[Keynote Speech]

생성형 AI 시대의 교육: 경제교육을 위한 근거와 시사점

Educating at the Time of Generative AI: Evidence and Implications for Economic Education

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Seoul, Ministry of Finance/KDI, 22 July 2026

EDUCATION & SKILLS

Educating at the time of generative AI:

Evidence and implications for economic education

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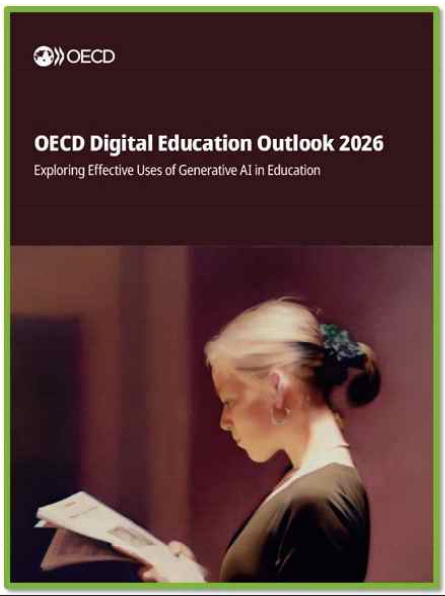
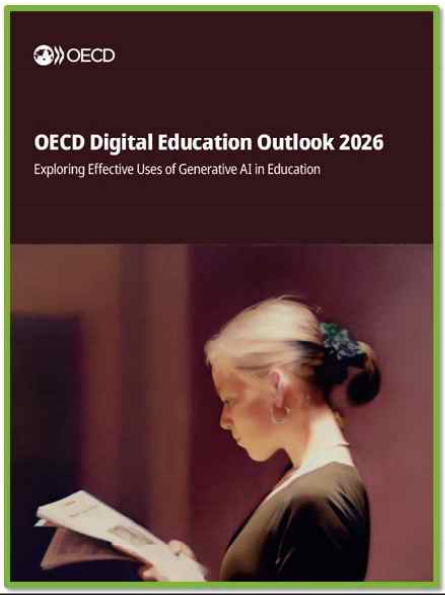
OECD BETTER POLICIES FOR BETTER LIVES

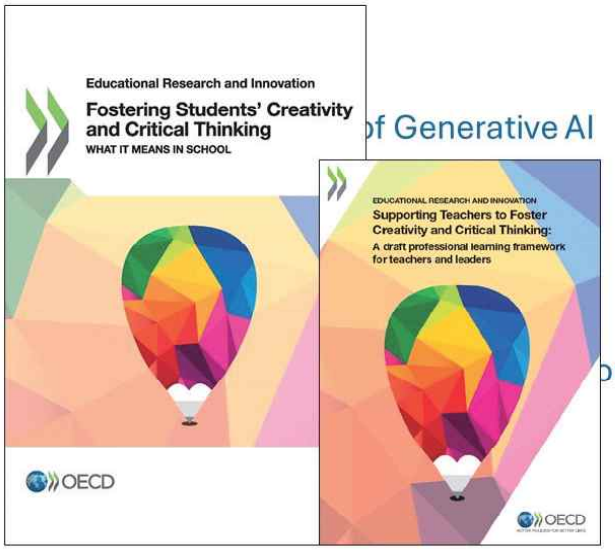
The OECD Digital Education Outlook 2026



- What are the effects of Generative AI (GenAI) on learning?
- How can GenAI support teachers?
- How can GenAI support administration in education?

The OECD Digital Education Outlook 2026





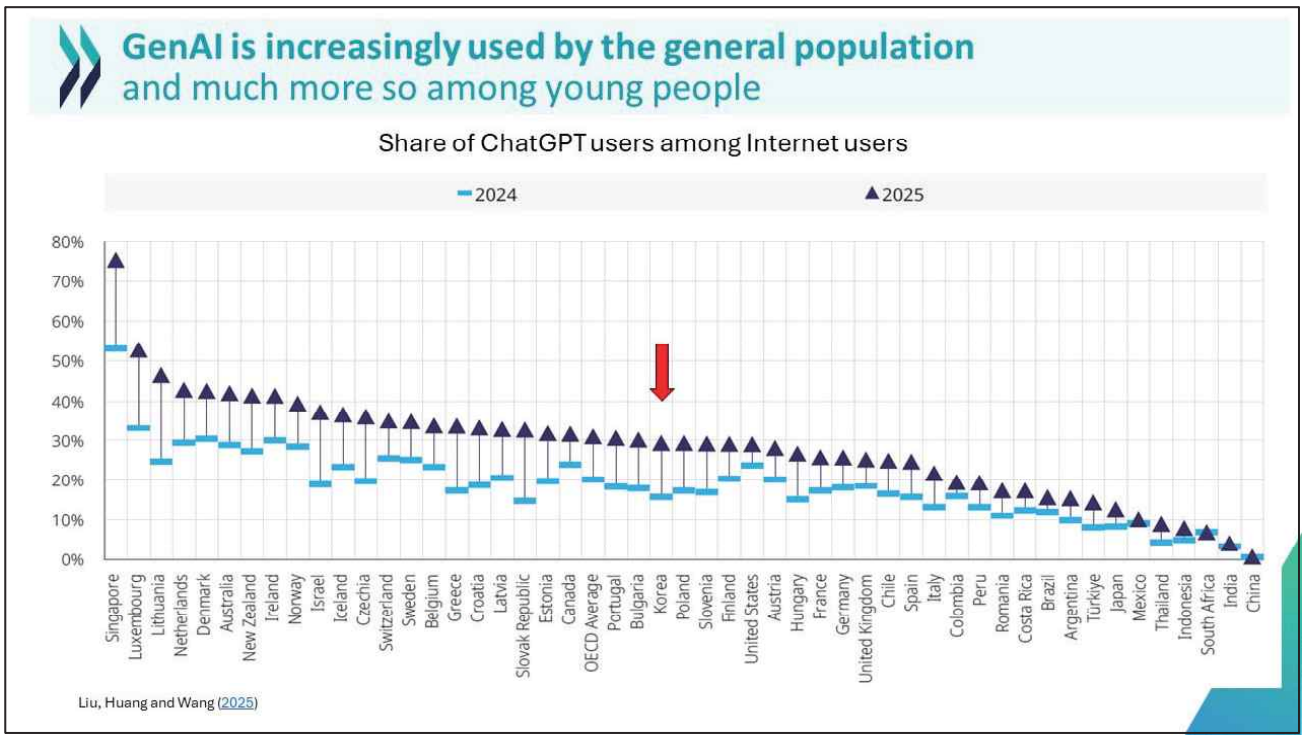
of Generative AI

on in

Outline

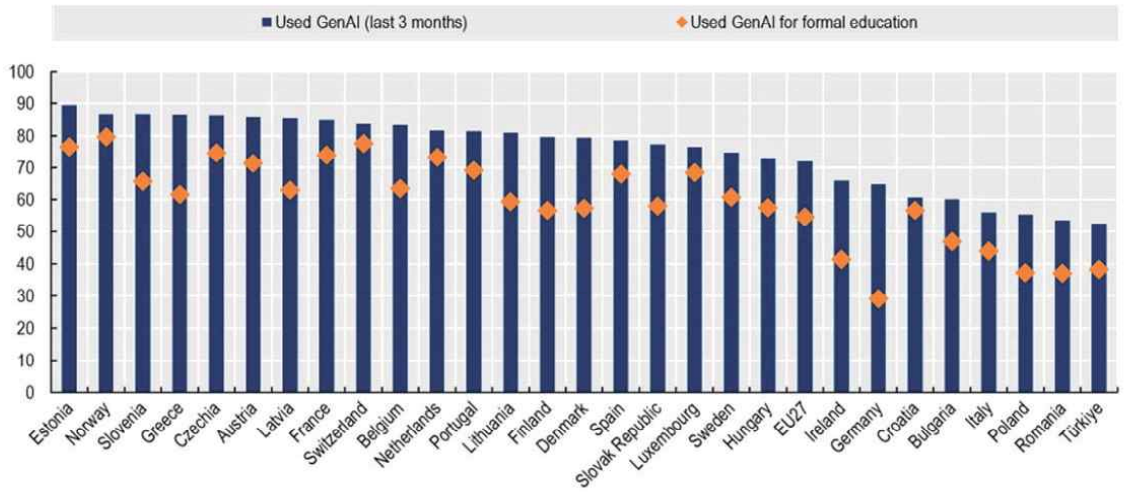
- What do we know about the use of GenAI in higher education?
- What do we know about learning with GenAI tools?
- Is it possible to promote deeper learning of economic education with GenAI?
- OECD Insights for the effective use of GenAI in education


EDUCATION
& SKILLS
1
the quick rise of GenAI – including in higher education


GenAI is increasingly used by the general population
and much more so among young people
Share of ChatGPT users among Internet users
2024
2025
80%
70%
60%
50%
40%
30%
20%
10%
0%
Singapore
Luxembourg
Lithuania
Netherlands
Denmark
Australia
New Zealand
Ireland
Norway
Israel
Iceland
Czechia
Switzerland
Sweden
Belgium
Greece
Croatia
Latvia
Slovak Republic
Estonia
Canada
OECD Average
Portugal
Bulgaria
Korea
Poland
Slovenia
Finland
United States
Austria
Hungary
France
Germany
United Kingdom
Chile
Spain
Italy
Colombia
Peru
Romania
Costa Rica
Brazil
Argentina
Türkiye
Japan
Mexico
Thailand
Indonesia
South Africa
India
China
Liu, Huang and Wang (2025)

Use of GenAI is widespread by high school, vocational and HE students (2025)

Share of students in Europe that used GenAI in the last three months, 2025

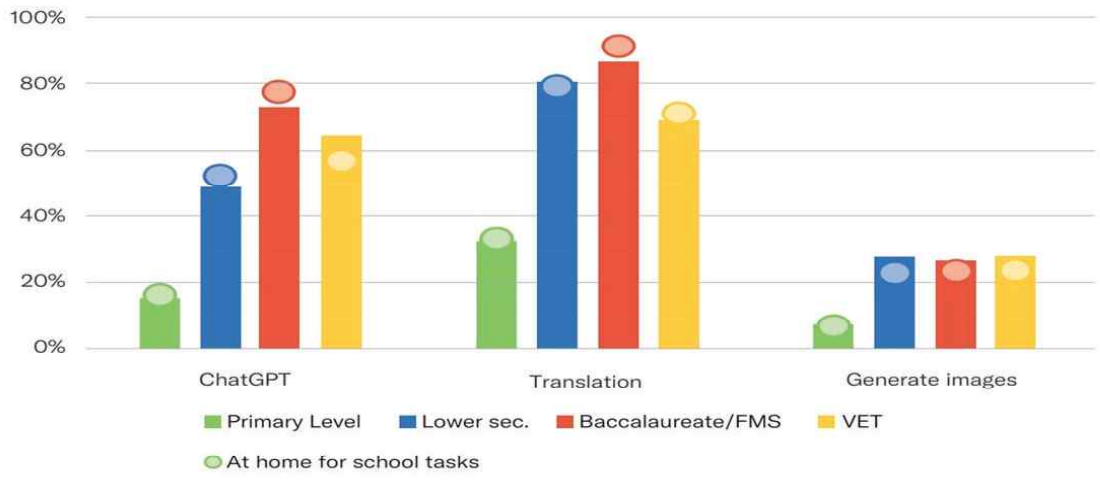


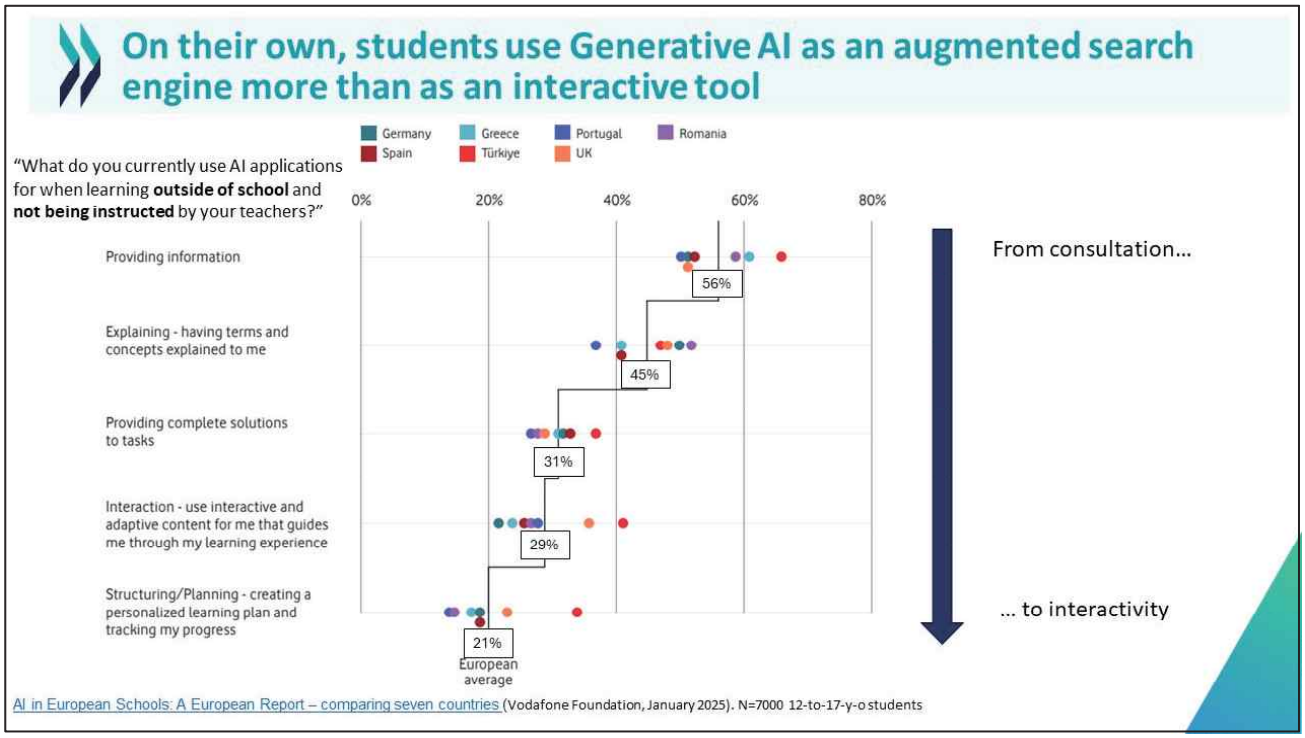
Source: Eurostat (2026), Individuals - use of generative AI tools

