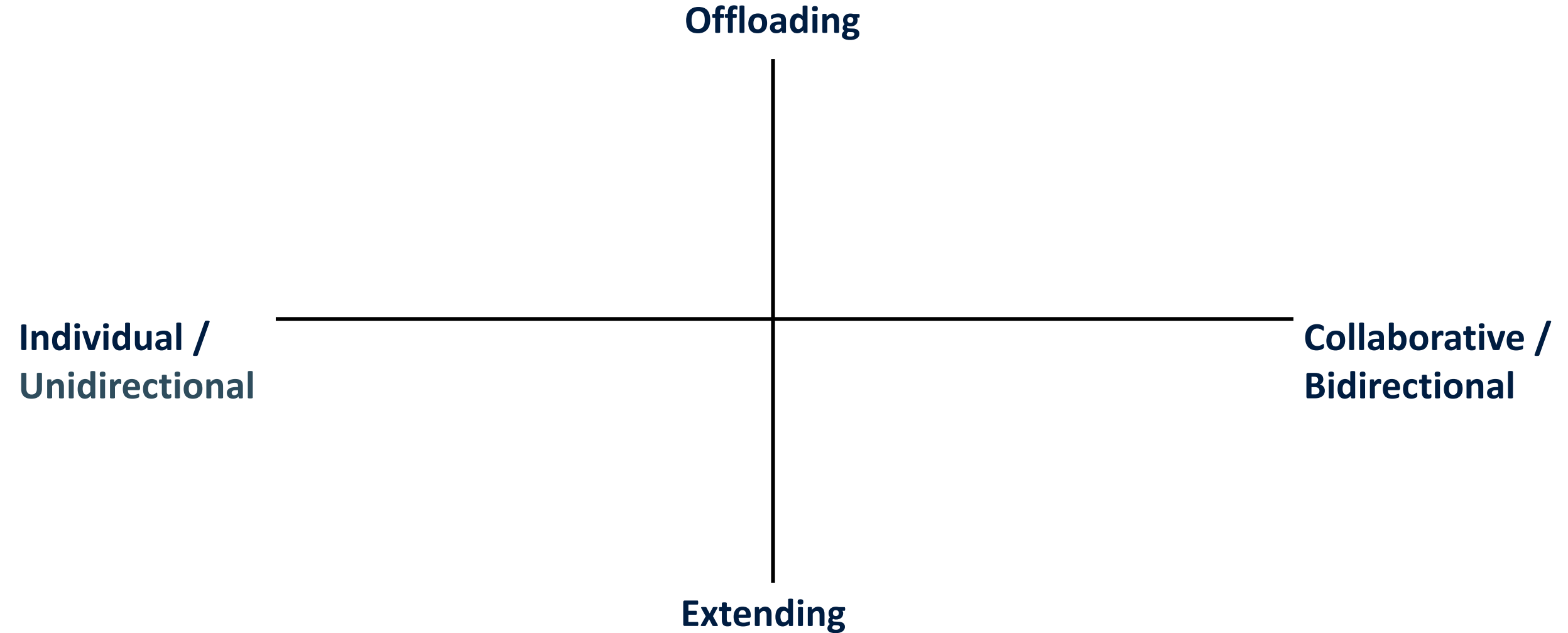
Learning demands active engagement, effort, sustained attention, curiosity, and motivation.

It thrives in environments where learners feel challenged and supported, and where learners can reflect, make mistakes, and receive meaningful feedback.

AI is not developed for learning!



Typology of GenAI use



By: Lodge, Yang, Furze, & Dawson (2023). It's not like a calculator, so what is the relationship between learners and generative artificial intelligence?

