Generation Connect Podcast

Episode 8: Empowering the Next Generation with AI in Education

With Maria Antonia Brovelli, Moitheri Hanese, Philipp Hacker

Hosted by Tong Niu

Transcript

Disclaimer: *The following transcript is machine-generated and has been slightly edited for clarity and legibility.*

Intro: Hi everyone! Welcome to the Generation Connect podcast, co-designed with youth, for youth. The ITU Generation Connect initiative aims to engage global youth alongside the leaders of today's digital change by empowering youth voices in the digital development dialogue. Tune in every month to listen to inspiring stories of youth, all across the world on the power of technology for sustainable development. Get involved by joining our global community of future leaders shaping the world of tomorrow.

Tong Niu: Hi everyone and welcome to the 8th episode of the Generation Connect Podcast, co-designed with youth and for youth. I am Tong Niu - part of the Generation Connect Team from ITU, and I will be your host for today.

In this episode, we will discuss the intersection of AI and education, a field with great potential yet ongoing debates and challenges. Today I am joined by three incredible guests - Moitheri, Philipp and Maria. Welcome everyone and thank you for joining me today. We would love to hear your thoughts on leveraging AI to foster better education for the next generation. Your personal experiences and advice could be of great help and support to all the young people tuning in today to listen to our stories.

So, to start off, it would be nice if you could introduce yourself in a few words for all our listeners. Who are you, and what do you do?

Moitheri Hanese: Hi, hi everyone. My name is Moitheri Hanese. I am a Generation Connect Youth

Envoy, and I am currently doing the IB diploma, which is the International Baccalaureate Diploma.

Tong Niu: Welcome Moitheri! And Philipp?

Philipp Hacker: Hi there. I'm Philipp Hacker, I hold the Chair for Law and Ethics of the Digital Society at European New School of Digital Studies at the European University Viadrina in Germany.

Tong Niu: Great! Nice to meet you. Maria?

Maria Antonia Brovelli: I'm a professor of GIS, which stands for Geographic Information Systems at Politecnico di Milano.

Tong Niu: Thank you everyone! It's a great pleasure to meet you all.

The recent ITU-hosted AI for Good webinar, "How ChatGPT will change the classroom," explored the tangible impacts of ChatGPT in education. Taking a step further, we will discuss how AI can enhance the quality of education, boost innovation, and reduce inequalities. These topics are in line with UN Sustainable Development Goals, such as SDG 4: Quality Education, SDG 9: Industry, Innovation, and Infrastructure, and SDG 10: Reduced Inequalities.

To kick things off, can you share a little story about using AI in learning or research? Moitheri, would you like to go first?

Moitheri Hanese: Yeah, sure. Um, like I said, I do the IB diploma and my experience with AI has been mostly about research in my course. It's a course that requires a lot of research and a lot of learning, and, um, I've encountered AI while learning. So mostly, I use AI tools involving paraphrasing or calculating. And recently I've used AI chatbots, mostly for research and interactive learning.

Tong Niu: Thank you. And what about you, Philipp?

Philipp Hacker: I can share a brief, um, anecdote from a paper that we recently wrote. Um, it's called Regulating ChatGPT, and it's about the, uh, legal perimeter for large generative AI models. And in fact, we wrote it in January this year when all the hype had just started.

We asked ChatGPT to generate a few paragraphs effectively on itself - describing what it does, how it's built, and so on. And we thought that would be funny and perhaps also insightful. And it turned out that it took us with this method about three times as long as if I had just written it myself, because it was particularly at that time, really, um, littering us with a lot of wrong content, with factcheck and doublecheck everything. So, uh, never trust AI, uh, but I think it'll get better and better over time like if I keep using it.

Tong Niu: Thank you for sharing. And what about you, Maria?

Maria Antonia Brovelli: Yeah, so, first of all, I would like to provide a brief explanation of geospatial information, which is exactly the domain where I'm teaching, and you will see the connection with respect to AI, specifically GeoAI. So, uh, we can say that geospatial information encompasses any data and information that is associated with a specific location. So, in reality, almost everything occurs somewhere and at some time. But in fact, it is estimated that around 80% of everything happening, um, depends, or is strongly related, can be contextualized, better contextualized if we consider the "where" and the "when" it happens.