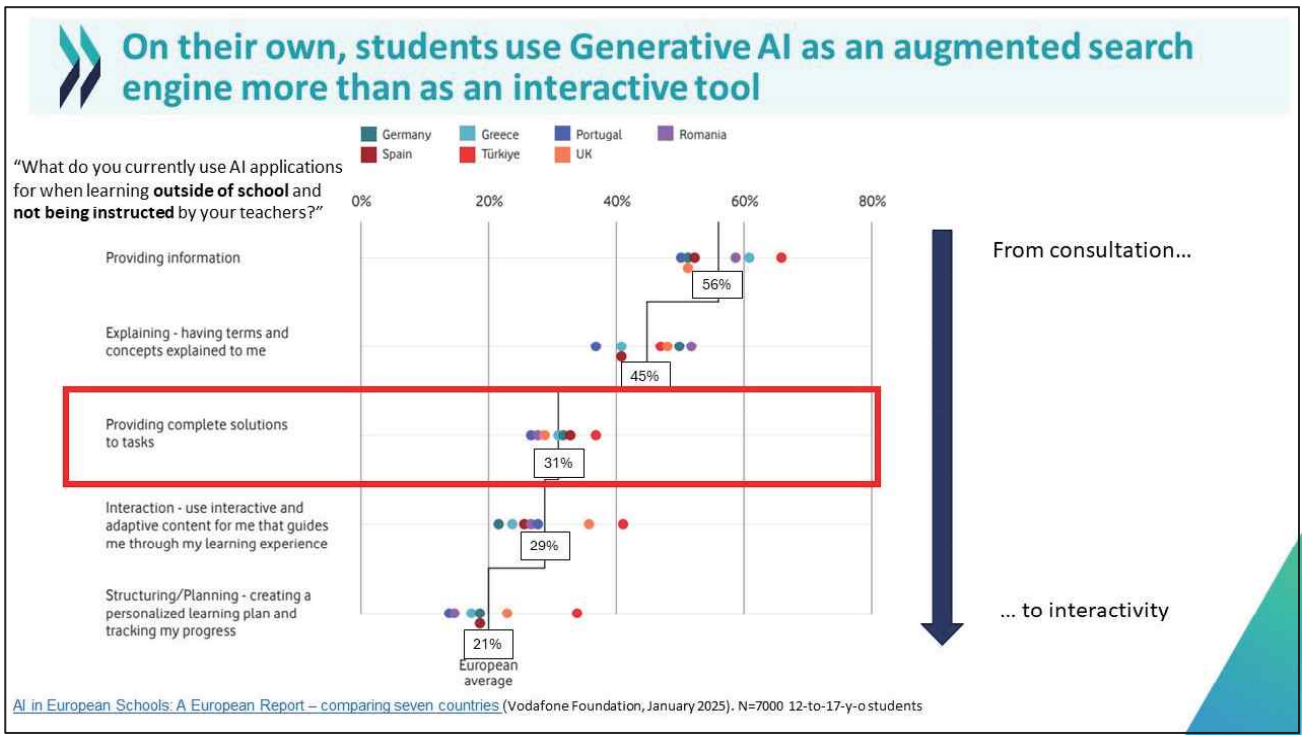
Students' uptake of AI increases with educational level (and age)

Use of different AI types in class and at home, by educational level

Statistically representative survey of 8-18-year-olds in Switzerland, 2024




On their own, students use Generative AI as an augmented search engine more than as an interactive tool
"What do you currently use AI applications for when learning **outside of school** and **not being instructed** by your teachers?"
Germany
Spain
Greece
Türkiye
Portugal
UK
Romania
0%
20%
40%
60%
80%
Providing information
56%
Explaining - having terms and concepts explained to me
45%
Providing complete solutions to tasks
31%
Interaction - use interactive and adaptive content for me that guides me through my learning experience
29%
Structuring/Planning - creating a personalized learning plan and tracking my progress
21%
European average
From consultation...
... to interactivity
AI in European Schools: A European Report – comparing seven countries (Vodafone Foundation, January 2025). N=7000 12-to-17-y-o students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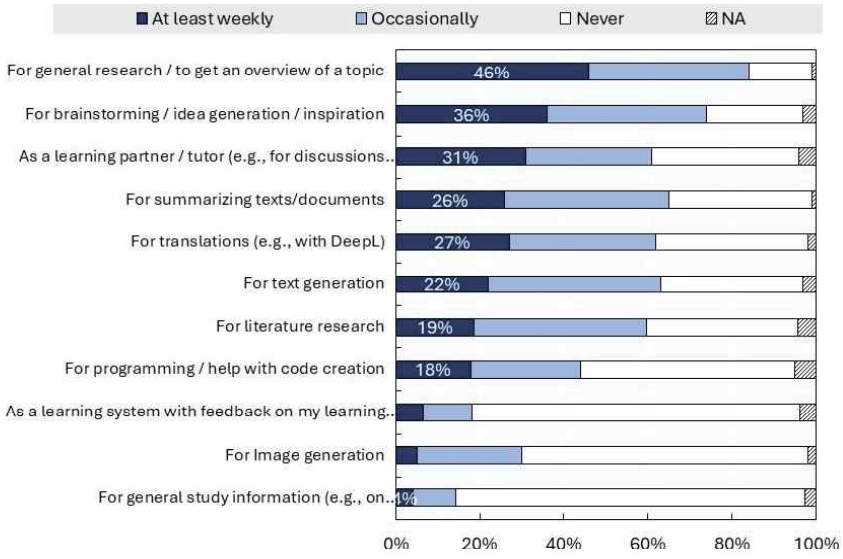
Use is even greater in higher education with similar purposes as high school students



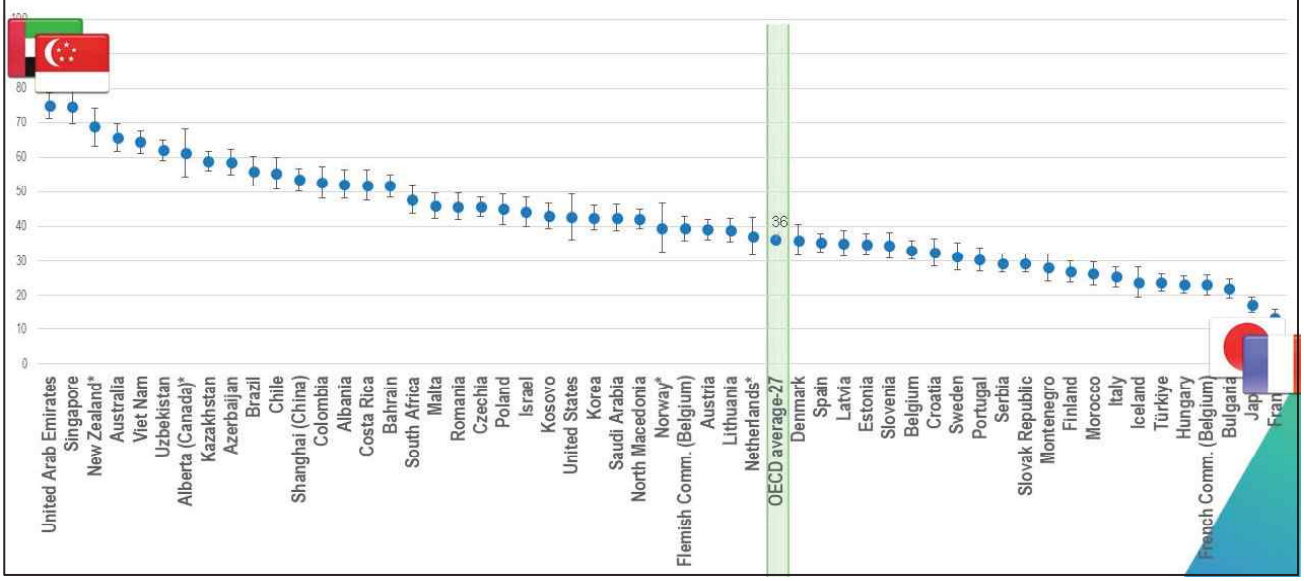
Hüsch, Horstmann and Breiter (2025)

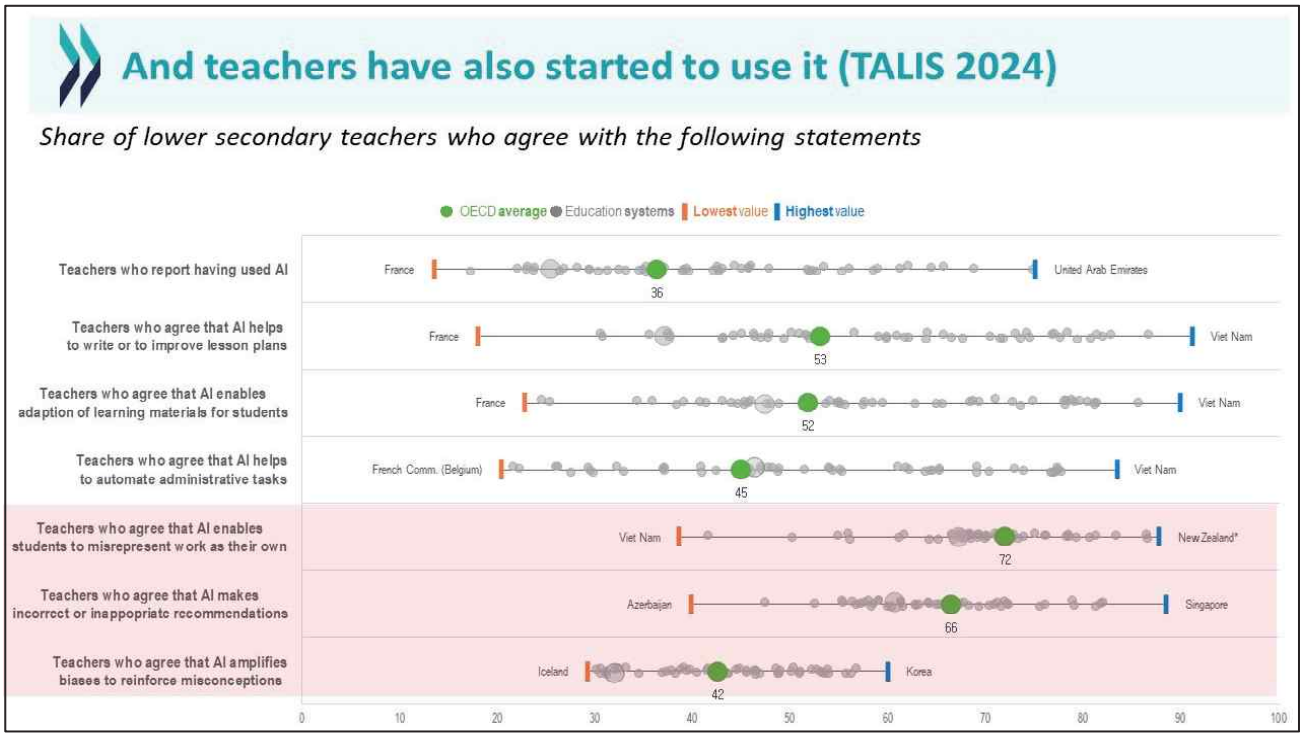
Survey of higher education students in **Germany** and **Austria:**

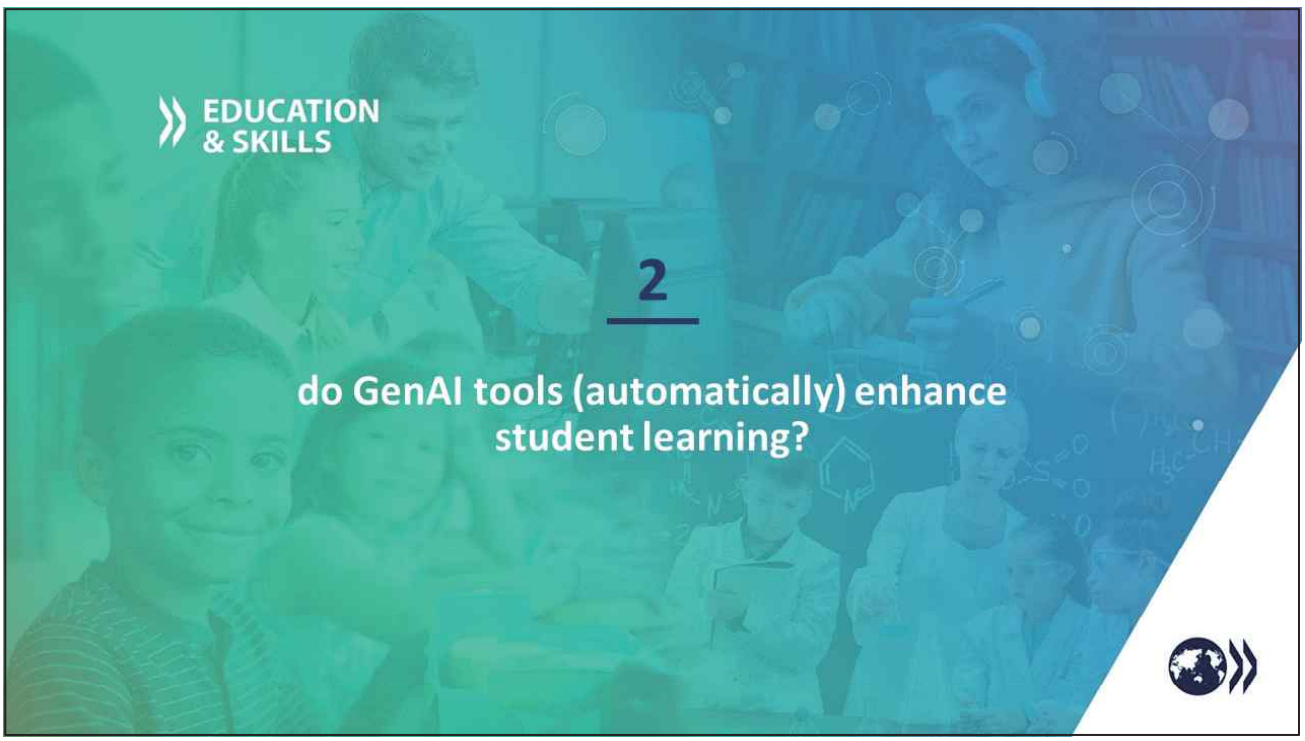
- **94%** used AI in 2025
- **65**% used it at least weekly
- Mostly for consultation, idea generation, inspiration, translation
- More rarely for content generation (text, image, code) or study help (feedback on learning, guidance)

And what about teachers?