Typology of GenAI use

AI as a performer
Cognitive offloading



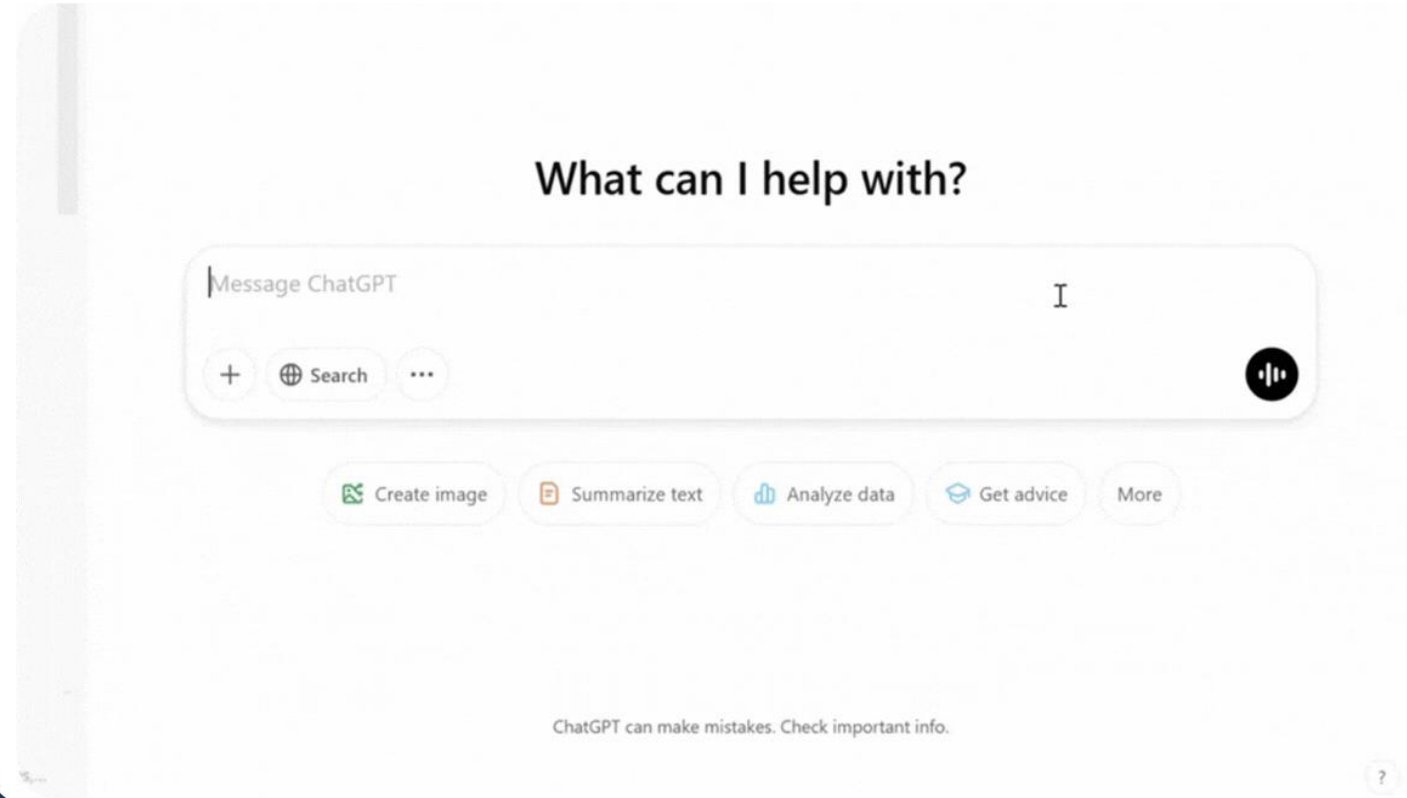
**Individual /
Unidirectional**

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Typology of GenAI use

AI as a performer *Cognitive offloading*

Individual /
Unidirectional



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Typology of GenAI use

Offloading

AI as a performer
Cognitive offloading



Extending

Individual /
Unidirectional

Collaborative /
Bidirectional

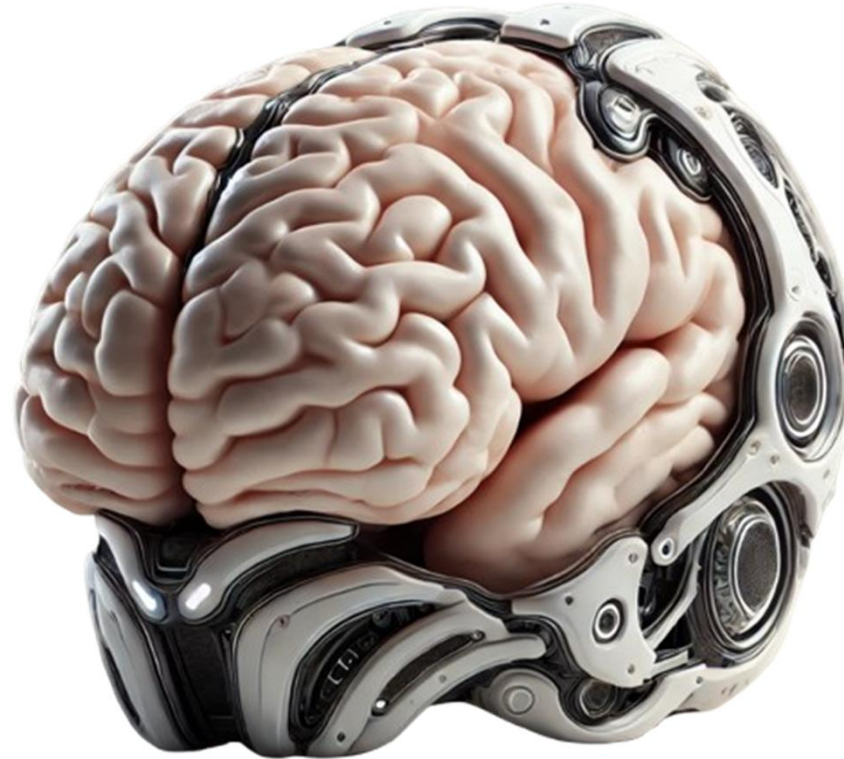
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Typology of GenAI use

