
# What role will artificial intelligence (AI) play in the classroom?

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# What role will artificial intelligence (AI) play in the classroom?

**Henri Pearson** [00:00:07] Hello and welcome to TopClass, the OECD's Education podcast. My name is Henri, and I work in the OECD's Directorate for Education and Skills. And today we're actually going to be talking about something we've already touched on the podcast before, but it's a big topic. It's something that everybody's talking about in basically all sectors of society. It's artificial intelligence, AI. How is AI going to affect education? What's going to change in schools and in teaching? Previously, we spoke to Yuhyun Park and Ruben Laukkonen on this subject, but we looked more at mindsets, we looked more high level at really the general attitudes and beliefs about education that might need to change. But today we're going to delve a little bit deeper. We're going to talk about what teachers need to do, how schools need to adapt. We're going to talk about how classrooms will be different, really take it down to the level of actual practice. So to talk about this, I managed to catch up by phone with Charles Fadel, who is the founder and chairman of the Center for Curriculum Redesign and someone who has written quite extensively on this topic. So take a listen to what Charles had to say on the matter, and I'll catch up with you at the end.

**Henri Pearson** [00:01:25] So Charles, thank you for joining me.

**Charles Fadel** [00:01:28] My pleasure.

**Henri Pearson** [00:01:30] So we're talking today about artificial intelligence in education. I mean, it's not the obvious pairing, I think for as topics. I don't think that many people when we think about artificial intelligence are automatically thinking about, oh, how's that going to relate to education? We all see the sci-fi movies. I think everybody immediately goes to kind of answer anthropomorphic robots that are marching around ruling the world. So I think what I'd actually want to ask you first is what we what do we mean by AI in education? How does AI relate to education?

**Charles Fadel** [00:02:06] Certainly. Well, so first of all, artificial intelligence is one of many technologies, and as you know, there's an entire branch of education called education technology. And so AI would fit under that branch and it would be considered on one side as an aid to how we teach. But it also has consequences that we'll talk about in minutes about what we teach in the first place. So it's really with that angle of what we teach and how we teach that AI has an impact on education and it is part of education technology.

**Henri Pearson** [00:02:47] And what, in your view, just the emergence of AI suggest about what should be taught in schools then?

**Charles Fadel** [00:02:53] Well, so AI is making the future of work and life more uncertain because it's becoming harder to figure out what exactly will perdure, what jobs are safe or what tasks, which tasks are safe. And so which occupations will emerge, which ones may wither away. So it forces us to think about education even more longer term mindset where we want to educate people profoundly for life. But at the same time, keep in mind that they will constantly be training themselves in a more narrow sense throughout their life. So schools, education as well as higher education needs to be a true education, which I differentiate from training. Training is what makes you very deep in the specific domain. But education is what makes you broad and AI forces us all the more to become both broad and deep, a t-shaped person, as IBM called it. And over time, you add more depth in several other areas, so you become more like an m more like a rake, if you will. You have like, say, a broad a broad capability at large. I'll give you a

metaphor, think of a Swiss Army knife. It has all sorts of different blades and screwdrivers and bottle openers and so on, so forth. So imagine yourself being trained to be a Swiss Army knife. Be very, very capable, multi multitalented, in essence, a renaissance person of sorts. And as life dictates, you can sharpen that tool, but you have the basis for that tool already. That's the horizontal part, but that sharpening, that specialization is the vertical part of the team. So that's how we need to contemplate education in an AI age, that it has to be both broad and deep because that's what makes it versatile. Whatever life throws at us, we have some tool to respond with.

**Henri Pearson** [00:05:11] And so how can AI be used in schools for teachers? I mean, it's an application that's going to affect basically every sector and already is in many ways. What are some ways that teachers in schools can use AI to their advantage now?