Share of lower secondary teachers who used AI in their teaching in the last year




And teachers have also started to use it (TALIS 2024)
Share of lower secondary teachers who agree with the following statements
OECD average
Education systems
Lowest value
Highest value
Teachers who report having used AI
France
36
United Arab Emirates
Teachers who agree that AI helps to write or to improve lesson plans
France
53
Viet Nam
Teachers who agree that AI enables adaption of learning materials for students
France
52
Viet Nam
Teachers who agree that AI helps to automate administrative tasks
French Comm. (Belgium)
45
Viet Nam
Teachers who agree that AI enables students to misrepresent work as their own
Viet Nam
72
New Zealand*
Teachers who agree that AI makes incorrect or inappopriate recommendations
Azerbaijan
66
Singapore
Teachers who agree that AI amplifies biases to reinforce misconceptions
Iceland
42
Korea
0
10
20
30
40
50
60
70
80
90
100


EDUCATION & SKILLS
2
do GenAI tools (automatically) enhance student learning?

Example 1: Short and longer term effects of AI (Turkey)

1000 high school students in Turkey (grades 9, 10, 11) on logic and arithmetics

Randomised control trial:

1) All students get taught the maths content
2) Practice the taught content with 3 conditions:
    1) They learn with course notes and textbook (control)
    2) They learn with general LLM (GPT base)
    3) They learn with instructional LLM (GPT Tutor)
3) All groups take same test (with no GPT)

Bastani et al. (2024)

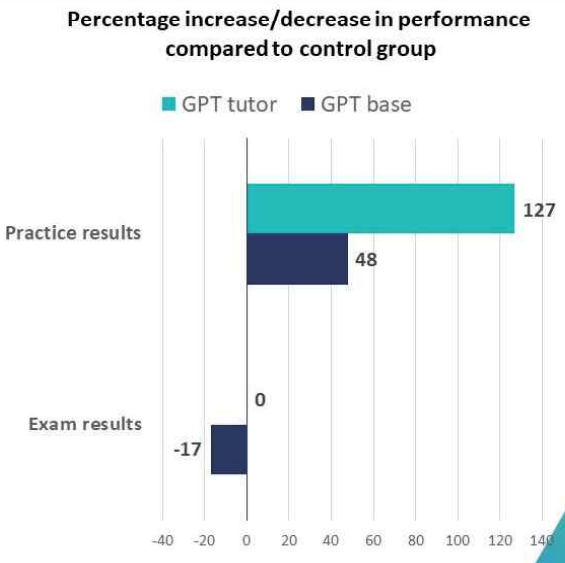
Example 1: Short and longer term effects of AI (Turkey)

Increased performance (correct solutions) during practice for both GPTs, with much stronger one for GPT Tutor

Inferior performance of GPT base and similar performance at exam (with no GPT)

One reason is that those using GPT base asked for (and got) the answer during practice (and thus learnt less)

Strong engagement of students during practice mode



Bastani et al. (2024)

Example 2: How students seek help from humans and from LLMs (China)

Question:

Do students have different processes when seeking help from LLMs and human experts?

Chinese native-speakers writing an essay in English

Method:

- RCT with 38 university students starting by writing an essay in English by themselves
- 2 conditions for revising one's essay:
  - Seek help from ChatGPT
  - Seek help from human expert
- Mesures: telemetry and observation
- Four help seeking activities:
  - Diagnosing question
  - Asking Help
  - Evaluating Help
  - Processing Help

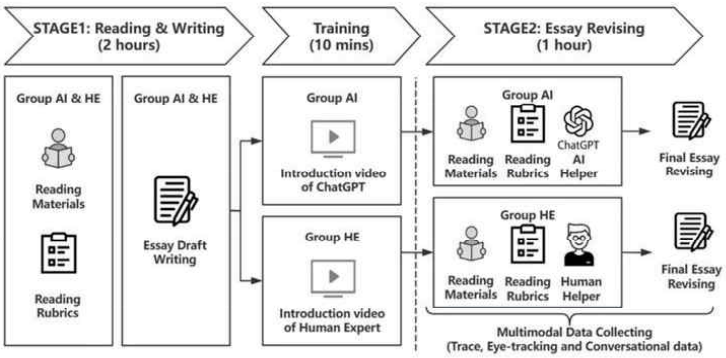


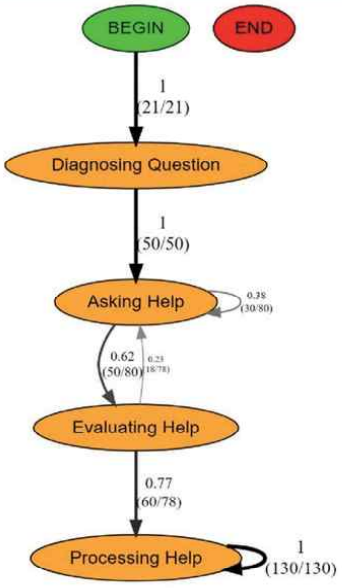
Fig. 1. Experiment procedure.

Source: Chen, Xiang, Zhou, Jia, Shang, Li, Gašević, Fan, 2025

Example 2: How students seek help from humans and from LLMs (China)

Findings

1) The "human" group seeks help in a linear way, following the classic "help seeking" theory



Source: Chen, Xiang, Zhou, Jia, Shang, Li, Gašević, Fan, 2025

Fig. 5. Help-seeking process temporal pattern in stages in HE Group.

Example 2: How students seek help from humans and from LLMs (China)

Findings

1) The "human" group seeks help in a linear way, following the classic "help seeking" theory

2) The human-LLM group has a more "circular" strategy and uses less "diagnosing" questions and evaluate less the help : **more "operational" approach**

3) Difference: more evaluation of help by humans, more processing of help by AI group – more thinking vs more tinkering?

Source: Chen, Xiang, Zhou, Jia, Shang, Li, Gašević, Fan, 2025

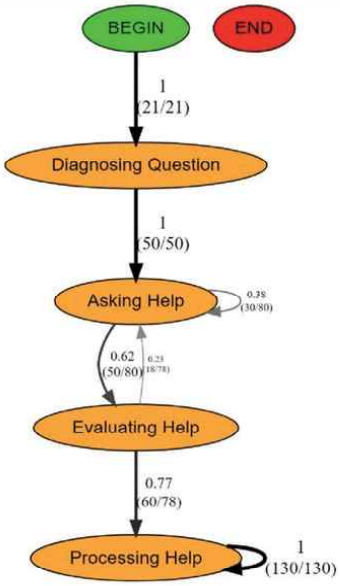


Fig. 5. Help-seeking process temporal pattern in stages in HE Group.

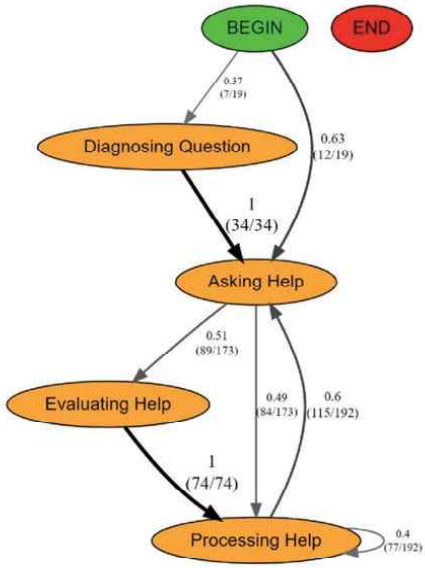
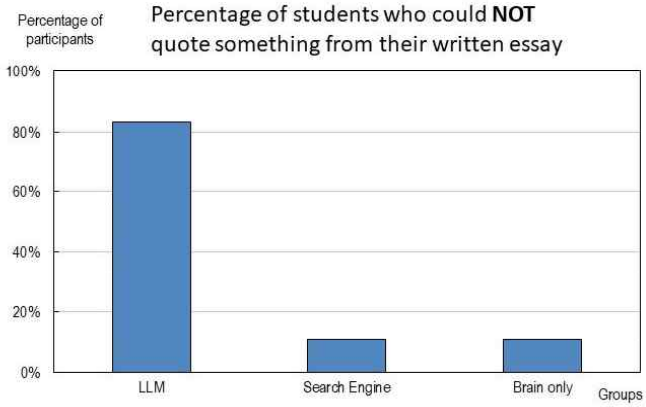


Fig. 4. Help-seeking process temporal pattern in stages in AI Group.

Example 4: Brain activation and recall when using LLM, Search engine and brain only (US)

Students writing with the LLM struggled to quote anything from their written essays



Post-task assessment:

LLM group had

- most limited ability to quote something from their written essay (recall)
- lower ability to summarise their essay's viewpoint
- lower level of ownership
- more homogeneity in essay content

Brain imagery:

LLM group:

- shifted their executive tasks from generating content to supervising the AI-generated content
- had less neural connectivity and less executive involvement

Source: Kosmyna, Hauptmann, Yuan, Situ, Liao, Beresnitzky, Braunstein, and Maes, 2025

Example 1: Fostering creativity and communication

Writing (short) stories with and without GenAI ideas

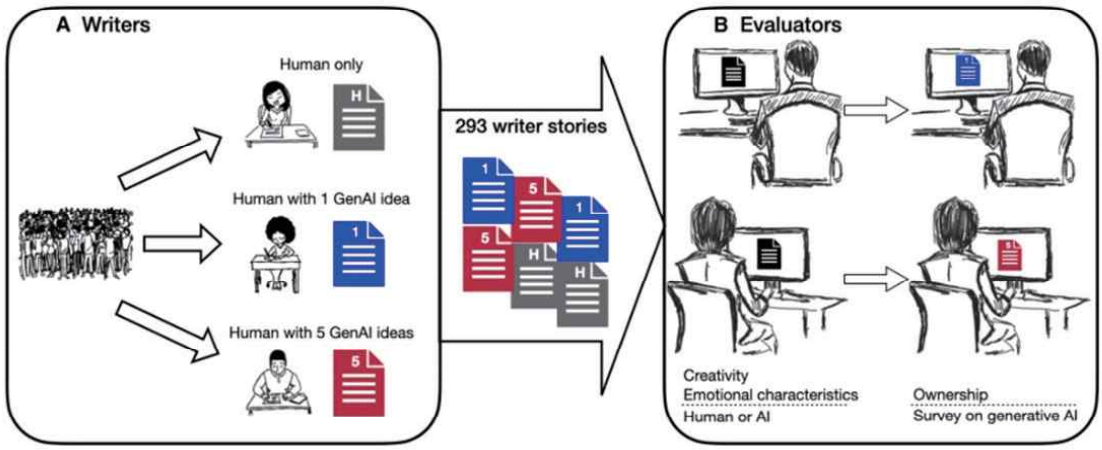


Fig. 1. Visual representation of experimental design.

Doshi and Hauser, 2024

Example 1: Fostering creativity and communication

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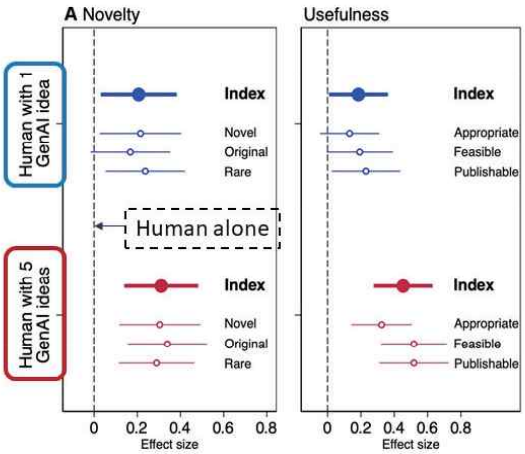

Access to generative AI ideas leads to stories evaluated (by humans) as:

- More creative (especially among less creative writers)

Doshi and Hauser, 2024

Example 1: Fostering creativity and communication

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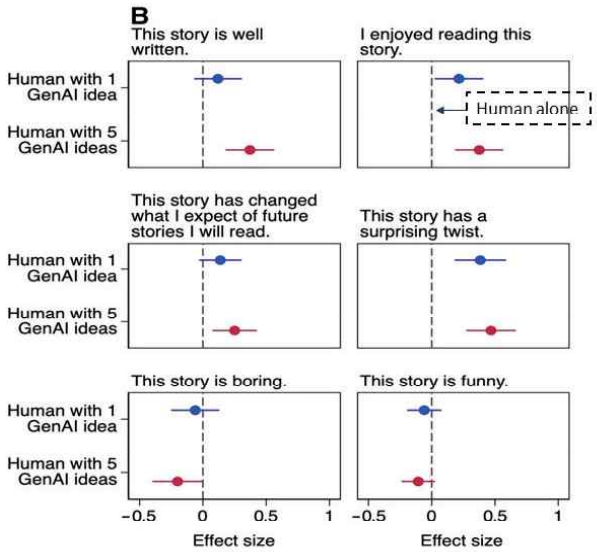


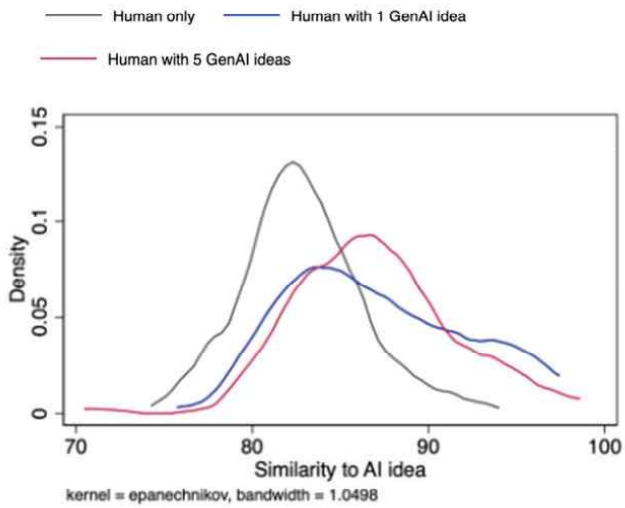
Access to generative AI ideas leads to stories evaluated (by humans) as:

- More creative (especially among less creative writers)
- Better written
- More enjoyable
- But (slightly) less funny

Doshi and Hauser, 2024

Example 1: Fostering creativity and communication

Writing (short) stories with and without GenAI ideas



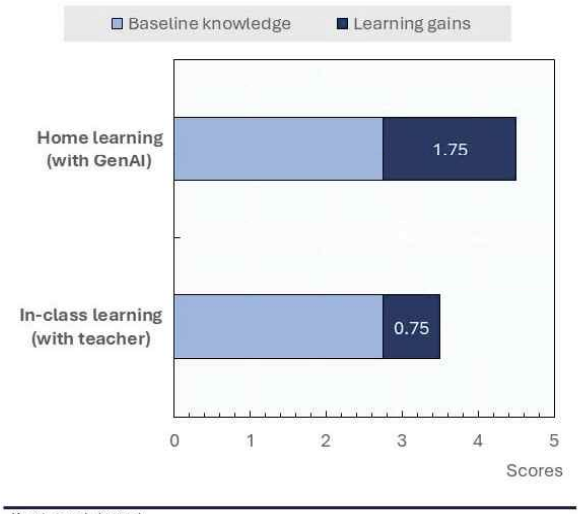
But the pools of GenAI-assisted stories exhibit higher similarity (less variety) to an AI production and with each other than the pool of human-only stories.