And I have to say that this is a novel approach, which is bringing us to new concepts, which are the concepts of Digital Twin Earth and the metaverse, where the metaverse is nothing but, uh, something built on detail, and labeled Digital Twin Earth. What is this concept of Digital Twin Earth? So, it is an interactive model of the earth that is obtained by merging individual models that portray diverse physical aspects of our planet.

And these, um, integrations, enable to better understand the past, better know the present and to predict the future also, in the idea of the scientist. And then the point that is related to AI is that starting from data measurement observations and using new analytical methodologies such as AI, we want to build this replica of our world.

Tong Niu: Thank you. Just as Maria mentioned, technologies, including AI, have increased the methodologies in doing research. So Moitheri, can you tell us more about how AI increased the quality of education from your perspective?

Moitheri Hanese: I can say this about AI, as I, um, it provides a lot of assistance in terms of education. Um, you ask for information, and it provides you that information. And education has now become a little bit more interactive, especially when it comes to learning from the internet or learning online. So, I can say that it has enhanced my quality of education in terms of that, uh, it has provided me mostly relevant information to my course, and it has helped me through the programs that I've accessed. It has helped me be much more interactive with what I'm learning. For example, lately I've been using Duolingo for learning French, and it responds, and it asks me questions and it's better than what I would learn on my own using just a passive program. It's, it's been quite helpful.

Tong Niu: Yeah, the language learning experience has to be the fascinating part of it. And apart from the improved education quality, Philipp, could you share your thoughts on how AI has been applied to foster equality compared to traditional education?

Philipp Hacker: Yeah, I think this is actually quite an ambivalent field to dig into. So, of course everybody can access it as long as they can access the internet, so that to a certain extent may reduce the socioeconomic divide.

Um, you could also say that the content production is actually the same or similar for all. So, if I

introduce a prompt, uh, in ChatGPT or GPT4, then a nice paragraph might result irrespective of whether I suffer from dyslexia or not, or other, you know, uh, problems in actually writing proper text. So that is, again, something that, uh, leads to greater equality between a highly diverse student body in terms of talent and, and also in terms of, uh, medical, uh, issues sometimes. And I would say as a third point, that, uh, it's often much more engaging as at least that's what I see in my, uh, experience in using AI in teaching. It's more engaging for students to also have these sessions with AI, you know, to experiment around. So, it's more motivating for everyone. And since we have, uh, different types of students that could be more or less motivated, it's also something that creates greater quality with respect to intrinsic motivations.

I want to say, however, that there are certain risks. So, for example, of course, we've already seen the emergence of paid versions that function better. If you want to get access to GPT4, you want to get an API for that. It just costs you some amounts of dollar, and some students will not be able to afford that. So, um, that's of course something we see in all kinds of support and help tools. Uh, but I think here schools and universities are under an obligation to provide access to the best, uh, not necessarily the best, best, but too, decent quality tools for all. And then also a second concern is of course that we do see some kind of discrimination in the output of these, um, models. And they may reinforce bias and stereotypes. Just one example from my own experience, I actually used, uh, an AI translation tool, a very good AI translation tool recently, but it came up when, when I had to translate, uh, into German, a phrase about a doctor and a nurse from a language that does not differentiate between these, uh, different types of genders. Uh, it came up with a female nurse and the male doctor, just as you read it in the newspapers, you know. And those are cases where we need to be very cautious, and we need to, need a lot of upskilling for teachers and students to make sure that they use it properly and that they can correct these errors that still occur.

However, overall, I would say the benefits outweigh the risks, but I do have the, uh, pronounced hope that it will in the end, if used correctly and with the right guardrails, promote equality in education.

Tong Niu: Yes. We have to be cautious of those biases. So now let's move on to innovation. Moitheri, as a student, how do you think AI has helped your peers become more active or innovative in your classes?

Moitheri Hanese: Um, I think what has been notable is, um, widening of learning possibilities. There's a particular way to learn as we traditionally know. But then now with the availability of AI, there are completely new ways to learn. And students, well, in my class and in my school find that much better than what we traditionally do when we're in class and learning.

And also, um, research skills have been quite active in class. People have just discovered lately that, programs such as ChatGPT can be very biased, and people are employing different sources now to find better information regarding their learning. And I think what's more important for us as students is interactive learning, because it is much more interesting, and it makes education much better when you interact with what you're trying to learn. So that is how this innovation has helped us in class.

Apart from that, I would say that students themselves have become more innovative in that they use AI themselves for other things outside of class to learn things that they never thought they would learn. For example, learning other languages other than what we already do. So, um, it's just fostering creativity. It's fostering work much more than before.