**Charles Fadel** [00:05:27] So, of course, the topic of education technology at large is a complicated one, and there has been both real capabilities as well as a lot of overhype in many things. AI in particular, is one more mechanism of personalization. So under the broad banner of personalizing the learning of every student, you already have several levels of such personalization starting at the courseware level with whether you want to focus more on humanities or technology or mathematics and technology at the second level within the discipline. For example, you prefer to build a swimming robot that it will be building a flying robots that's also personalized to each one of us. Then there's a level below that, about how we would learn, for example, language you are phoneme based and a whole world based. That's also personalization. And then you have a very fine grain level, which is really about progressions, learning progressions for each one of us. Those are more easy to apply in specific topics like mathematics that are very threatened. But even there you have two sublayers: an adaptive layer, which is simply to show you different pathways and just let you choose, and if you mess up with one presents to you the other pathway. But then finally, there's that layer where AI learns from your behaviour and starts gearing the content and gearing the pathways towards your personal abilities. That's the ultimate refinement. So if you imagine that a mass course would be designed that way, the student could immerse themselves into that pathway and AI, hidden AI, in the system would learn there are better ways of doing things and adapt to that. It would be very hard, of course, for a teacher to do that. Now you might say, so what's the role of the teacher of math classes thought that way? Well, if we only define math by being able to follow a certain learning progression, the teacher would be standing on the side and providing emotional support and all that. But any discipline is more than just teaching content. It's about teaching concepts. It's about teaching competencies like critical thinking and curiosity, etc. It's about teaching metacognition. You know, the meta dimension of metal learning and the growth mindset, and a teacher is going to be absolutely necessary for all of these other things. So in essence, you can view it as offloading the teacher from the more repetitive specific tasks and allowing them to focus on the higher order tasks that they have always wanted to reach, but what sometimes prevented. Furthermore, this is also all the more valid for mathematics because it is a tharead of discipline. It's not the same in every discipline. So there are plenty of other disciplines where that sort of learning progression that is finding finely tuneable will be a really hard to achieve with an AI. There are some specific categories where that's simple to achieve. Again, if we're talking about bounded problems to solve, AI can solve them; if we're talking about unbounded, complex woolly things, AI can't. So if you take essays, and the grading of essays, it should be relatively straightforward for an AI to do auto correction and show you where your syntax and grammar are I'd say not as adequate as it should be. But AI is not going to be grading the quality of the essay as a teacher can. However, even that said, over time, we can imagine that AI would at least give pointers to the teachers because teachers are humans and humans get tired and the grading may start getting offset by how late in the night it is, and how much time you're spending on each submission. And so an AI could monitor that and alert the teacher a little bit like a self-driving mechanism, saying, well, I think you're at this point because I'm seeing a drop in the way you

are dealing with some of the issues that are popping up. So you see it becomes an adjunct to the teacher if done right and allows the teacher to focus on higher order teaching.

**Henri Pearson** [00:10:10] Now it's interesting that you mention about maybe AI taking up some of the slack on the administrative tasks. In Teaching and Learning International Survey, one of the things that's pointed out is about learning time in the class, time dedicated to learning in a lesson and also in general over a working week for a teacher. And from what you're saying, it kind of sounds like that we can increase that time that the teacher has to facilitate learning rather than going rather than doing the admin tasks.

**Charles Fadel** [00:10:42] Exactly. So it's a bit like any technology that humans have used to lighten the load. If you think of the wheel as simple as that, right, sure, you could walk or you do farther distances, faster carrying heavier loads. That's really the expectation we have for technology, education technology at large, AI applied to education technology in particular. So it's really meant to offload us and allow us to go farther and deeper, better.

**Henri Pearson** [00:11:13] But it seems like at the same time, teaching is going to have to shift in a certain way. Teachers, even you've talked about this kind of symbiotic relationship between the AI and the teachers. I imagine there's going to be a lot of mindset change involved in that. How do you think teachers should prepare themselves for that change? And are they prepared now?