→ Increase in creativity of individual output and writing effectiveness at the risk of losing collective novelty?

Doshi and Hauser, 2024

Example 2: A GenAI tool fostering "active learning" pedagogy outperformed the same "in-class" pedagogy

Selected international evidence from the DEO 2026



Kestin et al. (2025)

United States (Active learning)

RCT – Undergraduate physics course

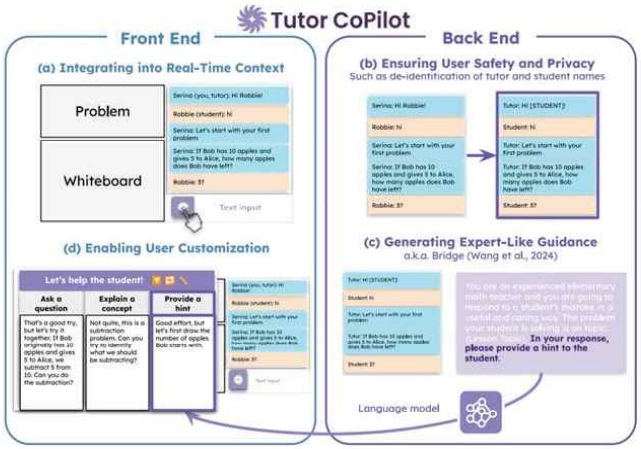
Same (active learning) pedagogy tested in two different settings: **at home with a custom-made GenAI** versus **in-class with a teacher**.

Results:

- Students **learnt more and in less time** when using the GenAI tutor
- They also felt more **engaged** and **motivated**

Example 3: Helping instructors in real time to provide feedback

Tutor Copilot: a way to mobilise less qualified tutors effectively?



Intervention: More or less experienced and qualified human tutors use speficically trained AI chatbot in real time to support underserved pupils in the US in a virtual tutoring platform

Machine is trained based on the ethnologic observation of good teachers providing feedback (and use GPT4)

Very robust study in K12 – possibly transferable to HE?

Wang, R. E., Ribeiro, A. T., Robinson, C. D., Loeb, S., & Demszky, D. 2024

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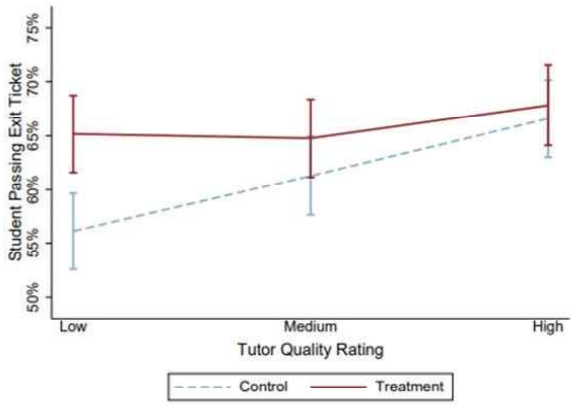
Tutor Copilot: a way to mobilise less qualified tutors effectively?



(a) Tutor Quality Rating

RCT shows effectiveness, particularly for « lower quality » (and less experienced) tutors

Wang, R. E., Ribeiro, A. T., Robinson, C. D., Loeb, S., & Demszky, D. 2024

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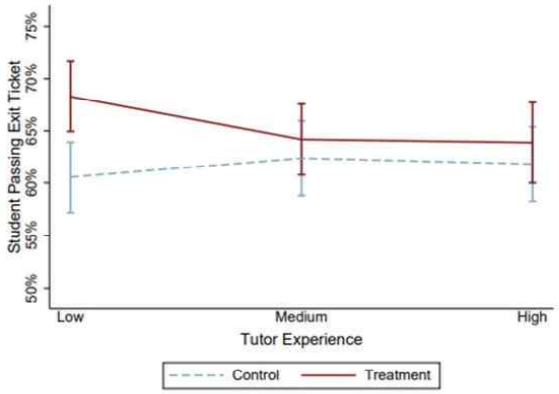


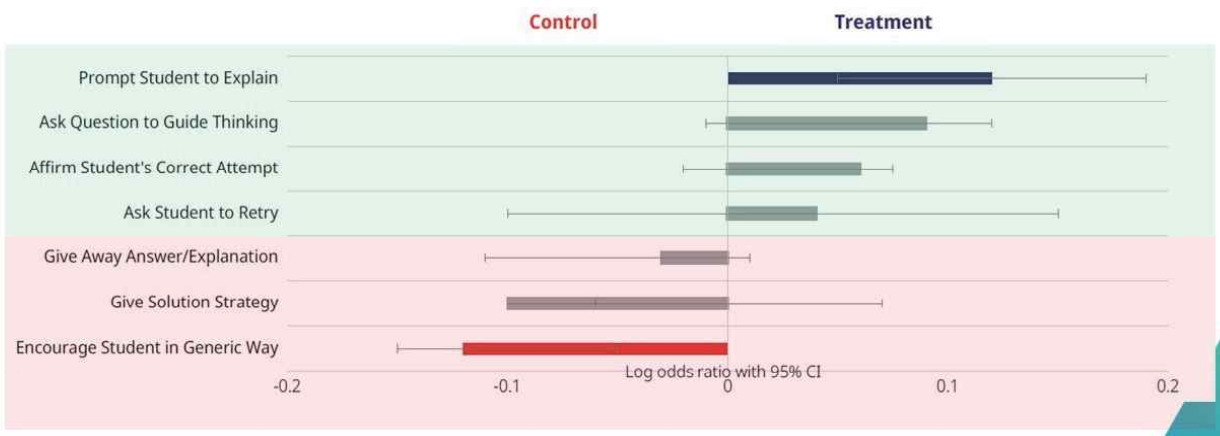
(b) Tutor Experience

RCT shows effectiveness, particularly for less experienced (and « lower quality ») tutors

Wang, R. E., Ribeiro, A. T., Robinson, C. D., Loeb, S., & Demszky, D, 2024

Example 3: Helping instructors in real time to provide feedback

How come? GenAI-assisted tutors used more active and effective teaching strategies.



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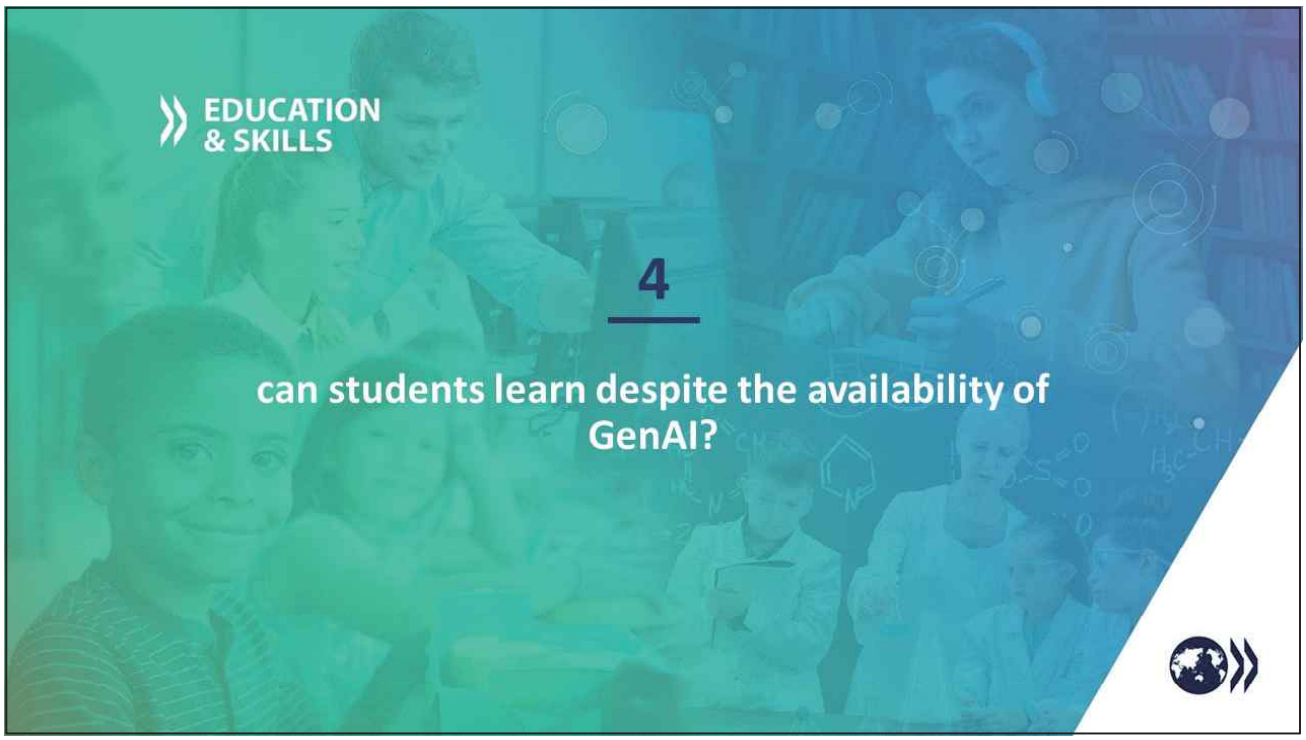


Example 1: Keeping same learning gains with or without LLM in computer programming course (Slovenia)

Question: How to change the tasks and assignments so that the access to ChatGPT does NOT make a (negative) difference on learning?

Controlled Experiment with **182 1st-year HE students** in **2 groups** (object-oriented programming):

1. Use of ChatGPT for practical assignments
2. No use of ChatGPT for practical assignments

Course structure (15 weeks):

1) 11 mandatory and 11 optional home practical assignments
2) Lectures followed by Lab session in which each students has an **extended assignment** and an **oral defence** of their home programme
3) 2 **paper-based** mid-terms exams

Results:

- Same results for both groups on lab work and on mid-term exam (slightly higher for Group 1 but not statistically significant)
- The ChatGPT group had the impression it had learnt more than the non-GPT group

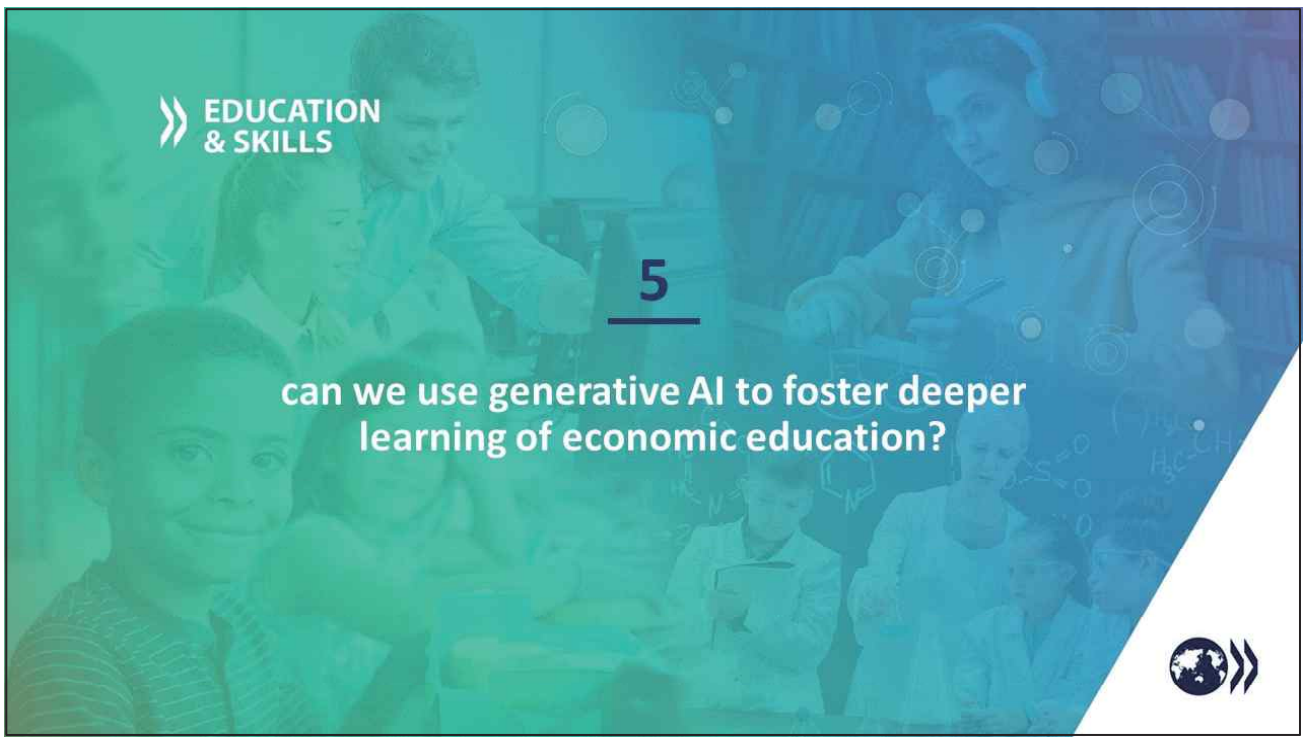
Source: Kosar, Ostojić, Liu and Mernik, 2024