Tong Niu: Yeah, absolutely. As a student, I sometimes feel the same. Having discussed the current role of AI in education, let's turn our gaze to the future. Maria, can you start by sharing how AI might change the future of education, particularly in geospatial study?

Maria Antonia Brovelli: So, uh, I believe that this is, uh, um, a topic that, as a matter of fact, we as professors are starting to consider. So, today there is no consensus on what should be taught in this field, which is why as an academic network participating in the activities of the United Nations Global Geoinformation Management Expert Committee, we have started working in.

And we started a survey among professors, uh, which is not yet complete. So, take this number, just as the first number. But we know that currently, only 35% of the geospatial-related study programs include GeoAI teachings, and in many cases with a very few hours of teaching. But interestingly enough, in contrast to that, the 90% of the respondents, so, the professors, believe it is important and necessary and timely to introduce this subject to our teaching. So, we as professors are convinced that this is not only our belief, but is also an expectation of our students. And this part means that as a community of teachers, we have to start, how to say, co-designing the new courses that are related to these new subjects. And given the fact that they're novel, uh, what we need to do in principle is to build the body of knowledge related to that specifically in my field area, GeoAI.

But another interesting point with, uh, emerged is that, uh, is the point of considering also AI trustworthiness. So, um, we need to understand how to teach AI, but in my opinion, we need also to, uh, prepare the student of being, of aiding a critical point of view with respect that, all, to all these new technologies. Because as a matter of fact, the metaverse will become probably a reality, that we need to understand what is fake, what is true. And I believe that one of the most relevant points with respect to this is to have the possibility to deepen into the data that is used for training the machines and the algorithms that are used for training the machines. Because if not, it's practically impossible or very, very difficult to understand what is fake and what is the reality. It's very relevant to be able to translate in an easiest way and so on and so on. But in my opinion, the most relevant point is how we can trust in what we see in ChatGPT and every generative AI. And the main point is that we have few tools for understanding what is fake and what is real.

Tong Niu: Thank you. And Philipp?

Philipp Hacker: Well, I think what Maria just said about distinguishing fake from reality, uh, that points to a broader concern, and that's an excellent point. Um, namely, to focus on the content of the stuff that is being produced, basically the output of AI. And that will have two different challenges.

One is related to distinguish hallucinations, things that are just factually incorrect from, uh, non-hallucinated, so factually correct content or from images and videos that make sense. Um, at the same time, it allows us as teachers or students to focus more specifically on the content itself rather than producing the content. You know, many of those who are writing, they probably know the horror of the blank page. You know, the first sentences that for many people are always difficult to find. Well, now you can overcome this problem and you can rather focus on really getting the content right, on fact-checking it, and on making sure that you engage properly and think critically about this content.

So, for me, this is really something that will facilitate, kind of modern ideals of teaching where we try to inspire students to think on their own and to criticize what they see and not to take things for granted rather than to, you know, engage in rote learning. So, for that, I see really many opportunities.

At the same time, I think, um, there is a challenge, uh, in the sense that we will need to integrate basic education and machine learning in all areas of studies and education. So, for example, um, all medical doctors, I think, in the future will need to have some basic knowledge of machine learning simply because they will be exposed to many of these models throughout their career in different, you know, different, uh, environments. And they need to know the limits. They need to be able to spot some errors and they need to have the courage to override these systems if necessary. If you haven't been trained in this, you know, uh, during your studies, you might, you may take things for granted or, uh, fall, succumb to some kind of automation bias.

So, uh, my sister's a medical doctor and, you know, they had, uh, tons of classes during their medical education that had very little to do with what they actually do now. So, and what each of these studies, study areas we will need one class, one semester on key areas of machine learning. And that holds of course, uh, across the spectrum also for teachers and professors. You know I use ML fairly often and with a certain ease in my classes, but I know a lot of teachers and a lot of other professors who are much more skeptical, and they actually just don't know how to use it.

And who don't know what this is really, and who are frightened and, and to a certain extent, uh, perhaps irrationally, focusing on the risks that these, uh, products have. And therefore, I think we need to do a lot of upskilling, a lot of outreaches, a lot of information campaigns, really, of those who want to be ambassadors for using AI for good amongst our peers and amongst students.

And frankly speaking, I think digital education, in the future, will have to start in kindergarten, and as you progress through the education system, being able to master basic AI tools like ChatGPT will be part of your CV when you apply somewhere, just like today, you say, I'm able to master Word and Excel, and you name it, PowerPoint.

