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Column Better than blackboard

ChatGPT: Great Promise for Teaching or Global Pedagogical Tragedy?

It's my 10-th column, and its time to talk about the elephant in the room: generative AI. Welcome to the new issue of 'Better than Blackboard'! Today I will write about generative AI in our classrooms and our courses. This time our student illustrator Mara Chelărescu not only made her wonderful drawings but also shared some very interesting relevant materials with me, for which I am very grateful. Check out more of Mara's art at <https://cara.app/vinylaroll>.

Fun fact. Ancient Greek philosopher Socrates was against written word and never wrote any of his thoughts (by the way, written word wasn't a novelty at the time; it was invented way before Socrates). On website [1], I found an excerpt from Plato's book that quotes Socrates' fable, in which the wise King of Egypt talks to divinity who invented writing and praised it as a 'potion of memory and wisdom'. I am quoting the reply of the wise King in its entirety because of how painfully familiar it sounds:

"You have not discovered a potion for remembering, but for reminding; you provide your students with the appearance of wisdom, not with its reality. Your invention will enable them to hear many things without being properly taught, and they will imagine that they have come to know much while for the most part they will know nothing. And they will be difficult to get along with, since they will merely appear to be wise instead of really being so." Socrates (469-399 BCE).

Socrates had a point, didn't he? Most likely,

writing did decrease humans' ability to remember words by heart. The irony is that we know about Socrates's wisdom only because Plato wrote it down. And we all know what happened next: in our current education system, writing is the primary skill and most important instrument of self-development and discovery.

Now we face AI. Most students embrace it. Some students want to ban it. Many teachers embrace it. Many others believe that AI destroys students' learning. Everyone sees the dangers. Everyone sees the promise. What can I possibly add to all these?! So, I will share what I've read, heard and experienced. And I will try to say something interesting, useful and optimistic. Let's go...

Cheating reinvented

On May 7, 2025, The New York Magazine published an article 'Everyone is cheating their way through college' by James D. Walsh (full text is behind a paywall, but I found an open version at the link [2]). The article is based on many interviews with students and professors in the USA and paints a dramatic picture. Most students

use ChatGPT every day, get good grades, and don't think there is anything wrong with it.

There was some critique on Walsh's article, for instance, the blogpost 'That terrible "Everyone is cheating their way through college" essay' [3]. The author says that Walsh portrays universities as passive victims, while we are not! We are actively looking for new ways to navigate this new reality.

But even if the tone of Walsh's article could be less dramatic, no one can deny that we have a big problem.

In terms of both tone and content, I am a big fan of the book *Teaching with AI: A practical guide to a new era of human learning* by Bowen and Watson [4]. They have a whole chapter on cheating. Here are some numbers from two different 2023 studies they quote: "89% of college students reported using ChatGPT"; "94% of students (across five countries) said that they would continue using AI despite mostly agreeing that it was dishonest".

Many of us, me included, encountered cheating with AI first-hand.

Of course, cheating was there before. Book [4] gives pre-ChatGPT numbers, and they are high, too. Especially in the USA many students used paid services to make their assignments. However, not everyone could afford paid help, while everyone can use AI. One LinkedIn post has put it very well: AI has democratized cheating.