Example 1: Keeping same learning gains with or without LLM in computer programming course (Slovenia)

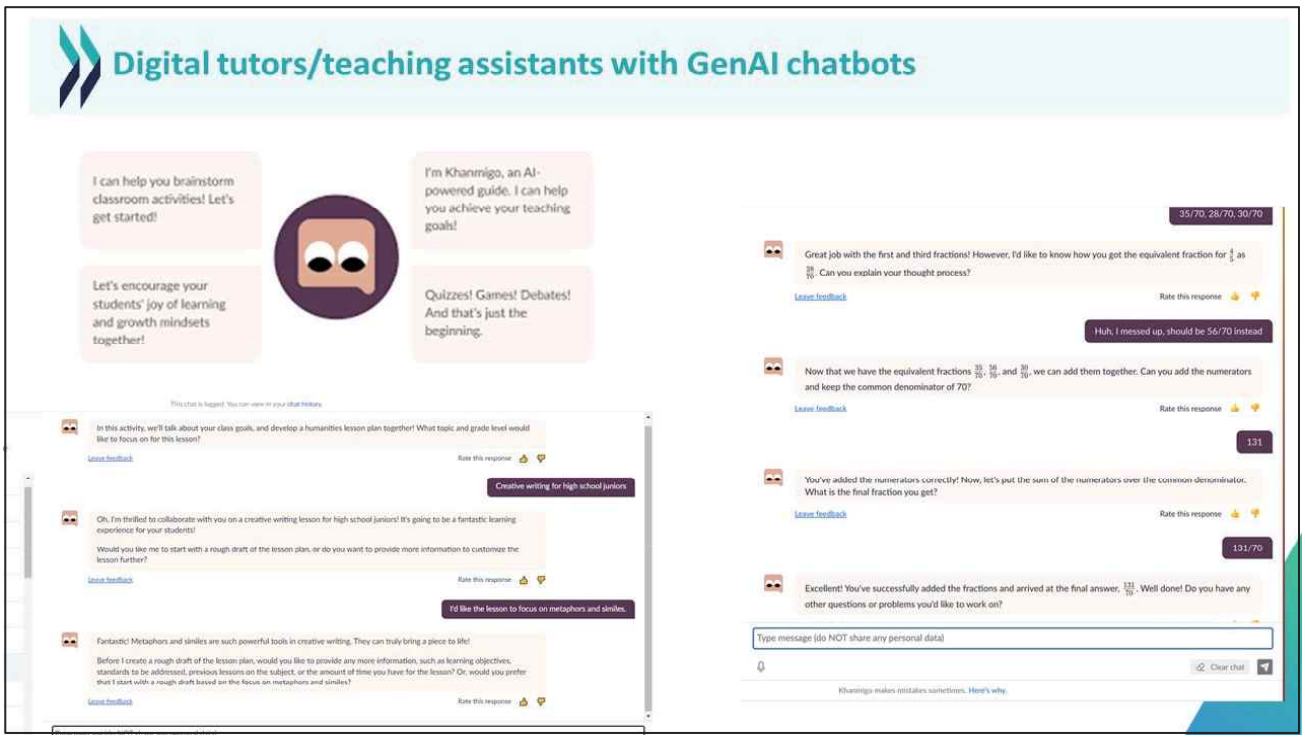
How did it work?

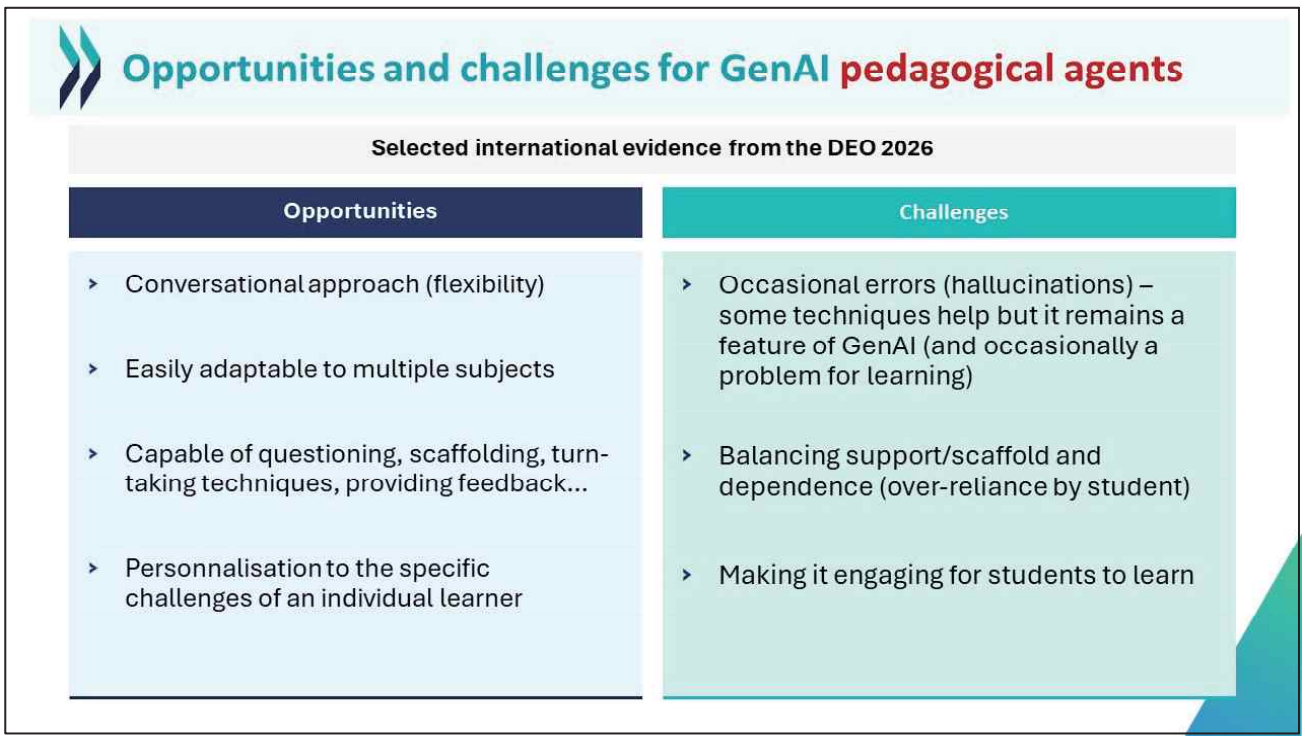
- **Revised assignments:**
  - Instructors checked what ChatGPT does easily and provided assignments that are less convenient for ChatGPT or require more student knowledge for good prompting
  - Use Lab sessions to extend home assignments (with no help of ChatGPT)
- **Oral defence of produced computer programmes (with Teacher Assistants)**
  - Conceptual questions (explaining part of their programming code emphasising object-oriented concepts)
  - Code analysis (search in code for specific functionality)
  - Code changes questions (minimal change in the object-oriented part of the programs that change the code's behaviour)
  - Code completion questions (demonstration of using object-oriented code in the main program)
- **Mid-term exams**
  - Mainly based on theoretical questions
  - NB: Paper format annoyed students to some extent

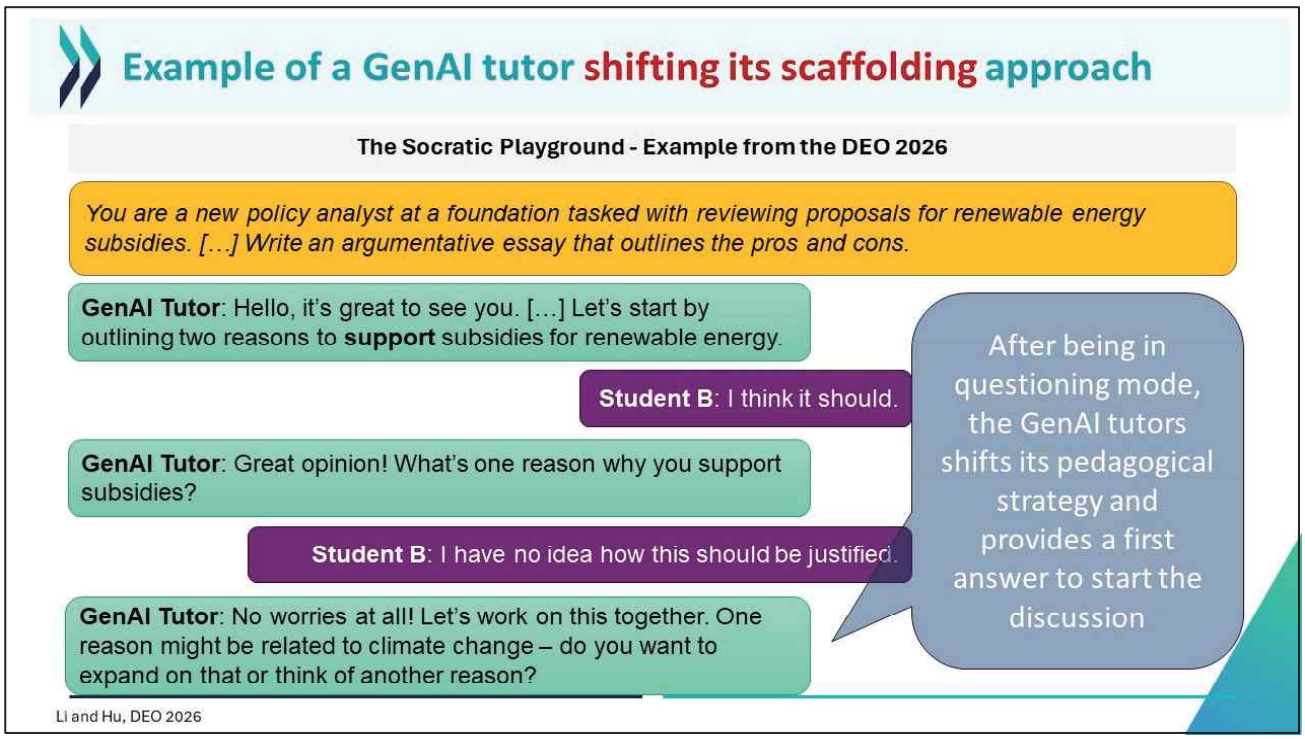
Source: Kosar, Ostojić, Liu and Mernik, 2024




Developing GenAI tools to learn about economic issues and economic concepts
35


Digital tutors/teaching assistants with GenAI chatbots
I can help you brainstorm classroom activities! Let's get started!
I'm Khanmigo, an AI-powered guide. I can help you achieve your teaching goals!
Let's encourage your students' joy of learning and growth mindsets together!
Quizzes! Games! Debates! And that's just the beginning.
In this activity, we'll talk about your class goals, and develop a humanities lesson plan together! What topic and grade level would like to focus on for this lesson?
Creative writing for high school juniors
Oh, I'm thrilled to collaborate with you on a creative writing lesson for high school juniors! It's going to be a fantastic learning experience for your students!
Would you like me to start with a rough draft of the lesson plan, or do you want to provide more information to customize the lesson further?
I'd like the lesson to focus on metaphors and similes.
Fantastic! Metaphors and similes are such powerful tools in creative writing. They can truly bring a piece to life!
Before I create a rough draft of the lesson plan, would you like to provide any more information, such as learning objectives, standards to be addressed, previous lessons on the subject, or the amount of time you have for the lesson? Or, would you prefer that I start with a rough draft based on the focus on metaphors and similes?
35/70, 28/70, 30/70
Great job with the first and third fractions! However, I'd like to know how you got the equivalent fraction for 4/5 as 28/70. Can you explain your thought process?
Huh, I messed up, should be 56/70 instead
Now that we have the equivalent fractions 35/70, 56/70, and 30/70, we can add them together. Can you add the numerators and keep the common denominator of 70?
131
You've added the numerators correctly! Now, let's put the sum of the numerators over the common denominator. What is the final fraction you get?
131/70
Excellent! You've successfully added the fractions and arrived at the final answer, 131/70. Well done! Do you have any other questions or problems you'd like to work on?
Type message (do NOT share any personal data)
Clear chat
Khanmigo makes mistakes sometimes. Here's why.


Opportunities and challenges for GenAI pedagogical agents
Selected international evidence from the DEO 2026
Opportunities
Conversational approach (flexibility)
Easily adaptable to multiple subjects
Capable of questioning, scaffolding, turn-taking techniques, providing feedback...
Personnalisation to the specific challenges of an individual learner
Challenges
Occasional errors (hallucinations) – some techniques help but it remains a feature of GenAI (and occasionally a problem for learning)
Balancing support/scaffold and dependence (over-reliance by student)
Making it engaging for students to learn


Example of a GenAI tutor shifting its scaffolding approach
The Socratic Playground - Example from the DEO 2026
You are a new policy analyst at a foundation tasked with reviewing proposals for renewable energy subsidies. […] Write an argumentative essay that outlines the pros and cons.
GenAI Tutor: Hello, it's great to see you. […] Let's start by outlining two reasons to support subsidies for renewable energy.
Student B: I think it should.
GenAI Tutor: Great opinion! What's one reason why you support subsidies?
Student B: I have no idea how this should be justified.
GenAI Tutor: No worries at all! Let's work on this together. One reason might be related to climate change – do you want to expand on that or think of another reason?
After being in questioning mode, the GenAI tutors shifts its pedagogical strategy and provides a first answer to start the discussion
Li and Hu, DEO 2026

using GenAI to develop lesson plans that foster deeper learning in economic education

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Some examples of GenAI applications for teachers

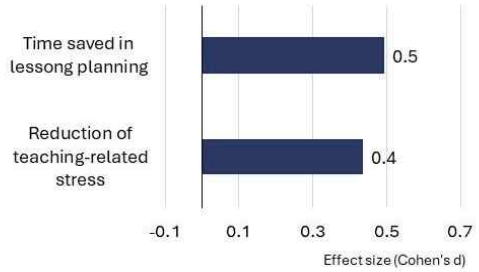
- Generation of lesson plans
- Contextualisation of lesson plans
- Support to provide more detailed feedback to students
- Support to generate exercises and assessments
- Support to score student work according to a rubric

GenAI as a productivity boost for teachers

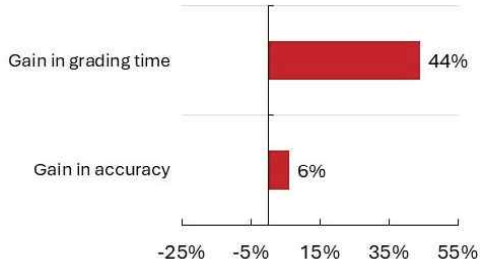
Selected international evidence from the DEO 2026

Comparing **GenAI** and humans in...