AI as a performer
Cognitive offloading



Extended mind



Individual /
Unidirectional

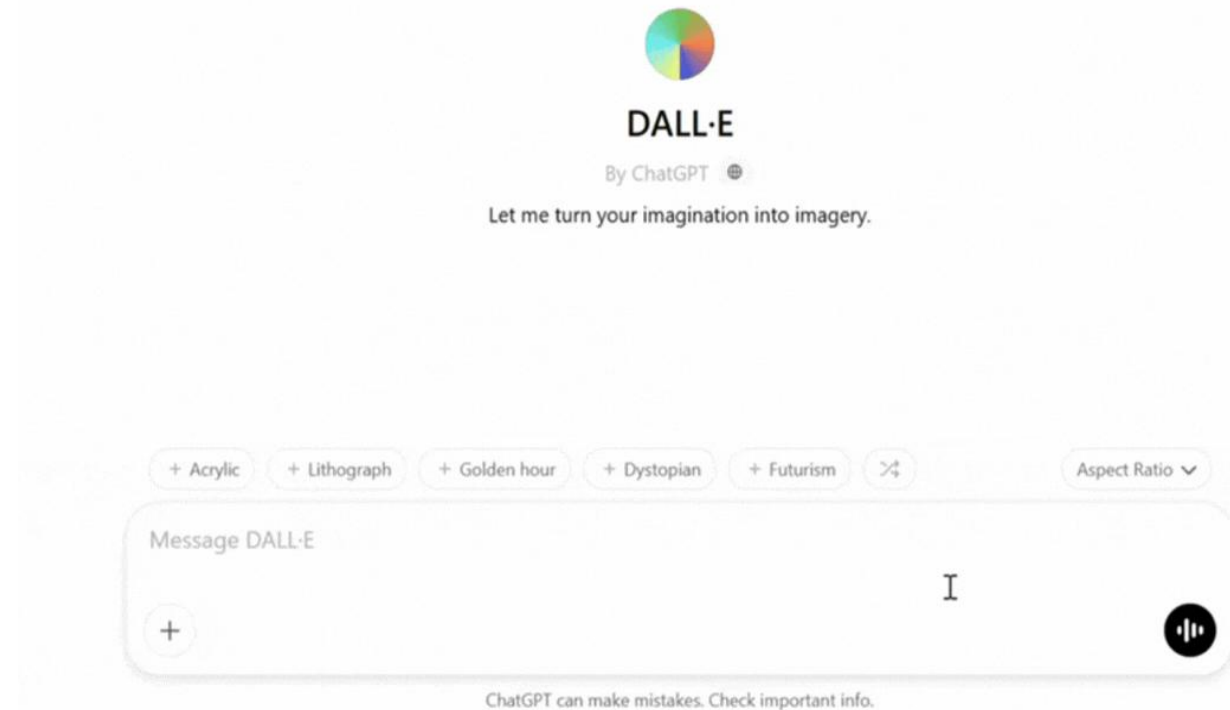
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Typology of GenAI use

AI as a coach *Co-regulation*



**Collaborative /
Bidirectional**

Typology of GenAI use

Offloading

AI as a performer
Cognitive offloading



AI as a coach
Co-regulation



Extended mind



Extending

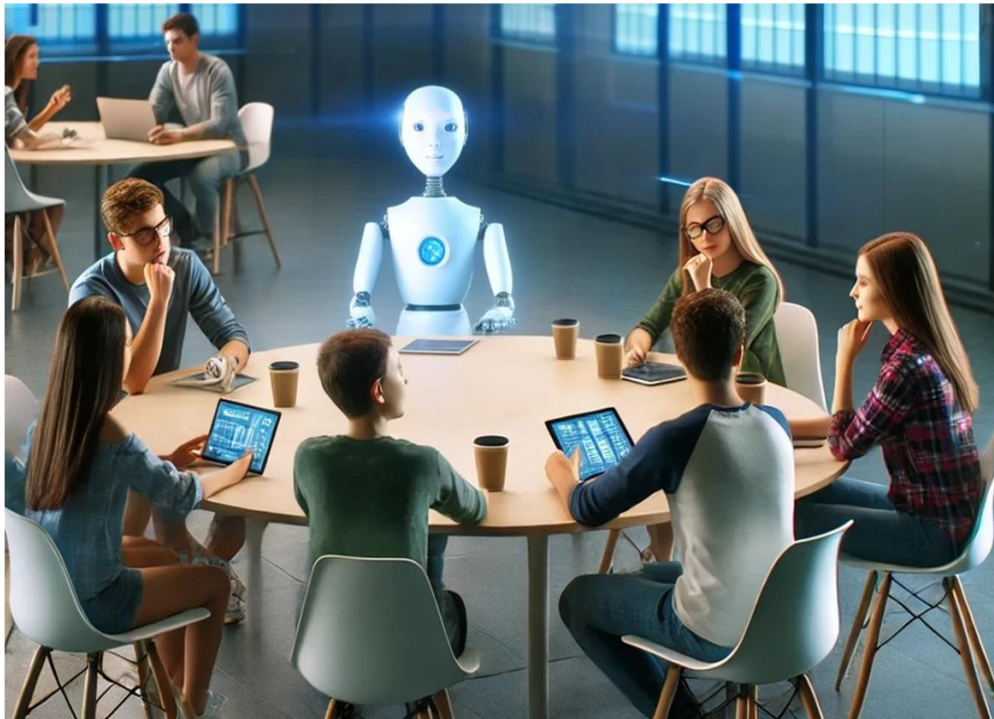
Individual /
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Typology of GenAI use