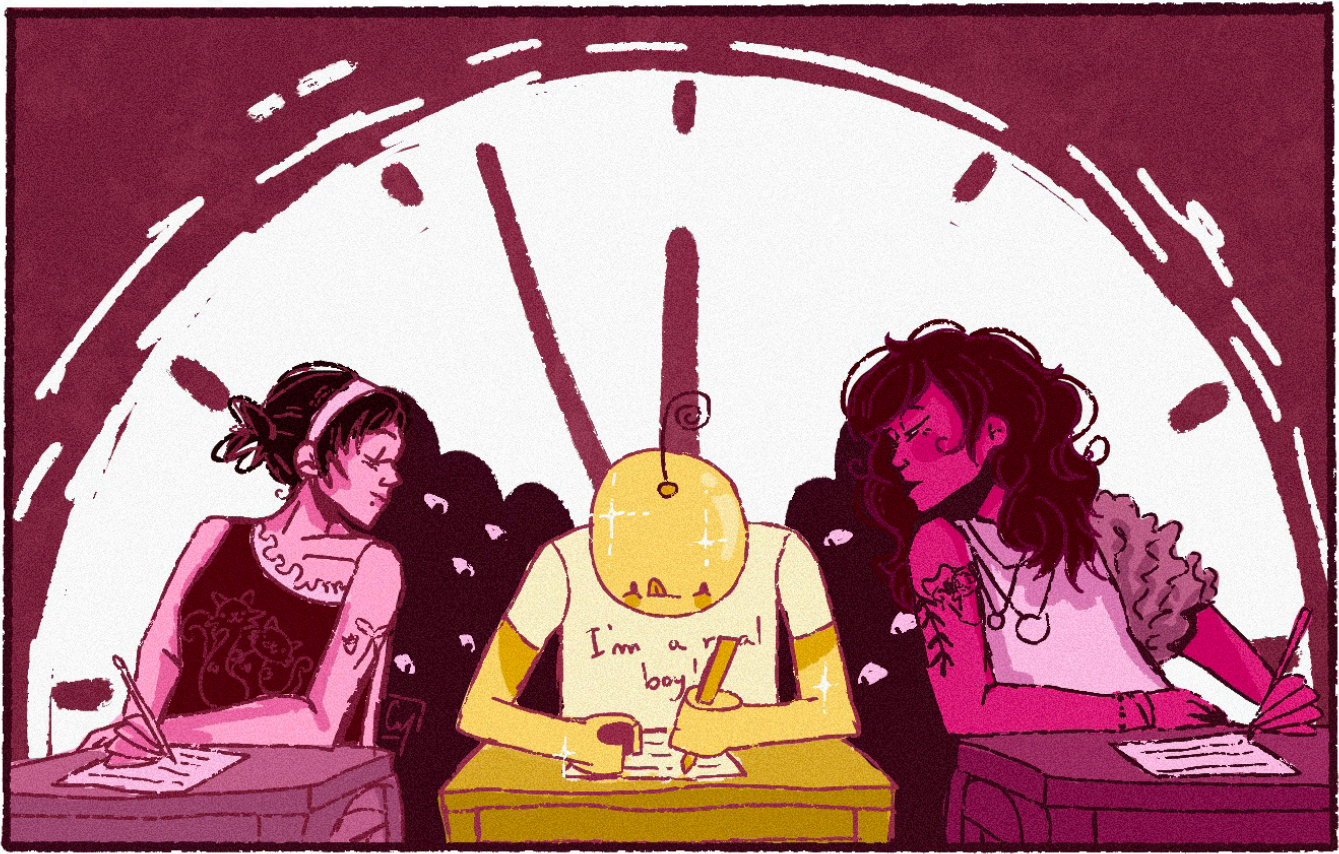


Illustration: Mara Chelărescu

Figure 1: Massive cheating

AI messing with critical thinking

The problem with cheating is not only dishonesty, but also (perhaps, mostly) that students don't learn what they need to learn.

My colleague George Fletcher gave many talks about possibilities and impossibilities of AI in education. He compiled an impressive list of references on this topic [10]. George's main take-away from literature is that AI is incapable of supporting the Humboldtian values of our higher education system: critical thinking, original thinking, and writing as intellectual exploration and development.

Bowen and Watson's analysis of literature [3] arrives at a similar conclusion: AI's produces average, homogenized outcomes. They call it 'consistent C'. For a newcomer in the profession, consistent C might be a significant improvement. For the original expert work expected from our graduates, this is by far not enough.

Learning to think critically is a hard and messy process. AI gave the students an unprecedented shortcut to avoid the pain of learning altogether.

In June 2025 a 206-pages MIT article [5] was posted on arxiv and made big waves. The title is *Your Brain on ChatGPT: Accumulation of Cognitive Debt when Using an AI Assistant for Essay Writing Task*. The authors divided students in three groups and asked them to write essays. The first group used only their own brain and no external tools. The second group used search engine. And the third group used an AI chatbot. Then the authors measured students' brain activity using electroencephalography (EEG). You guess it, the strongest activity was in the brain-only group, and the weakest in the AI group. Moreover, the students in the AI group had troubles quoting their own essay and had a much weaker sense of ownership of their work.

This doesn't yet say that AI damages students' brains. But it does say that brain on ChatGPT deprives students from the intended intellectual growth.