... preparing lessons



... grading a coding assignment



Though it also comes with risks to mitigate for teachers: cognitive offloading, loss of social interactions with students, halt to professional development, reduced agency and autonomy

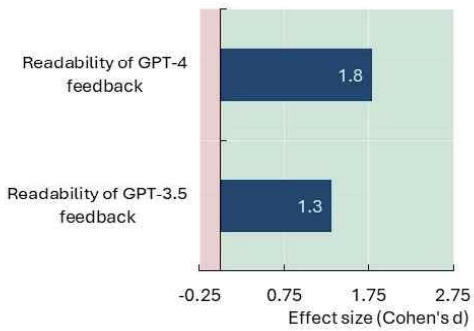
Dennison et al. (2025)

Liu and Liang (2024)

AI and the power of feedback - readability

Selected international evidence from the DEO 2026

Comparing **GenAI's feedback readability** to humans'



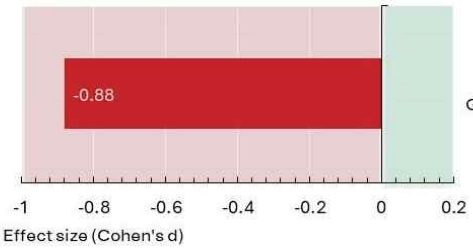
Review of evidence

- GenAI can scale timely and individualised formative feedback.
- Evidence shows that **AI-generated feedback** can match or exceed human feedback in quality, readability, structure...
- And can lead to similar learning gains for students.

Gašević and Yan, DEO 2026

AI and the power of feedback - credibility

Selected international evidence from the DEO 2026



Nazaretsky et al. (2024)

Review of evidence

- Whatever its quality, feedback is only effective if taken seriously and acted upon
- And students still tend to perceive GenAI feedback less credible and meaningful than humans', which decreases their motivation and engagement
- Comparable quality of feedback does not imply pedagogical interchangeability
- Thus, **hybrid AI-teacher** models are most promising

GenAI tools can support teachers in different ways

Some ways to think about Human-AI teaming and the design of AI tools for education

Replacement	Complementarity	Augmentation
GenAI accomplishes a task or subtask for the teacher	GenAI amplifies the teacher's capabilities while the teacher remains actively involved	Human–GenAI team outperforms what either the human or the GenAI could have performed alone
Productivity gain: more time for other tasks	Productivity gain: tasks are done better	Productivity gain: tasks are done better
Risk of skill atrophy?	Conducive to professional learning?	Conducive to professional learning
Important loss to human teaching relationship?		

Cukurova, DEO 2026

Developing subject knowledge and competences simultaneously: thinking like an economist

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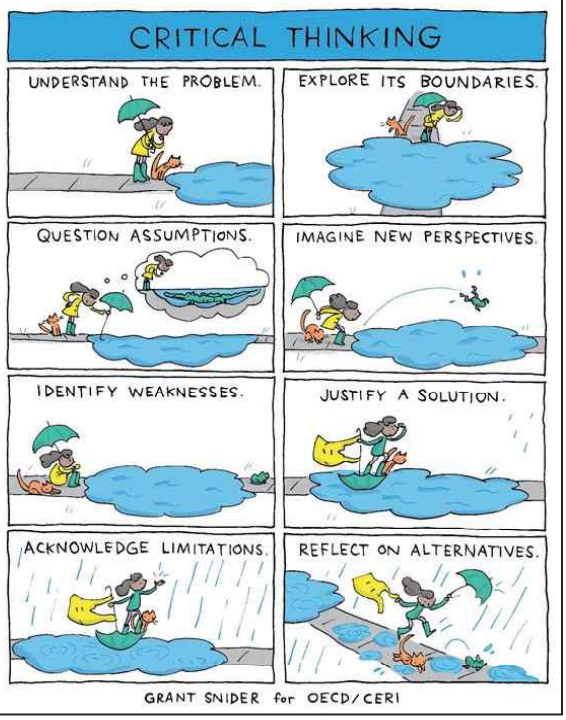
Creativity

- **Creativity**: the ability to produce work that is both novel and appropriate
- It is about:
  - Ideation and exploration (divergent-exploratory)
  - New and interesting combinations (convergent-integrative)
  - Getting at ease with unusual and daring ideas
  - Not about « novel to the world » or « gifted » or « successful »

Critical thinking

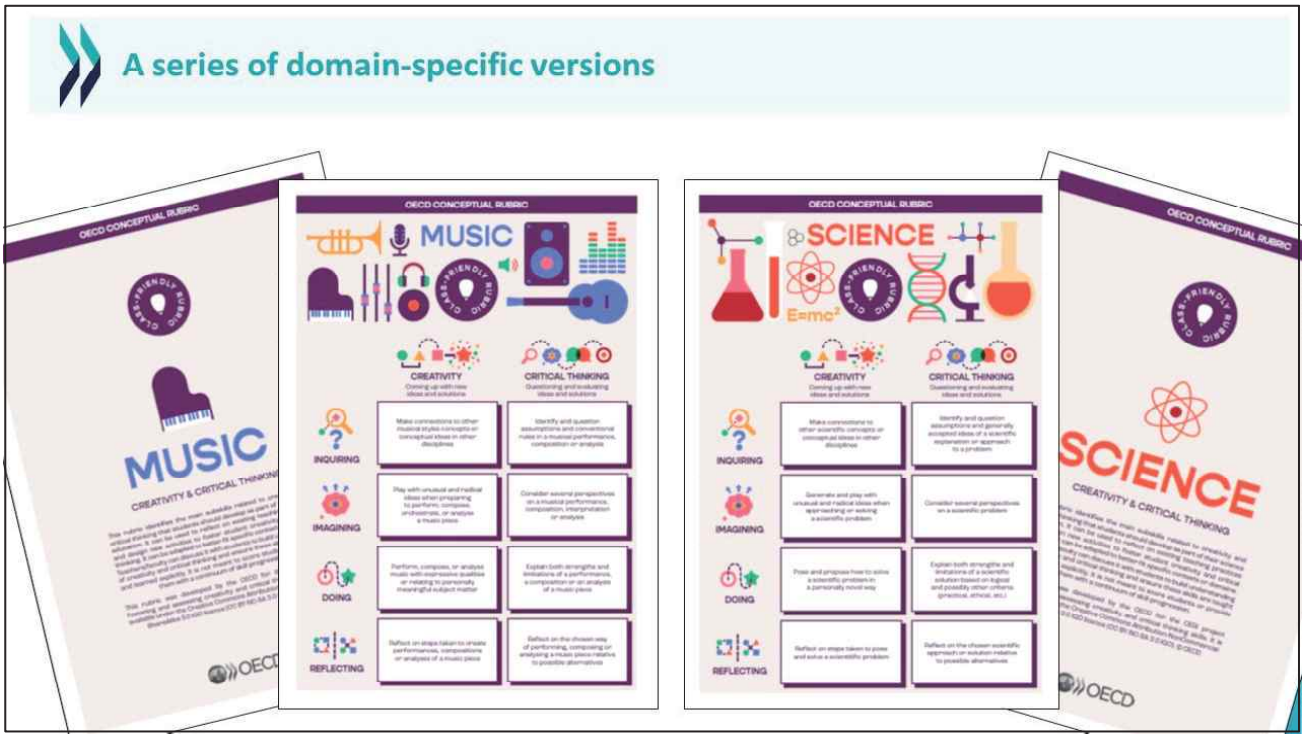
- **Critical thinking**: the ability to carefully evaluate and judge statements, ideas and theories relative to alternative explanations or solutions so as to reach a competent, independent position

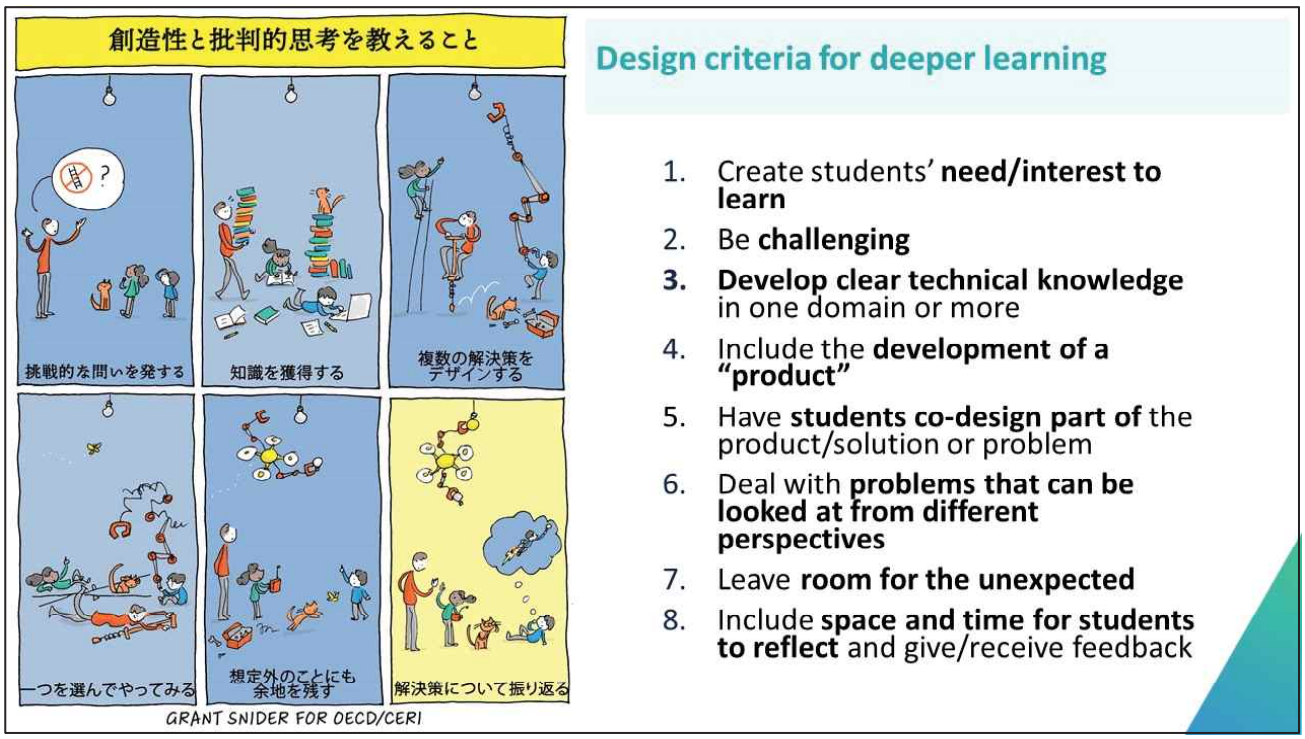
- It is about:
  - Thinking rationally (slow) and in a certain disciplinary frame
  - Understanding the limitations of theories and conventions (including ours)
  - Challenging assumptions
  - Considering other theories and perspectives (possibly to then discard them)



OECD (conceptual) rubric on creativity and critical thinking (class-friendly version)

	CREATIVITY Coming up with ideas and solutions	CRITICAL THINKING Questionning and evaluating ideas and solutions
INQUIRING	Make connections to other concepts and knowledge from the same or from other disciplines	Identify and question assumptions and generally accepted ideas or practices
IMAGINING	Generate and play with unusual and radical ideas	Consider several perspectives on a problem based on different assumptions
DOING	Produce, perform or envision a meaningful output that is personally novel	Explain both strengths and limitations of a product, a solution or a theory justified on logical, ethical or aesthetic criteria
REFLECTING	Reflect on the novelty of solution and of its possible consequences	Reflect on the chosen solution/position relative to possible alternatives


A series of domain-specific versions
OECD CONCEPTUAL RUBRIC
MUSIC
CREATIVITY & CRITICAL THINKING
SCIENCE
CREATIVITY
CRITICAL THINKING
INQUIRING
IMAGINING
DOING
REFLECTING
OECD


創造性と批判的思考を教えること
挑戦的な問いを発する
知識を獲得する
複数の解決策をデザインする
一つを選んでやってみる
想定外のことにも余地を残す
解決策について振り返る
GRANT SNIDER FOR OECD/CERI
Design criteria for deeper learning
1. Create students' need/interest to learn
2. Be challenging
3. Develop clear technical knowledge in one domain or more
4. Include the development of a "product"
5. Have students co-design part of the product/solution or problem
6. Deal with problems that can be looked at from different perspectives
7. Leave room for the unexpected
8. Include space and time for students to reflect and give/receive feedback

Using GenAI as support to develop a lesson plan (teachers' perspective)

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A pedagogical activity developed with GenAI: defining learning goals (and idea)

- **Learning goals** (subject knowledge: economics):
  - Price, supply and demand
  - Economic incentives – and others
  - Correlation and causality
- **Other learning goals** (competencies):
  - Critical thinking
  - Creativity
  - Collaboration
- Possible applications for students:
  - **International student mobility**
  - Oil prices
  - Coffee price

A pedagogical activity developed with GenAI: generate simulated datasets

- As a project for economic education in secondary education, students will learn about supply, demand and the role of prices by studying cases of international student mobility. They should have examples with alternative scenarios where a significant raise in tuition fees lead to different outcomes in terms of international student numbers and the composition of this group. Some of the effects could be unrelated to the policy but come from changes in other countries' policies or from the economic or political situation in the country of origin of the students.