AI as a teammate *Hybrid*



AI as a coach *Co-regulation*



Collaborative / Bidirectional

- Utopian use
- “Augmented intelligence” (Cukurova et al., 2019)
- “Hybrid intelligence” (Molenaar, 2022)
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Your Brain on ChatGPT: Accumulation of Cognitive Dept when Using an AI Assistant for Essay Writing Task

<https://arxiv.org/abs/2506.08872>

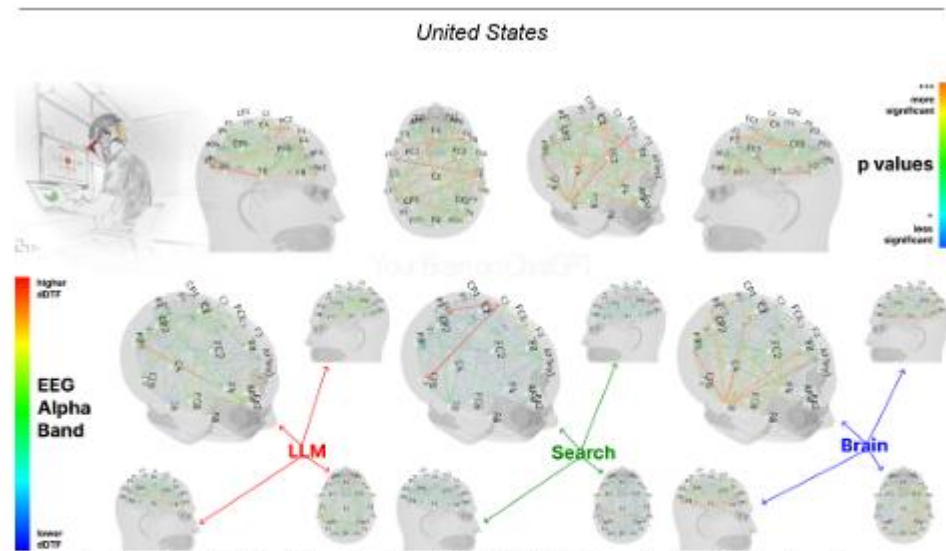


Figure 1. The dynamic Direct Transfer Function (dDTF) EEG analysis of Alpha Band for groups: LLM, Search Engine, Brain-only, including p-values to show significance from moderately significant (*) to highly significant (***).

This study shows evidence that writing with a LLM:

- Reduce cognitive load
- Lower ownership
- Written texts were better structured and more fluent, but contributed fewer original ideas

Order effect?

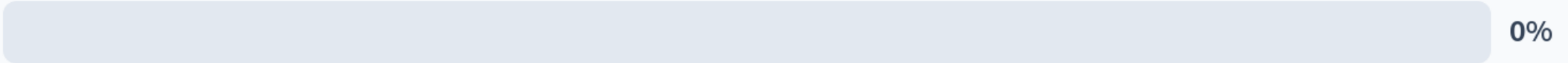
- Some students used ChatGPT from the start (LLM-first group); others only after drafting (Brain first, followed by LLM use)

¹ Nataliya Kosmyna is the corresponding author, please contact her at nkosmyna@mit.edu
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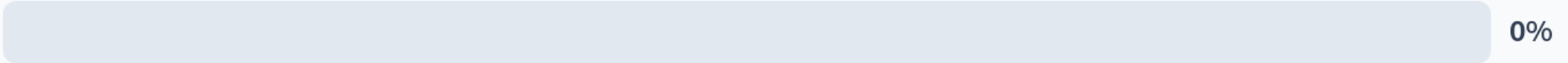
Wat is de aanwezen volgorde voor het gebruik van GenAI bij schrijftaken

0

Gebruik van LLM bij de start (LLM first group)



Starten zonder LLM (Brain first)