Students feel that, too. In the same study (cited in [4]) where 89% of the students admitted using ChatGPT, 72% of the students said it should be banned from

the campus. One of my students said to me, "I used to use it a lot. But now I don't. It messes with my brain, I don't learn anything!"

If students at university massively bypass the pain of learning to think critically, it does sound like an existential crisis for our Humboldtian higher education system.

Is the system broken?

Almost any text about AI in education repeats the same reflection: cheating is not new, shortcutting the difficult learning is not new. The system was already broken, AI just made it plain clear.

I agree that the problems are not new. These problems motivated me to write these columns in the first place. I sincerely don't believe that, say, 10 years ago, all (or even most) students in the massive higher education system developed the Humboldtian critical thinking. For many years now I've been observing students skipping classes, learning from old exams, asking me to 'just tell them how to solve it' instead of willing to struggle through the problem. These are not signs of critical thinking. And

I believe it started years ago, even before I was a student.

But AI did much more than ‘just’ made it clear. It has created a wide ethical gray zone and made shortcuts too tempting to resist. It gave the broken system another big blow. Before AI we could look away from the cracks. Now we cannot. It’s time to overhaul the system.

Policing won’t work

It is now clear that AI detection won’t help us in any way. Bowen and Watson [4] give a lot of evidence that detectors are highly unreliable. They tell a remarkable story. A professor, using an AI detector, wrongly accused a student of cheating. Then the student, determined to fight back, entered an abstract of the professor’s recent accepted paper in the GPTzero. And bingo! The tool returned 36% probability that the abstract was written by AI.

Human teachers, too, cannot tell the writings of AI from that of an average student, except for obvious blunders like essay saying ‘As an AI, I have been programmed...’ (true story, see Walsh’s article [2]).

Some professors populate their assignment description with hidden text in a small white font (like ‘mention pinguins’). If a student is careless, pinguins get into their essay proving that not only didn’t they write it, they also didn’t read it! But it is only a matter of (very short) time that these tricks won’t work anymore.

In mathematics we are lucky that we can take all our tests in class either on paper or in a secure online environment. But how long will it take before students have AI whispering in their ear or generating answers on their glasses, invisible to others? How far do we want to go in scanning and policing the students in exam halls?

Walsh [2] tells a story of Chungin (Roy) Lee, the founder of successful startup Cluely. Cluely is an AI app that takes in everything you hear, say and type in an online meeting and types on your screen what to say next. The point is that AI clues remain invisible to others even if you share your screen. With Cluely you cheat in job interviews and sales negotiations, conversations on complex topics, etc. Lee’s LinkedIn profile states exactly this: ‘CEO @ Cluely (cheat on everything)’.

Lee strongly believes that he does

the right thing. Concise and expressive, Cluely’s manifesto says:

“... yes, the world will call it **cheating**. But so was the calculator. So was spell-check. So was Google. Every time technology makes us smarter, the world panics. Then it adapts. Then it forgets. [...] So, start cheating. Because when everyone does, **no one is.**”

Walsh [2] tells how Lee genuinely believes that most college assignments are irrelevant. Lee’s last quote in [2] gives me shivers: “We’re going to target the digital LSATs; digital GREs; all campus assignments, quizzes, and tests.”

Whatever level of policing we are prepared to tolerate on campus, we will never win the race against AI. We must do something completely else.

What are we here for?

Book [3] offers one way forward: co-creation. Students must understand what each assignment contributes to their human skills, they must agree that these skills are useful, and they must understand and agree on whether AI will support or harm the development of these skills. To the question “What am I here for?”, the students should have a better answer than ‘good grades’, and the teachers should have a better answer than ‘going through the program’ and ‘giving inspiration’.

I believe in co-creation, but I also believe we are not quite ready yet. At least three things are necessary.

First, universities must de-incentivize cheating by reducing the grade pressure that we put on our students (more about it in my previous column [8]).

Second, we as teachers, must scrutinize each assignment, talk to the students and have a very clear story how this assignment contributes to their human skills and why this skill is worth the struggle.

Third, both teachers and students must have a current understanding of how human brain learns and how different uses of AI affect this learning.