This will be a key component for everyone entering the work, uh, workplace or the, the working market. So, I think it's really quite a revolution and we're going to, uh, ensure that we, we will be able

to channel it in the ways that affect our lives and lives of our students for good.

Tong Niu: Wow, amazing. I think those are very practical, and actually AI also plays with promise in many fields other than education. So, it's worth considering what makes it unique in education. Maria and Philipp, I would love to hear your thoughts on the uniqueness. Maria?

Maria Antonia Brovelli: Yes. So yeah, that, that is very interesting, and it is also the reason why I started working using the machine learning. I have to say, with a different perspective, because more than using generative AI, in our case it's different because, uh, I'm teaching engineering students, environmental and computer science engineers.

And so, the point here is not to use, uh, things like, like ChatGPT or there are also other generative AI, that are developed by universities that I prefer instead of ChatGPT, I have to say. But, uh, what we do is mainly to, um, create our models that can be based on algorithms already existing, and they are open and doing something that is called the ensemble models for obtaining better results. But again, the main point is that, uh, um, we are able of obtaining the good results because these tools are very powerful. Uh, this doesn't mean because, um, we have all the traditional statistics methods that we used in the past and they were good. So, it's not that we have a preferred way using these methods, but this is something new, something more helping us of better studying some phenomena. Like for instance, we are, I'm using with my students, so better they are using with my guidance, um, machine learning algorithms for computing what are told the susceptibility maps. Susceptibility with respect to disasters, every kind of disaster, so, heat waves, flooding, earthquakes, and so on and so on.

And I have to say that it's a powerful tool. Again, the main point is every time to understand the data you are using. My point of view is more than a point of view of teacher of people using the generative AI, of being a teacher of people developing something based on that.

Tong Niu: Thank you, Maria. Then what about Philipp?

Philipp Hacker: Yeah, thanks. So, I see, um, three main points here that really stand out in distinguishing education as a domain from other fields, such as healthcare and what we already talked about. Um, so first of all, data protection is a really serious issue here because we are talking about adolescents and children oftentimes. And, uh, in these areas we have to make sure that this partially also sensitive data is not used in a way that hinders the flourishing of the students later on. However, I want to, uh, also mention that these concerns can also be overblown. And we saw this pretty clearly, uh, during the Covid pandemic. When in Germany, for example, many schools were barred from using, you know, state-of-the-art technology, like Zoom or other, you know, MS Teams, uh, other, uh, video conferencing systems for fears of data protection violations. And that I think is just out of bounds. You know, you have to always waive this with the fact that this is going to have lasting effects on people's lives if they don't get high quality education.

So here, I think we, uh, shouldn't fall into the data protection trap and not use these, uh, systems and then fall behind for overblown fears of data protection. However, of course we need to take the GDPR seriously and what's important here, and that's my second point, is that consent, which is usually the kind of mechanism that you use to make sure that something complies with the GDPR and that you can actually use data. Consent does not work in school settings or in educational settings, or at least not very well because oftentimes it's, it's a non-voluntary setting, so there's a kind of power imbalance between the school or the university and the students. So, we need other guidelines in place. We need to have clear guidance and laws, um, to make sure that we can use these tools in a data protection conform way.

And the third point here is that I want to stress that we need to bring the parents on board, particularly of children uh, which is also different in other areas because, you know, in, in healthcare and whatever, finance, mostly adults who are dealing with this. But here we have the children really and the adolescents. It turns out that I think investing in upskilling the teachers and the professors and bringing parents on board and convincing them that this is really for the better of their kids is done properly.

Tong Niu: Wow. Thank you for your incredible thoughts. Considering those features you guys mentioned I want you to rethink all the risks and challenges and conclude it in your own perspective. Moitheri, would you like to start?

Moitheri Hanese: Alright. I think, um, the main challenge with all this technology is unreliable information. As with everything on the internet, everything needs to be fact checked before we can take the information and use it for whatever purpose that there is. I think also what's been trending lately is AI generated images. I think those are prime in circulating unreliable information. And in the education sector, I think it's important that information is reliable cause we are talking about people's education. On top of that, reliance is an issue because as with every new technology, people begin to rely more on it than they should, such that independent thinking becomes null and void. And so I think those are the risks pertaining to AI that are quite important.