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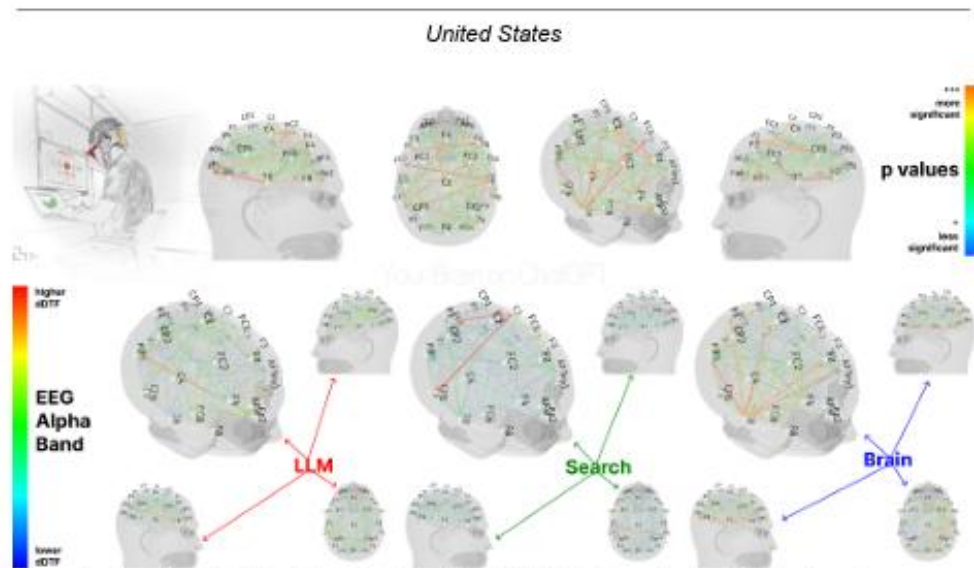


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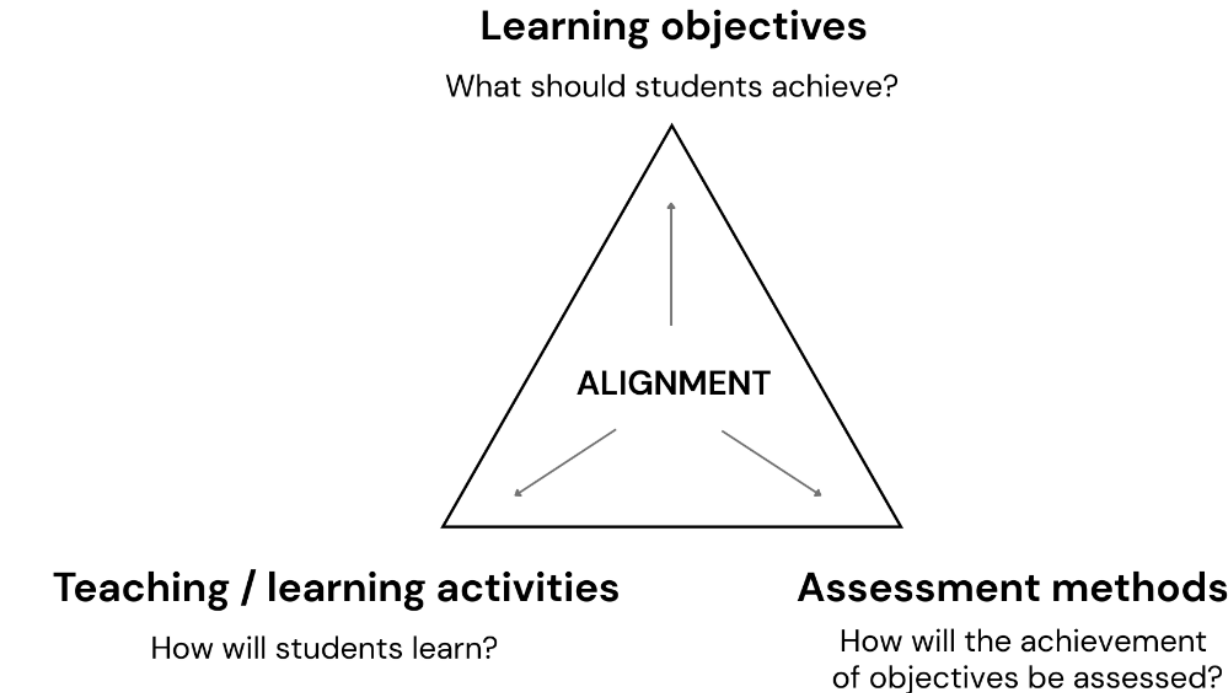
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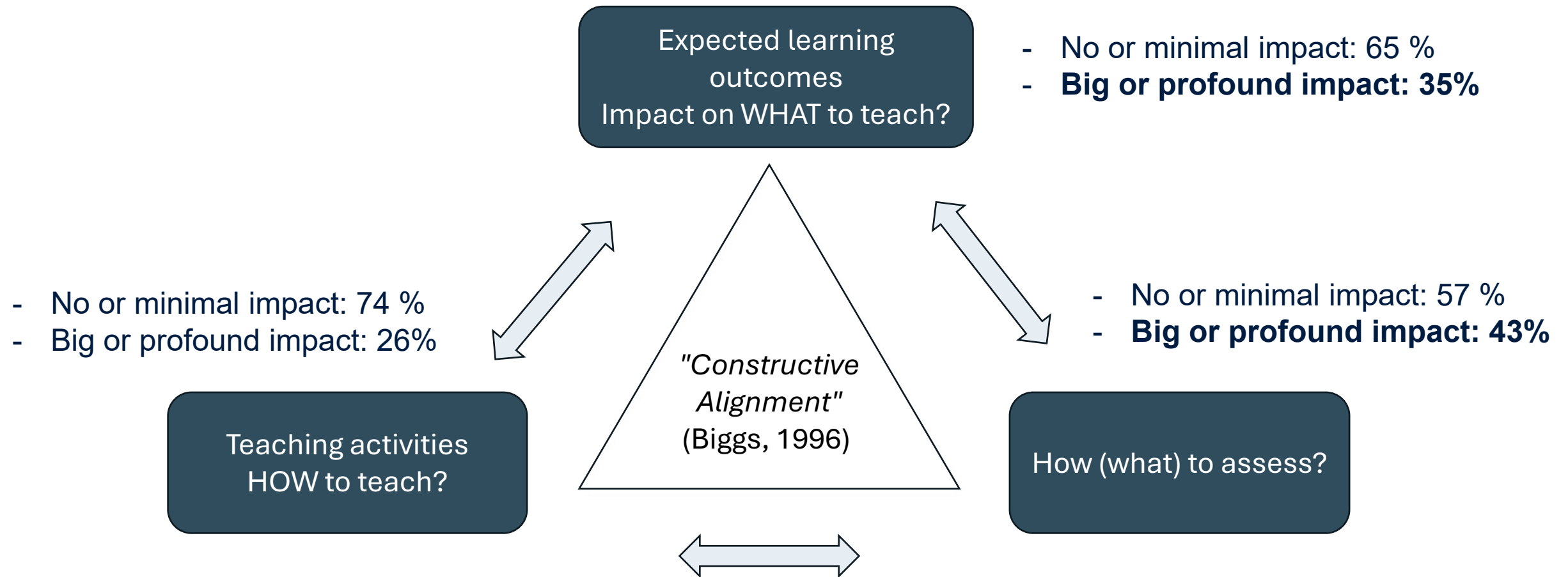
- Some students used ChatGPT from the start (LLM-first group); others only after drafting (Brain first, followed by LLM use)
- Best results for Brain – LLM: higher engagement and brain activity during initial writing; benefited from AI for refinement; best balance of quality and understanding.