As it stands now, students may believe that giving homework prompts to AI helps them to learn better. The same way as many students believe that they learn best from worked-out solutions. A lot of literature (like one of my favorite articles [6] and book [7]) tells us how students get illusion of learning when things go smoothly. At the end, using Socrates’ words “they will

imagine that they have come to know much, while for the most part they will know nothing”.

It is not the responsibility of the students to know how learning works. Universities must explicitly explain to them why struggle is necessary and why shortcuts are meaningless.

Here is my attempt of two explanations, one scientific and one metaphorical. I hope you will like it.

Scientifically, book [7] explains that education, on a physical level, is a network of neuronal connections in a person’s neocortex. Hence, [7] describes the learning process as ‘learn it, link it’. When students listen to the teacher, read a book or work through known solutions, they ‘learn it’. When they struggle with problems, they ‘link it’. Without linking, there is no education. If students don’t struggle, their brain doesn’t develop, as the MIT study [5] has shown.

Metaphorically, here is the story:

Alice and a magical bird

Alice looks around, excited and a little scared. She is in a beautiful garden; she came here to learn about fruits. As proof of her knowledge, she must collect the best possible fruit basket. She is already imagining how beautiful her basket will be.

‘Why don’t I start with this branch of peers,’ Alice says to herself. But before she can take one step, she suddenly sees a magical bird.

“Ask me anything,” says the bird.

Anything at all? Alice looks around, now more scared than excited. The garden is so big, no way she can learn all about it. And she is so busy right now! It’s ok if she gives herself a break just this one time... And what’s the point anyway if the bird already knows everything?!

So, instead of walking the paths, climbing the trees and learning about fruits’ names and nutrition, Alice turns to the bird: “Please collect the best possible fruit basket!” “Certainly, I can collect the best possible fruit basket for you,” says the bird. Two seconds later the basket is full, and Alice notices strange flower-shaped pink fruits in it. “What are these pink fruits?” Alice asks. “The pink fruits are Charlotte Apple Blossoms,” says the bird cheerfully. “They are known for their excellent asthenetic and helogeneous properties and they



Figure 2: Fairy tale about the Charlotte Apple Blossom and the magical bird.

Illustration: Mara Chelărescu

go great with the peaches next to them. Is there anything else I can assist you with?" Alice stares at her basket. She had never heard of Charlotte Apple Blossoms before. Maybe they are the best fruits ever. Maybe only penguins can eat them. Maybe they don't even exist... (They don't; I asked a creative colleague to come up with a fake fruit name and invented a couple of fake properties - NL). Alice has no idea. She is as clueless about the fruits as she was before she came here.

Alice picks up the basket and walks to the exit. Maybe she is not so excited about fruits after all.

I don't say that math teachers must tell students fairy tales about magical birds (although Lewis Carroll was a mathematician). But I do strongly believe that universities as organizations must take responsibility for teaching their staff and students about the learning process and the role of AI in it.

Can AI be helpful for the teachers?

My answer to this is: yes. Besides the standard use for coding and LaTeX, I will give

you another two examples.

The first example is now my favorite. I thought, it would be very useful for me and my students if AI could generate many practice and test questions. Luckily a talented Engineering Doctorate student Ziyarat Mahmudzade picked up this idea as her graduation project. Ziyarat has built a system that takes course materials in any form (slides, lecture notes, old questions) and creates questions for the students of desired type (single-answer multiple choice, multiple-answer multiple choice and numerical response), desired format (Latex, pdf etc.) and desired difficulty level. The system filters out hallucinations and keeps human in the loop. At the end, the teacher is in control, they choose and/or edit the questions. But isn't it great to have many draft options?! I am totally taking this project further and I hope I can use the system very soon.

My second example is that I use AI to look for words. I really like the view of Bowen and Warson [3] on AI and creativity. AI is not creative, but it can generate many options very fast and thereby boost our

human creativity. When I know what I want to say but am not happy with my own formulation, I ask ChatGPT to give me other options, and always at least one of them makes my text better.

Here is a simple illustration. Out of principle, I wrote this article without using AI. I invented the title "Great Promise for Teaching or Global Pedagogical Tragedy?", and I am very happy with it. But just for the sake of illustration, I asked ChatGPT to create more abbreviations, for both promise and threat of AI using a variety of words. Here are the results I received in a few seconds. Enjoy.