- **Generate a simulated dataset for 3 different countries** located in Asia (e.g. Japan), Europe (e.g. UK and Sweden) and Oceania (e.g. Australia or New Zealand) with three data points for each variable: **initial situation and situation 2 and 4 years after the reform.**

- Provide levels of tuition fees for domestic students, for international students, number and percentage of international students in the system, percentage of international students by main region and country of origin, length of study of international students in the host country, revenues from trade in education services.

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A pedagogical activity developed with GenAI: generate simulated datasets

- **Generate a second set with information that students could have access to in a second stage**: change in country/region GDP, change in number of students that enter higher education, cap set by migration authorities, perceived quality of education compared to other host countries, perceived research quality compared to other host countries, percentage between undergraduate and graduate students.

- All these variables should allow to make students learn/understand that 1) changing a price may have implications on supply and demand, but also, 2) in a second stage, that the price is only one explanation to the actual phenomenon as other factors may also influence. Depending on the countries, effects 1 and 2 could be shown in year 2 or in year 4.

- Explain how the dataset reflect these constraints and what competing explanations could be advanced.

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Country A

Key indicators

Variable	Initial (Year 0)	Year 2	Year 4
Domestic tuition fee (USD/year)	5,000	5,200	5,300
International tuition fee (USD/year)	**6,000**	**10,000**	**10,500**
Total students	3,000,000	2,950,000	2,900,000
International students	**180,000**	**155,000**	**210,000**
International students (% total)	6.0%	5.3%	7.2%
Average length of study (years)	3.2	3.0	3.1
Education export revenues (USD bn)	2.0	2.2	3.4

Origin region	Year 0	Year 2	Year 4
East Asia	70%	65%	55%
South Asia	10%	15%	25%
Southeast Asia	15%	15%	15%
Other regions	5%	5%	5%

Top Countries of origin	Year 0	Year 2	Year 4
China	45%	35%	22%
Vietnam	15%	17%	14%
India	5%	10%	20%
Nepal	5%	7%	10%
South Korea	10%	8%	6%

Country B

Key indicators

Variable	Initial (Year 0)	Year 2	Year 4
Domestic tuition fee (USD/year)	12,000	12,500	13,000
International tuition fee (USD/year)	18,000	28,000	30,000
Total students	2,700,000	2,750,000	2,800,000
International students	540,000	620,000	430,000
International students (% total)	20.0%	22.5%	15.4%
Average length of study (years)	2.8	2.8	2.7
Education export revenues (USD bn)	16	21	17

Origin region	Year 0	Year 2	Year 4
South Asia	25%	35%	30%
East Asia	35%	25%	20%
Africa	15%	18%	20%
Europe	15%	12%	15%
Other regions	10%	10%	15%

Country	Year 0	Year 2	Year 4
China	28%	18%	15%
India	15%	28%	22%
Nigeria	5%	10%	12%
Pakistan	4%	8%	8%
United States	3%	4%	5%

Country C

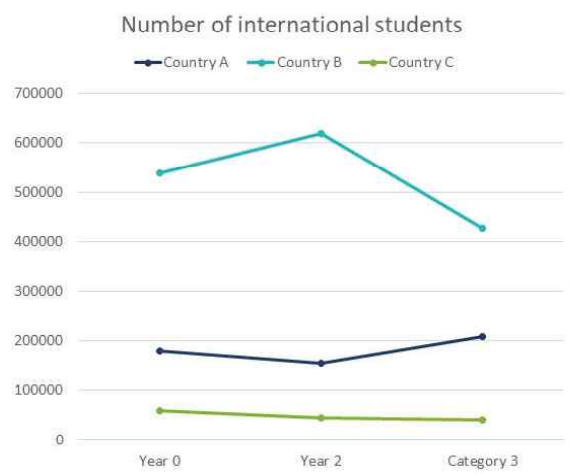
Key indicators

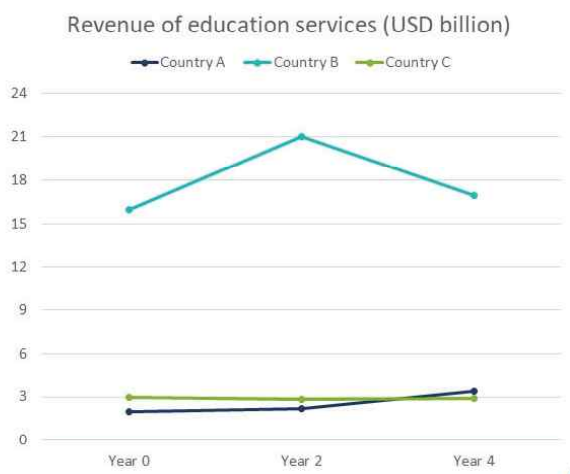
Variable	Initial (Year 0)	Year 2	Year 4
Domestic tuition fee (USD/year)	5,500	5,600	5,800
International tuition fee (USD/year)	15,000	24,000	25,000
Total students	300,000	305,000	315,000
International students	60,000	45,000	42,000
International students (% total)	20.0%	14.8%	13.3%
Average length of study (years)	2.9	2.7	2.6
Education export revenues (USD bn)	3.0	2.8	2.9

Origin region	Year 0	Year 2	Year 4
East Asia	50%	40%	35%
South Asia	20%	25%	20%
Southeast Asia	15%	20%	25%
Pacific Islands	10%	10%	15%
Other regions	5%	5%	5%

Country	Year 0	Year 2	Year 4
China	30%	20%	15%
India	15%	20%	15%
Philippines	5%	8%	10%
Indonesia	5%	8%	12%
Fiji	4%	5%	8%

Some visual representation of the data

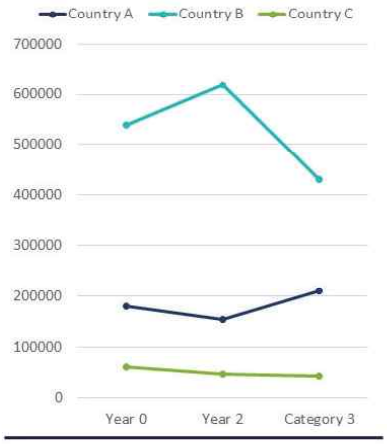




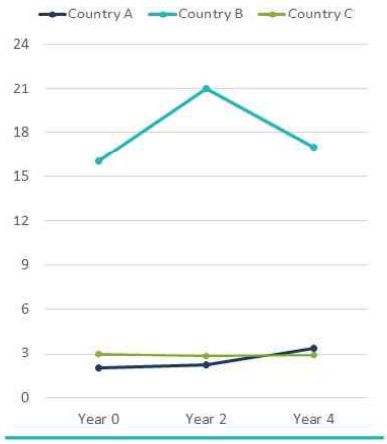
Some visual representation of the data

The main data at a glance

Number of international students



Revenue of education services (USD billion



Comments

- Country B and C (eventually) follow the simple model of supply and demand – but not country A
- The revenues related to student mobility follow student numbers for country B only: less students can generate more revenues if they pay (and spend) more
- Because the answer is not straightforward and students have the composition of the international student population, they have hints to think more deeply

Second simulated dataset (additional information)

Country A	Year 2	Year 4
GDP growth in main origin countries	+1%	+5%
Change in higher education entrants in origin countries	-2%	+12%
Student visa cap	None	None
Perceived education quality (1-10)	7.5	8.0
Perceived research quality (1-10)	7.0	8.2
Undergraduate share	75%	65%
Graduate share	25%	35%
Country B	**Year 2**	**Year 4**
GDP growth in main origin countries	+6%	+2%
Change in higher education entrants in origin countries	+15%	+8%
Student visa cap	None	Moderate restrictions
Perceived education quality (1-10)	9.5	9.5
Perceived research quality (1-10)	10.0	10.0
Undergraduate share	55%	60%
Graduate share	45%	40%
Country C	**Year 2**	**Year 4**
GDP growth in main origin countries	+2%	+3%
Change in higher education entrants in origin countries	+4%	+5%
Student visa cap	Tight cap	Tight cap
Perceived education quality (1-10)	7.8	7.7
Perceived research quality (1-10)	7.2	7.1
Undergraduate share	70%	75%
Graduate share	30%	25%

The tuition fee (price) increase initially reduced demand, but after four years, the combination of stronger economic growth in South Asia, more students eligible and seeking overseas study, as well as the improving reputation of universities and growing recruitment of graduate students led international student numbers eventually to rise despite higher prices.

First, demand increased despite much higher prices, thanks to the fast-growing economies (especially India) and more purchasing power from source countries. Strong international reputation and high expected labour-market returns fuelled this demand. At Year 4, migration restrictions reduced demand and some students shifted to alternative destinations, leading numbers to fall even though quality perceptions remained very high.

The tuition increase reduced demand and visa limits constrained supply, making competing countries more attractive. Research reputation did not improve. Consequently, student numbers remained below the initial level despite continued global demand growth.

Pedagogical activity: advising on tuition fee policy for international students

Project

The government is considering to increase significantly the tuition fees of international students. Its objectives are multifold: 1) supplement the public budget to universities to increase their quality of education and research; 2) increase the number of international students by increasing the quality of services for them; 3) decrease the public subsidies to foreign students; 4) improve its trade balance thanks to trade in education services. Before the raise is introduced, your class is asked to advise on the policy.

1. **Individual work (before class, possibly with GenAI)**:

Step 1: Review the simple model of supply and demand and write down what would happen in terms of demand for studying in Korea if the government raises the tuition fees for international students. Would more or less students want to study in Korea? Would universities offer more study places for international students? What are the possible scenarios?

Step 2: The provided dataset includes information about 3 countries that raised significantly international students' tuition fees in past years. Turn the main information of the table into figures. Analyse the dataset that you were provided. Which of the scenarios you envisage best illustrate these countries' pattern? Imagine 3 competing hypotheses about what happened.

Pedagogical activity: advising on tuition fee policy for international students

2. Group work and class discussions (no GenAI): The class is divided into 3 groups that will have to prepare an analytical report on one of the three countries, but with the information of other countries also available.

Step 1: Brainstorming. Find at least 10 possible drivers of the evolution of international student numbers?

Step 2: Individual extension work. Each student should find and note down 2 possible explanations that did not come up in the group discussion, including one that is original. This adds to the group's ideas.

Step 3: Group discussion. The group discussed to what extent the identified drivers could explain the data and how this would apply to their country (their advice).

Step 4: Group decision. Based on their discussions, the groups can "order" 4 other data points (that the teacher will get generated by GenAI) – or, if easier, the teacher provides the second dataset to all students.

3. **Group work outside of class (possibly with GenAI)**: Students analyse their datasets, and prepare a presentation/report that proposes a scenario on what could have happened in the country they studied. Then they provide advice to the government by highlighting two possible scenarios after they raise tuition fees and in which context they would happen. They advise on what the positive and negative impact of raising the tuition fees could be, how economic factors will play out, and what other considerations the government should keep in mind. They can use GenAI to make their presentation more engaging.

4. **Group work in class (without GenAI)**:

Step 1: Presentations of the their analysis and of their recommendation

Step 2: Based on the discussions they already had, each group has to review the position of another group and is tasked to develop an alternative explanation and argumentation to what was presented.

Using GenAI to learn given the educational task (students' perspective)

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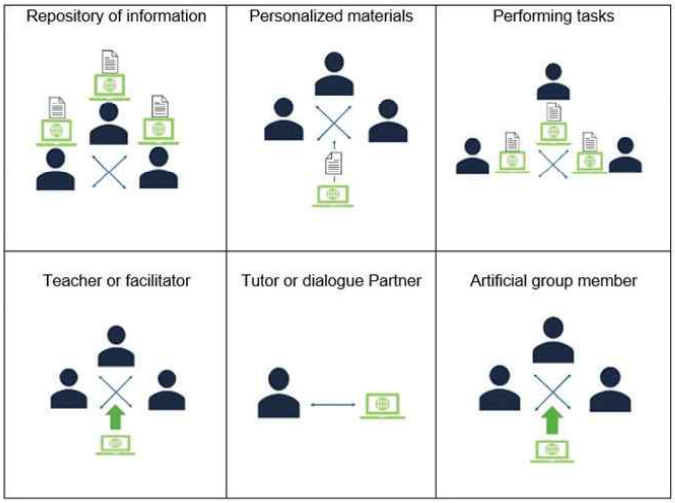
Faculty can use GenAI to design, but can students use GenAI (and learn)?

- What GenAI **can easily** do for them (if not done in class):
  - Help with the analysis of data
  - Find multiple possible scenarios for their preparation
  - Help them find ideas to challenge what others have done
  - Support to prepare the report and presentation and give feedback on it
- What GenAI **cannot** do for them:
  - Make decisions on what stories they decide to privilege in terms of explanations
  - Make decisions on what they would like to know or how they interpret the information (value-based)
  - Argue for them in the the group discussion and oral presentations
  - Finding original ideas to explain the effects on demand (and to a lesser extent supply)
- What GenAI allows to do: an **authentic task** rather than an exercise with a predefined solution – more complex task than what would typically be done before

Using GenAI in collaborative learning pedagogy to enhance outcomes



GenAI can play **different pedagogical roles** aligned with rule-based AI provided before.