3. Which learning objectives, teaching methods, and assessment methods are perceived by university educators becoming less or more valuable for future education?

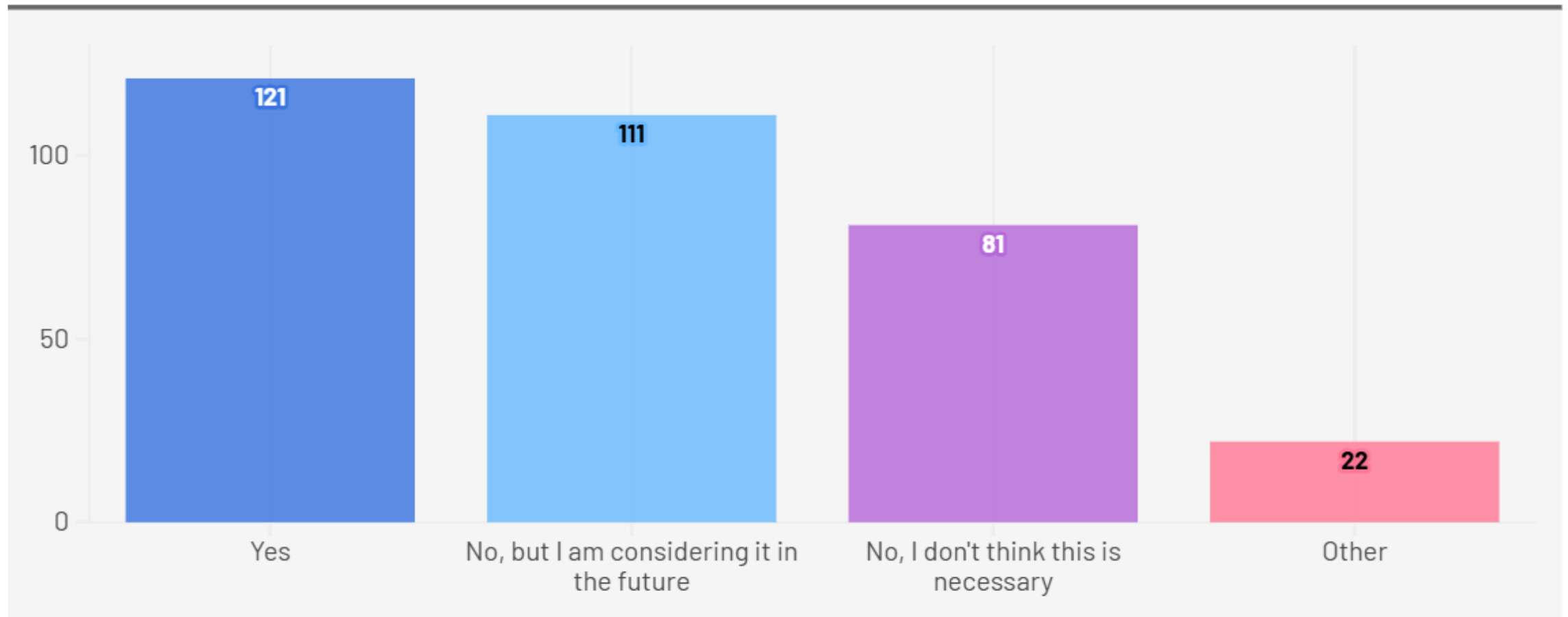


Constructive Alignment Framework. Adapted from Biggs (1996)

In your opinion, how significant is the impact of GenAI on...



Have you already made any adjustments to your assessment practices due to the arrival of GenAI?



Related to assessment

What will become less valuable or outdated?

- Unsupervised/unproctored take-home essays, reports, reviews
- Product only grading, correctness alone is seen as misleading
- Reports without defense or process evidence
- Authenticity / ownership concerns:
 - “Not ‘less valuable’ but made more difficult... transparency about what comes from GenAI.*
 - “Het zal toekomstig moeilijker worden om papers en thesissen van studenten te beoordelen omdat de verleiding groot is om GenAI op een ontransparante manier te gebruiken, vooral omdat we niet voldoende tools hebben om het gebruik te detecteren.”*

More valuable due to the advent of GenAI?

- Oral and interactive assessment gaining importance
“oral defenses are the only form of evaluation from which genai is completely excluded.”
- Controlled and on-campus written exams regaining value
- Focus on critical thinking, reflection, and argumentation
“A focus on the student’s understanding of the steps they took to arrive at the result. ‘Correctness’ is no longer a good proxy for ‘understanding.’”
- Process-Oriented Assessment and Project-based assessment
- Integrating and Critically Using GenAI in Assessment
“I now have students write texts with and without AI and have them reflect on them.”

Consequences for education?

Call to reflection and action

This typology invites a shift in the conversation:

- From **"Should we allow GenAI?"** to **"How can we design tasks that harness its potential while preserving learner agency and effort?"**
- From **"AI will make students lazy"** → To **"Which GenAI use support cognitive and metacognitive growth, and which undermine them?"**

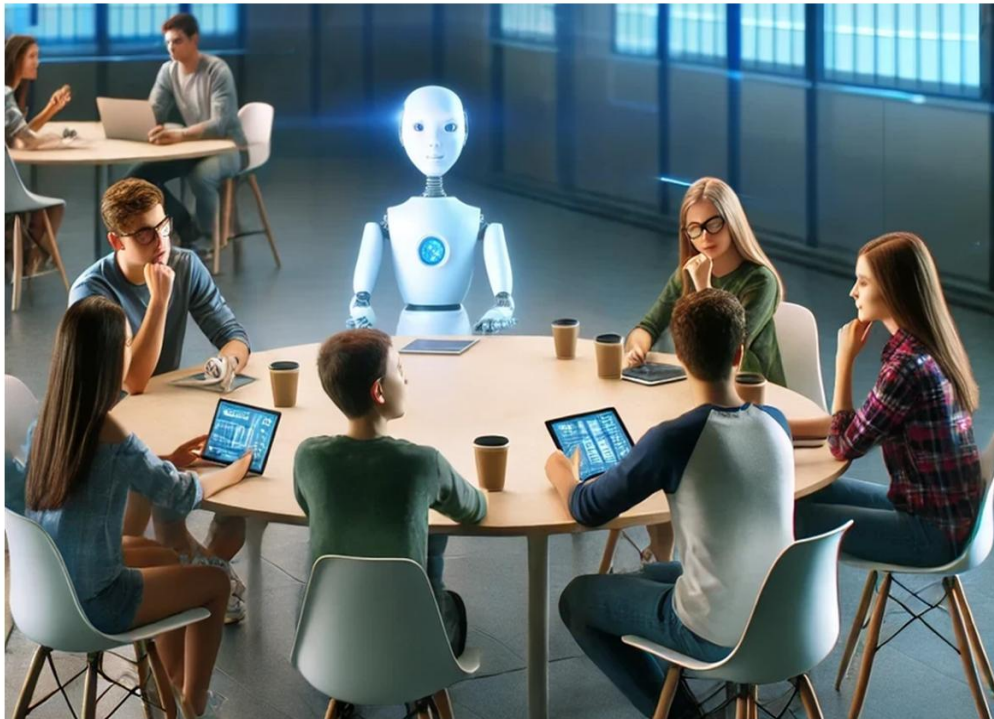
Teaching is a design science

Designing for learning, also known as instructional design, is more important than ever.