Tong Niu: Thank you Moitheri, and Philipp?

Philipp Hacker: Yeah, thanks. Um, again, I see perhaps two to three different, uh, big challenges. So, the first one is to spur the sufficient amount of critical thinking in students. Again, that is something that is, um, very conducive or can be easily integrated in the educational traditions of some countries, in the US, for example, where you have the Socratic method, also in large parts of Europe. But we have a very diverse student body and I know that in some disciplines, in some areas of the world, this is not something that is uh, generally at the moment, taught at universities or places of higher education.

So not to take AI for granted and the output, that's really a challenge in many areas. And the second point related to this, and I, I want to build on what Moitheri just said, is that, uh, we cannot even at

this point already, trust images and videos anymore. It's just, it's an arms race and I don't think will develop the tools necessary to keep track with ever more sophisticated generative tools. You know, in the beginning you were able to see that this, uh, video or this image was fake because the hand had three, three fingers or six fingers or something like this. There were these little mistakes, but that now is not the case anymore.

And hence I would say that this is basically a lost cause. We need to teach students and teach ourselves to look for reliable resources. Fact checked or peer reviewed, you know public media, um, some trusted institutions that we need to build upon to trust the output of these institutions when it comes to images and videos that can be so easily manipulated.

And the third point, and the really big challenge, is I think the heterogeneous pool of users of AI as students and also teachers and professors with highly diverging, you know, privacy preferences, technology skills. Um, many of them adolescents or children, as I've said, and, and a lot of sensitive data floating around. So, kind of to give guidance to this heterogeneous pool and address the different concerns that they legitimately have and the fears that they perhaps have, that is going to be a challenge to make AI work for everyone and to make it a tool that people will accept and use for their own benefit and for the benefit of society.

Tong Niu: Yeah, thank you. And Maria?

Maria Antonia Brovelli: I have to say that probably from our point of view as teachers, one of the main challenges is to catch up with this technology, which is going so quickly, so fast. So, it is not something that we have studied, or we are very prepared in teaching and so on. So, we also are learning day by day things that we wanted to teach to our students, but this from a certain point of view is even more interesting because it means really co-creating with the students some new ways.

What is the reason of studying? What do we want to obtain? Which is our ultimate goal when we are studying? And, uh, this is an interesting question in my opinion, because this brings us to the point why we want to use AI for education. How to say, uh, it's bringing us something more with respect to the reason why we want to study or it's simply another methodology adding nothing.

I want to mention an example. For instance, if we think about the problem of climate change, the scientists in the past were speaking about climate change. They didn't need really AI for having these, um, results of their studies. But, um, do usually we think that using AI or GeoAI, we will solve this problem? Do the new generation think that we will solve this problem? I don't think so. I think that it's a problem of choices. This, this is a new technology. And we don't, uh, don't have to consider that the technology is bringing us to a better way of living. So, the main choice is why we want to use it. We want to use it for um, improving the profit or we want to use it for building something new, creating something together collectively and possibly disruptive with respect to what is the situation now? And so probably starting from that, we can see what can be the risks and what can be the, um, the positive points of AI. So, we need to think why we want to use it, what we want to study, and what we want

to build.

Tong Niu: Thank you for sharing. And here comes the final question. Being aware of those potential risks and challenges, what steps can we take to better regulate and utilize AI in education?

Philipp and Maria, can you share your suggestions?

Philipp Hacker: Yeah. Um, I think we already have a lot of regulations in place. So, the GDPR, the data protection law applies, non-discrimination law applies, uh, product liability applies irrespective of specific adjustments that we make. So, I think we should make some minor adjustments. For example, offer specific guidance of when we can use this in the context of the GDPR or of other data protection frameworks. Beyond regulation, I think we need to do a lot of outreach work, and this is, this podcast is actually part of it.

Tong Niu: And Maria?

Maria Antonia Brovelli: The main problem is the problem related to openness. So, if we don't have openness, we are not able to understand it even if we want what is beyond that. So, we can use the best program, but if we don't know what is the purpose it was developed for, how it was trained, uh, with which data it was trained, we are not on the, on the good way. So, in my opinion, the solution is the complete openness.

Outro: Thank you for listening to our podcast! You can find all the podcast episodes on the ITU Generation Connect website. And if you don't want to miss an episode, subscribe to us on Soundcloud, Spotify, and Apple Podcasts. Thanks again and see you next month for a brand-new episode of the Generation Connect Podcast.