**Charles Fadel** [00:11:33] Well, so teachers like all of us react to the demands that are placed on them. If we don't change the demands and we don't change the concomitant training they get, how could they adapt? That's not fair. Right? We would have to change the assessments, reflect in your assessments all the higher order thinking and learning that we're talking about here, deeper knowledge and of course, skills and character, better learning dimensions of an education and then reflect that in the assessments, reflect that in the training we give teachers. And then that would be a fair thing to ask. What we've been doing for the past couple of decades is keep on adding, adding, adding to their loads, not giving them necessarily adequate training and not removing anything and not changing the assessments in the end. And I understand that's an untenable situation for them.

**Henri Pearson** [00:12:37] So this is more a job for the policymakers to start with, at least.

**Charles Fadel** [00:12:41] Exactly, and that's why the conversation about the what is so important to have up front. Because, for instance, a very simple example, why would you apply all this brilliant intensity to something that's already partially obsolete? For instance, trigonometry, sure, we all need to learn periodicity. But why do we care about trigonometric functions? Those are automated, and we certainly don't have the same requirement for land surveyors as we did one hundred and fifty years ago when trigonometry was introduced. However, we do have nowadays a need for a lot more data scientists and computational thinking. So if we want to make room for that, we have to remove something. So how about we remove some trigonometry and we add more statistics and probabilities? Well, who's going to make that decision? Not teachers. It's going to be made the policymaker level  the national curriculum. And as long as those stay relatively rigid and how can I say traditional progress cannot be made because why would you spend all of this intensity on learning something functionally obsolete? How about we apply this intensity to modern branches and areas of various disciplines?

**Henri Pearson** [00:14:03] I think at the moment, one classic position on artificial intelligence is that of skepticism. I mean, it's all over online discourse and in the news that people are afraid of artificial intelligence taking things over or being out of control in some way. There's a lot of fear around AI and I get that we'll touch on in in the education sector as well. What are your thoughts on that? What's your response to this fear?

**Charles Fadel** [00:14:31] Well, to be blunt, I think the fears are justified, but not quite in the way they're portrayed. There should be a lot more fear about privacy issues, which have actually nothing to do with AI at this point, right? Then we're talking about social media and searches and so on. These privacy issues are enormous already, irrespective of they are. The public should be a lot more concerned about that, in my opinion, than about AI. Now what AI does is the ability to multiply the impact of the lack of privacy, and that makes it all the more dangerous. But the fundamental question is the privacy, the electronic digital privacy issue that I can all the more, let's say, render even more dangerous and manipulative and manipulative aspect of essentially. So it needs to be paid attention to. That said, there's also a lot of overhype about And you know, we are trying to strike the right tone, a very sober tone about what can be done, the promises and the perils without the hype. So saying, you know, with the cold analysis, this is what truly capable of. This is what they will be capable of in the future, seemingly. But that's not going overboard about the hype presently.

**Henri Pearson** [00:15:57] But in general, you're more hopeful.

**Charles Fadel** [00:16:00] Well, I guess I would be balance. I would say, sure, it's definitely coming with things that we should be careful about. And by the way, it has nothing to do with n particular, it has to do with human behaviour, you know, greed and things of that nature. That caller what we do about visual privacy that has nothing to do with is purely a human problem. It's also a human problem to set up databases that propagate bias against some populations in the legal system. These are human problems. They rendered all the more potent because of algorithms and algorithms aren't necessarily all about AI. has become this big catchphrase for anything algorithmic and mathematical. So there needs to be a final discourse, but unfortunately, it's easy for people to get concerned because they don't have the time to

**Henri Pearson** [00:17:06] Well, I think that's basically all we have time for. But Charles, thanks for joining us.

**Charles Fadel** [00:17:12] It was my pleasure. Thank you very much.

**Henri Pearson** [00:17:15] And thanks to everyone for listening. If you'd like to find out more about our work, there are plenty of updates on our Twitter page, which is @OECDEduSkills. You can also find out more at our website, which is www.oecd.org/education.Thanks again. And until next time.