

Episode: How New Artificial Intelligence Tools Will Keep Changing Education

Series: [AI in the Classroom](#)

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Erik Voss:

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[short electronic musical sting]

For me, thinking about AI before generative AI and before all of these new technologies are known to so many people, I had been thinking about artificial intelligence and the applications primarily for language assessment, language learning. I had developed a course originally called Natural Language Processing, and now it's called Computational Linguistics to help students understand what goes into artificial intelligence and how it can be applied in education and language assessment, language learning.

I am taking advantage of the accessibility of generative AI, particularly for my Computational Linguistics course. So for example, generative AI can create text, but it can also create code, computer code, which is a language. And in my Computational Linguistics class, the students learn how to program in Python to develop analytic tools, linguistic analysis tools. And it's always been a challenge because in addition to learning the content and about linguistic analysis, they need to learn a coding language. And so by using generative AI as a tutor or a TA, they can use this system, generative AI, to help understand the code, to debug the code, to come up with code to help them create the analysis that they want to do without having gone through computer science courses. And so it's balancing applied linguistics and computer science in a way that they can do more

than they could before without generative AI. Just like the use of generative AI to produce text, this is still a work in progress, because it's a tool and they're not sure how to use it. But I see that those students that get it, they get it. And so I can see that at some point we will learn how to use generative AI to help humans do more than we can alone.

One of the things that most people are not aware of is that AI is primarily human driven. And so to create a model to predict or to make a decision relies on a huge training data set. And those data sets are created by humans. Humans have labeled them yes, no, correct, not correct, positive, negative, and it's the data set that these tools learn from. And just like the generative AI, they're learning from a huge data set of human language. And so it's only as good as what it's trained on.

So we have humans in the loop or humans at different stages in the development, deployment and use of these different tools. But at every stage there's a human involved. So the development stage, we have the human labeled data or the human production that the tool is trained on. And then we have the deployment. So who is using it and how they're using it. And the use, whether it can be used appropriately if we understand how to use it or not, and at the end, and also interpreting how we use the output. So humans are still involved throughout most of the AI pipeline or process.

There are some difficult issues that we still need to figure out, and one of those is authorship and copyright, and we're still figuring out what this means. And so when someone uses the tool and comes up with ideas, whose ideas are they? If we're looking at published articles or books, we can cite where those come from. But it's more difficult when it is coming from this whole dataset. Some of the large language models or companies using these models have put in a way to find out where that source comes from. And so that I think is a direction we're going as this becomes a larger discussion. So we might see more of that and it can identify where that has come from.

But as technologies develop, right now we're using these AGI, they're not even AGI, they're tools that are trained for just many different tasks. But I'm starting to see these tools be more refined. And so for example, we have one stage right now that we're at, where if you ask a large language model a question, the answers come from the training data that it was trained on. The second stage, which is behind a paywall now, is the models where you can ask a question and it will go out onto the internet, it will use its resources and it's more effective because it's finding actual facts. And then you could trace those to where they're getting, where the answers are coming from.

The third stage that we're going to move into, and I see this starting to happen with Google's Tailwind and other tools built on these models, is that you can have your own corpus, your own data set. So if you're working on a project and you can pull in your own books or your own notes from class or your own research articles, and ask the model just to look in these sources and help you understand them and summarize them and have it ask you questions, comprehension questions or thoughts about what you should look for to help you learn as a student or as a researcher. Then we have a set, a number of texts, that are our own that we're looking at and those we can draw from. And that's similar to what we're doing now in research or in learning where we are reading a text, we're looking at the ideas, and we are critically thinking about those. And I think that's a good direction to go in.

Right now, artificial intelligence is still not defined very well. We have been using tools like Grammarly and Word to identify spelling and grammar errors, and now the hot topic is generative AI producing text. But this is just the beginning. Artificial intelligence is so large. It also includes computer vision and spoken dialogue systems and chat bots that you can communicate with your voice.

So I see the future incorporating many more tools, which we can use in education as well. And one of those is wearables. I'm really interested in smart glasses. And so smart glasses are a way for the faculty, for example,

to see information on their glasses. And just picture this scenario, if you walk into a class on the first day and through your glasses, the camera in the glasses can see the student, and then it will show their name in your glasses. So you can talk to the person with their name on day one and build that personal connection. Later on you don't need that prompt anymore, you can have other prompts, but I think technology can be used to bring people together instead of separating people. I think that's a way to look at it for the future.