PROMISE:

Guided Pedagogical Transformation
Global Potential for Teaching
Genuine Progress in Tutoring
Growth, Personalization, and Teaching
Grasping Possibility Through AI
Generative Partner in Teaching
Gateway to Personalized Tutoring
Great Potential for Thinking
Gifted Pedagogue Technology
Generative Pedagogy Toolkit
Guidance, Precision, Trust
Game-changing Pedagogical Tool
General Purpose Tutor
Genius-Powered Teaching (playful)
Grading, Planning, Teaching (emphasizing utility)

THREAT:

Generic Pedagogy Trap
Global Plagiarism Tool
Grave Pedagogical Threat
Garbage Passed as Teaching
Ghostwritten Papers, Totally
Gradual Pedagogy Tear-down
Gimmick Passing for Teaching
Guided Propaganda Transmission
Glitchy Parroted Text
Glitchy Parroted Text
Generative Pretend Teaching
Great Plague of Truth (more philosophical/dystopian)
Grading Panic Trigger
Gutless Pedagogy Trick
Gravely Problematic Technology
Gains Power, Trains Nothing (provocative)

Can AI be helpful for students?

Yes, to this as well. When used right, AI can be a powerful tool for learning.

When students are proficient enough and know what they are looking for, AI can boost their creativity by generating many options; this works for students and teachers alike.

I also know many examples when professors encourage students to use AI for routine tasks that don't fall under learning goals of that specific course.

But AI can also help to learn. Recently OpenAI launched Study Mode of ChatGPT. I have tried it, and it works quite well.

As experiment, I asked ChatGPT in the Study Mode to teach me integration. I expected long explanations, but this was far from true. It started with asking me about my goals (I said: "I want to prepare for my first probability course"). Then it did some diagnostic ("1. Do you know differentiation? 2. Have you seen the sign f?"). Then it moved to learning and asked me to guess the meaning of a formula. I said I had no idea. It said "no problem", explained only the very minimum, and asked the next question. I was genuinely impressed.

OpenAI has 'Education Newsletter' on Substack, for students and teachers; you can search it online. It gives so many examples how AI can be used in education in a good way. There are many other tools as well, some of them can already be embedded in Canvas in the Dutch universities. It does sound promising, and I do believe

that AI can become a very effective tutor as long as the students don't blindly copy-paste prompts in it but keep the study mode toggled on.

When people need people

I am not worried about human intelligence dumbed down by AI. I believe in resilience of society. Soon enough we will develop a new culture of healthy and skilled human brain in the age of AI, similarly to the culture of a healthy and skilled human body in the age of cars and supermarkets.

The question is: what will happen to our higher education system in this new culture?

I believe there are dark sides of AI that we must avoid at all costs. For example, teachers may never spend their human effort to grade AI-generated work. Likewise, teachers may never give AI-generated feedback to students' authentic work.

But there are also gray areas. Internet is full of publications, including a New York Times story in May 2025, about students being upset when professors use ChatGPT. They say it is unfair: teachers don't allow students to use ChatGPT, but they use it themselves! It may happen that my students will be upset with AI-generated exam questions.

AI can be well-used or misused by students and teachers alike. This is why

we must always be in an open and honest conversation. People to people. Students and teachers must look each other in the eyes, define common goals, and give AI its rightful place as a powerful but assisting tool in achieving these goals together.

Education is a complex socio-cognitive process. On the surface, the cognitive side is most important, but it is also easy to hack by AI. The only way to fix the system is to build on the social side of it.

I don't know how to do it. Maybe nobody does. But we all can try. This year I started by learning the names of 40 students in my course and asking them what they are good at. It was an icebreaker from the blog by Robert Talbert [9]. I liked the activity, but didn't like the word 'icebreaker', it sounds corporate and boring. I asked ChatGPT to give some alternative names for this activity. This is how I started my course with the slide 'Who is in the room?'. The answers were diverse and impressive; the students were good in so many things from sports to arts! Knowing this made a huge positive difference in my teaching.

AI cannot compete with us in being genuinely human. If we learn about our students, make them feel seen, create strong sense of community and shared goals, then we can defy Socrates' laments and have the magical bird helping Alice to learn about fruits. ←

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