It is the *“process of deciding what methods of instruction are best for bringing about desired changes in student knowledge and skills for a specific course content and a specific student population”* (Reigeluth, 1983).

Typology of GenAI use

AI as a teammate *Hybrid*



AI as a coach *Co-regulation*

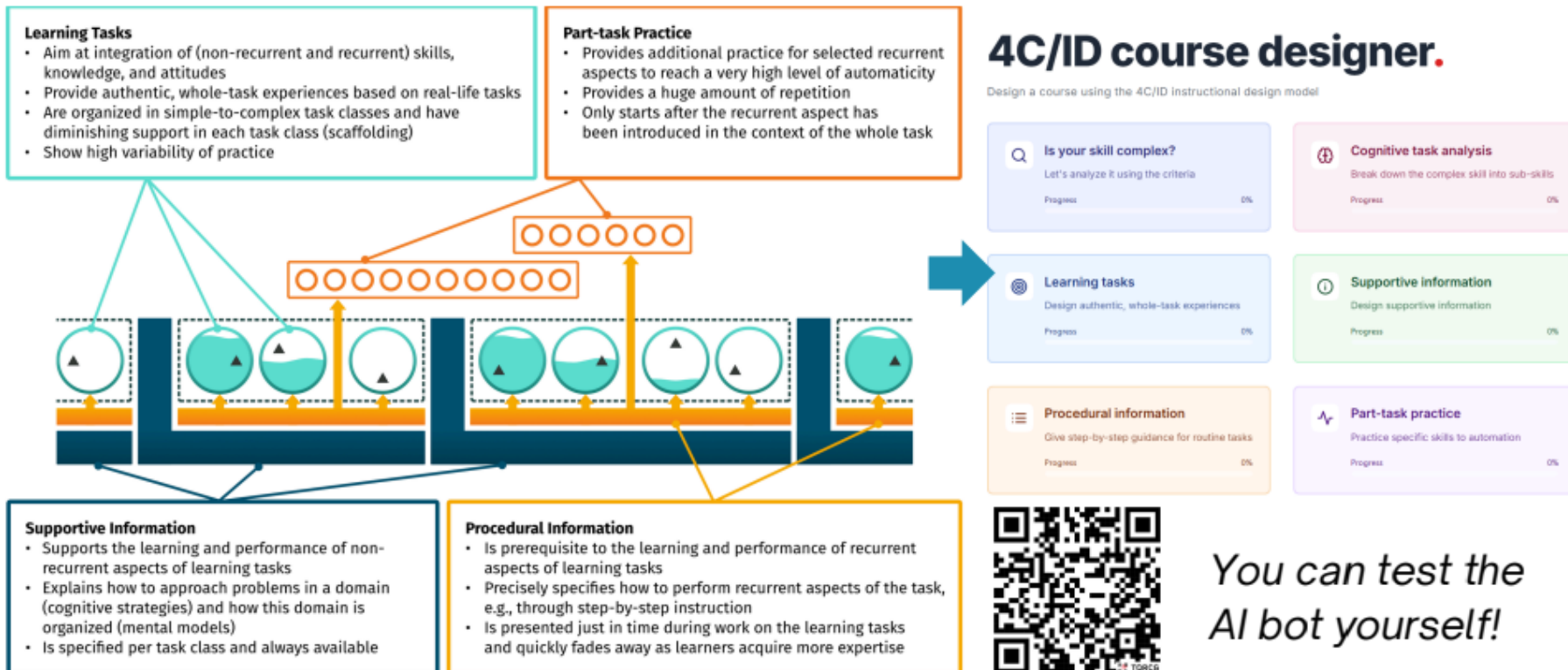


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Co-instructional Design bot

ID THEORY – 4C/ID MODEL (Merriënboer, 1997)



Current study: two main focuses

Quality of ID outcomes

- Grounded in instructional design theory, e.g. 4C/ID (van Merriënboer, 1997)
- Sufficiently challenging and age-appropriate
- Demonstrating clear alignment between instructional design components (Biggs, 1996)

Educators' perceived agency

Professional agency as a practice when professionals “exert influence, make choices, and take stances in ways that affect their work and/or their professional identities” (Eteläpelto et al., 2013, p.61)

- Agency is shaped by material contexts
- Individuals' personal backgrounds, e.g. prior knowledge, serve as affordances or constraints for exercising agency

“The very architecture of expertise is built not by exposure, but by effort. Without internalised knowledge, there is no deep understanding, no flexible thinking, no meaningful creativity. The most advanced AI can simulate intelligence, but it cannot think for you. That task remains, stubbornly and magnificently, human.” (quote by Carl Hendrick (June 2025) included in the speech by Speech by rector Severine Vermeire during the opening of the Academic Year 2025-2026)

Thank you.

Annelies.Raes@kuleuven.be