While most impact studies are small-size and with short interventions, they show a **medium positive effect** on learning (η (squared effect size) = 0.16)

None of the studies use GenAI as a general-purpose tool

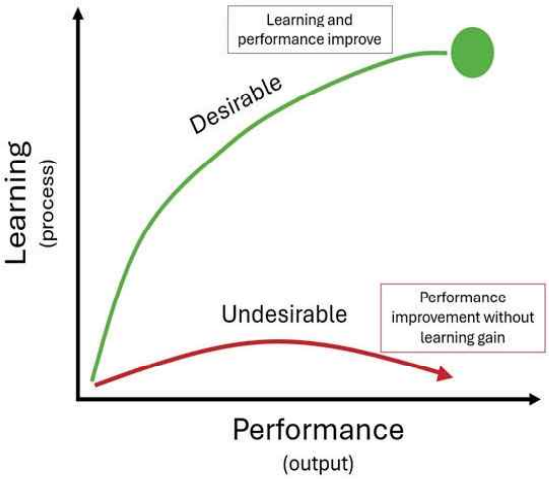
Source: Strauss and Rummel, 2026 (OECD Digital Education Outlook 2026)

EDUCATION & SKILLS

5

concluding remarks and guidelines on the use of GenAI in education

What does it take to learn with GenAI?
Either integrating GenAI into learning.... or embedding learning into GenAI



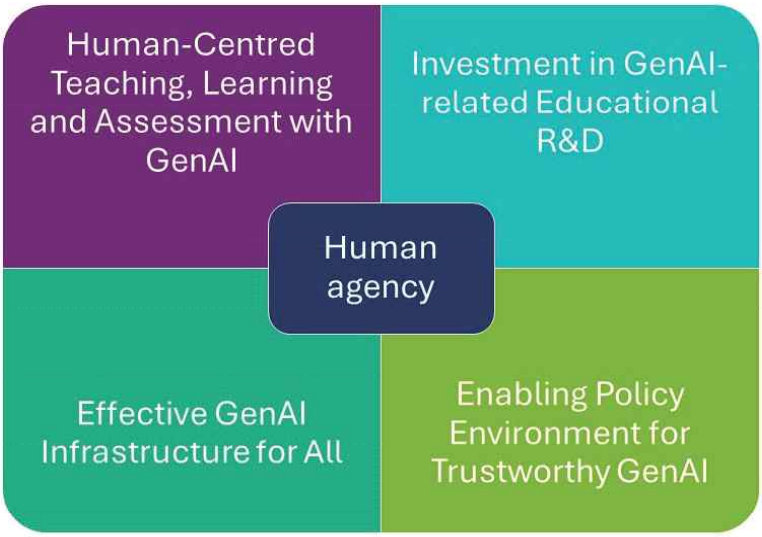
- Use **general-purpose** GenAI tools as part of traditional pedagogies in ways that support learning, **under teacher guidance**
- **Redesign current pedagogies** so that the availability of **general purpose** tools does not affect learning outcomes
- Pay attention to **learning processes** and not just outputs and emphasise **process-based assessment**
- Identify the course/subject foundational knowledge and skills and make sure they are acquired (without AI) →dual mode of learning and assessment (with and without GenAI)
- Develop **educational** GenAI tools aligned with pedagogical knowledge and educational research

Different types of AI in education

- GenAI tools are AI systems that:
  - create new outputs (e.g., text, code, audio, images, video),
  - often in response to prompts,
  - based on their training data
- GenAI is widely accessible and used outside institutional control by students, teachers and researchers
- 2 types of GenAI: general-purpose and educational

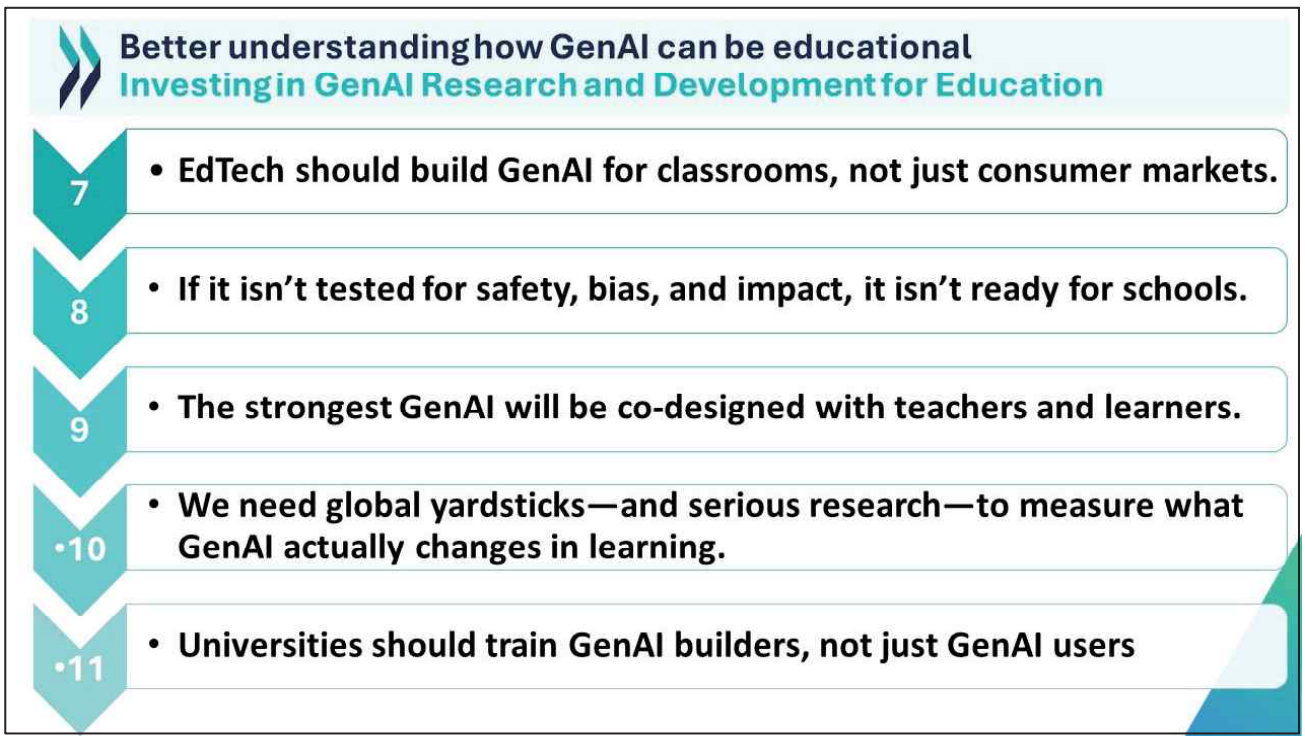
	General-Purpose	Educational
Non-generative (Predictive)	**Translation software** **Speech to text, Text to speech** (essential for assistive technologies)	**Intelligent tutoring systems** **Early warning systems**
Generative	**Large-language models** (LLMs), not mostly designed to support student's learning e.g. ChatGPT, CoPilot, Gemini, etc.	**LLMs developed for education purposes** e.g. Khanmigo, Socratic Playground, etc.

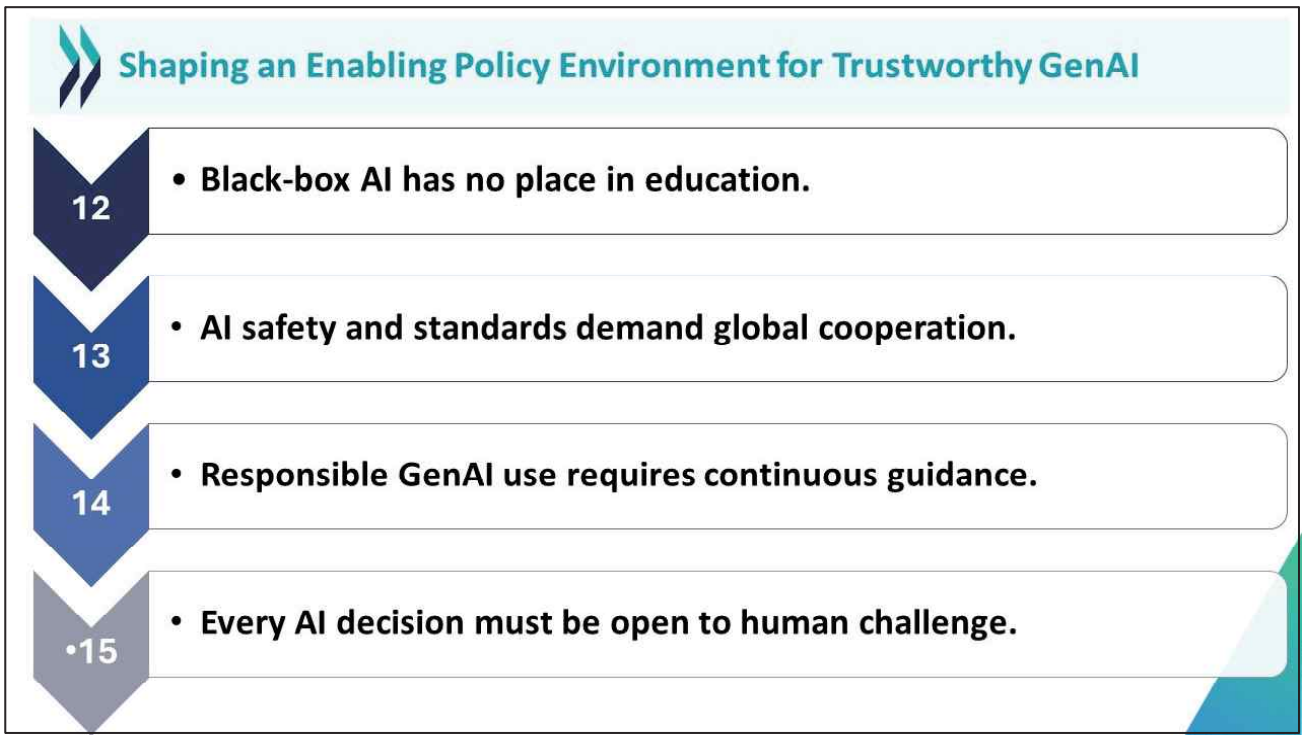
OECD Insights for the effective use of GenAI in Education



Harnessing GenAI for education while mitigating risks for learning
Human-Centred Teaching, Learning and Assessment with GenAI

1. **Doing a task with GenAI isn't the same as learning from it**
2. **As machines get smarter, human skills matter more.**
3. **Students must learn to think** (without GenAI) **before they learn to prompt.**
4. **GenAI works best when teachers design the task.**
5. **No GenAI lesson plan replaces professional judgment.**
6. **Algorithms may suggest; teachers must decide. Teachers should not outsource assessment to AI.**


Better understanding how GenAI can be educational
Investing in GenAI Research and Development for Education
7
• EdTech should build GenAI for classrooms, not just consumer markets.
8
• If it isn't tested for safety, bias, and impact, it isn't ready for schools.
9
• The strongest GenAI will be co-designed with teachers and learners.
•10
• We need global yardsticks—and serious research—to measure what GenAI actually changes in learning.
•11
• Universities should train GenAI builders, not just GenAI users


Shaping an Enabling Policy Environment for Trustworthy GenAI
12
• Black-box AI has no place in education.
13
• AI safety and standards demand global cooperation.
14
• Responsible GenAI use requires continuous guidance.
•15
• Every AI decision must be open to human challenge.

Adding GenAI tools to countries' digital education infrastructure
Supporting an Effective GenAI Infrastructure for all

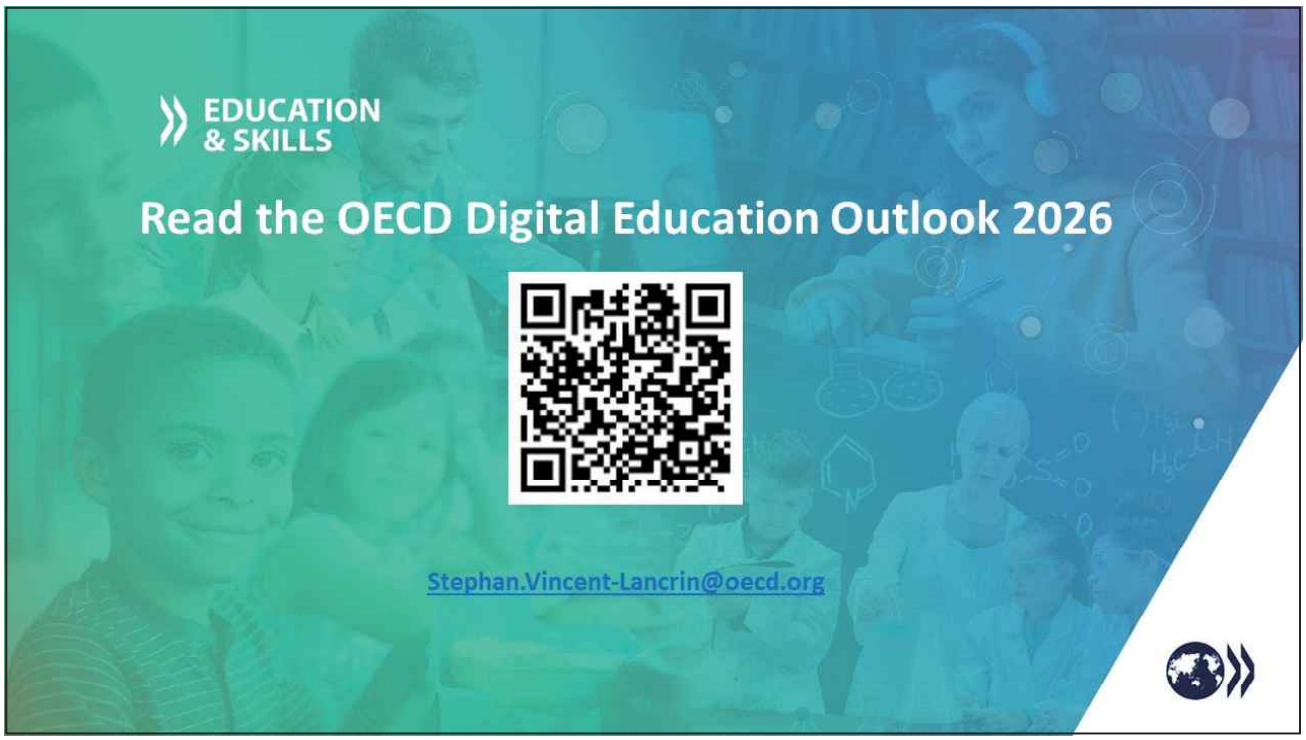
16 • No devices, no connectivity—no AI learning.

17 • GenAI belongs alongside other digital resources and textbooks as a core learning tool.

18 • Teachers need ongoing AI literacy, not one-off training.

19 • GenAI should empower teachers, not watch them.

Working together internationally


EDUCATION
& SKILLS
Read the OECD Digital Education Outlook 2026
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