

Episode: AI: Innovation, Reaction and Impact

Series: [AI in the Classroom](#)

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When we first started talking about generative AI, I did tell the students in this particular class, in Cognition and Computer, that I would not mind if they actually did use ChatGPT as a writing partner for their final project.

And there was a gasp.

I think there's a lot happening with what's the development that's happening with AI and what implication it may have, but I'm sure there's a lot more discussion and expectation than what actual impact would be made.

With AI, as there has been so many different types with different technologies over time, there will be a lot more hype, fears, hope and whatnot than what actually what impact that would actually make. But I think what it comes down to at the end of the day, just like any other technology that came by before this wave of AI excitement, is to really understand what it means for us as human beings and for our learners that we're designing for and supporting.

Even before what we are seeing with the generative AI, that is really the current discussion and topic, there has been AI very present in the educational technology field, more for a longer period of time in the field of intellectual, intelligent tutoring system, right?

So I think that probably will in a way continue to develop, but I think there has been a lot of tools that we don't know AI is behind that has been our cognitive partner and cognitive tools that we have been using in an educational context for a long time, as well.

I feel like instead of there being a completely new way of technologies or tools that we have in the educational field, I think it will be an incremental development of what we already have and are learning in our ecosystem and them being a little more sophisticated and complex.

There is one class that I teach called Cognition of Computers, where we explicitly explore the relationship between human cognition and technology and how it may influence our cognition and vice versa, especially in the context of learning. So our students are interested in looking at technology from how it may impact our learning or our cognition over a long time.

Is it changing us to become a very different people, but also, how can we evaluate and also research these different tools and its potential impact on our cognition? And so we have been using AI as a target of observation and discussion— especially in the context of learning design.

I've been teaching this class for I think about four years now, and over time, there are different tools, but of course they come in different variations. So an intelligent tutoring system is one of

the the older sort of models of AI generated learning environment that we have been looking into. So that's one way of thinking about how technology can become a cognitive partner to human learners.

There are other tools that we would consider, like a Google search even, that can be used as a cognitive tool to help with the research and learning more generally. So there are different tools that we will be exploring, but also more purposely in relation to: What are the cognitive tasks these AI generated tools perform for the human learners and how is it supporting human cognition through the process?

So there are some new developments that has caused a new inquiry from our students. Most of all, on the first day of class in January, the students started talking about, Oh, I asked ChatGPT to tell me about X, Y and Z, and so I thought, Okay, so we have to talk about generative AI.

And of course, we people talk a lot about the text based, generative AI like ChatGPT, but the image based, generative AI has been around for a little longer, although it was not as widely discussed in the public realm. So I brought generative AI as one example of AI of many different variants. And thinking about how what role does it take and how can we form a different cognitive but also creative partnership with these generative AI tools, and being very purposeful and analyzing what it's able to do, but what it's able to support the human learners and being able to problem solve into learning and into creating.

I've invited students to also come in with different activities that we can do with generative AI. In one instance, a student brought in an example where they used ChatGPT as a way to become a learning partner. So adopting, learning by teaching framework. What the student tried to do was to teach ChatGPT, and by teaching ChatGPT as a teachable agent, the learner would actually develop a deeper understanding of a topic.

I think the student did find that it was not as effective as the teachable agent because it does not actually learn the way a programmable sort of teachable agent would. And also the different way of knowledge representation has— there's a limitation in how you can interact with the ChatGPT nowadays because it mostly takes in the text based sort of input.

But I think there was a bit of a limitation in how the students envisioned the tool will react and learn with— as a partner, as opposed to what it actually did. I think what the learners or our students wanted to see happen as a teachable agent or a learning partner is for the tool to understand what they were trying to teach them and to very transparently visualize what they're learning or failing to learn.

But I don't think you actually quite get that transparency with this tool. As of yet. It could also be a different way of presenting knowledge with just a text based explanation. Or it sounds very, very eloquent, right? They talk very well, but then the knowledge is not always there, but it's really hard to decipher what it knows and what it doesn't know unless you know what to look out for.

And I think that was one of the challenges that our students were experiencing.

Yesterday, we were talking about creative partnership with generative AI, and we were looking at the image based, generative AI, but also a text based, generative AI. And we're talking about human creativity and how we get involved with creative activity. And the one thing that we— we first began by coming up with an advertising phrase ourselves and analyzing the cognitive process that we may have gone through through this creative activity.

And then a student asked to go through the same activity and the results were a little different from what the students came up with. And I think from that we were able to deduce some of the creative— or the skills and knowledge that human beings may have in regards to creativity as opposed to the algorithms or the AI.

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And the students were like, Really? And I think at that point— this was before we actually did a more mindful evaluation of what capacity it has, and what are some of the possibilities of using it as your learning partner and a writing partner? And I think they were assuming that I thought it was okay for them to have this AI *think* for them.

And now through all these analyses, they do recognize that they will not be able to think for them, but the students will have to lead the thinking and the cognitive process. While the ChatGPT will provide some kind of writing support. The class is not about academic writing. And so I had to be very clear. You know, if it was an academic writing class, I would not ask you to use a generative AI to help you with your writing.

However, this class— the core sort of learning goal of this class is about them understanding and generating new ideas about the relationship between cognition and technology. And if writing becomes a hurdle or a barrier for them coming up with new and creative ideas, I don't think that really should be a problem. So I think it's a different way of thinking about the tool as well.

I'm a little biased because I work in the field where we do work with technology very heavily. I think my more immediate peers probably are not as hesitant and they're probably very welcoming in different uses of integration of these new tools into the learning environment.

I would think some of the people that I discussed with outside our immediate community were a little more fearful, especially when it comes to the K-12 learning space. Some of the teachers that I've spoken to, they were not too clear on how they should be viewing this tool.

But the interesting part is that they were hit with the restriction that came from the Department of Education first. So that also does create the ambiance or expectation as to how to perceive these new tools that are being introduced in the world as well.

The hype with any technology, whether it be AI or not, has always come and gone. But I think after research and thoughtful evaluation of these technologies, regardless of what flavor or shape it comes in, I think at the end of the day, it always comes down to our more fundamental understanding of our learners and what our learners need in relation to the technology. And so I think the inquiry has to be driven from the learners and human side, as opposed to it being driven by the technology itself.