

Generative AI: Rethinking Learning Futures

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Associate Professor Haripriya Rangan, Principal Consultant Government Projects, Australia India Institute (Chair)

Hello, everyone, and welcome to the Australia India InnovEd Forums, hosted in partnership with EduGrowth and the International Institute of Information Technology Bangalore. I'm Associate Professor Priya Rangan, Principal Consultant for Government Projects at the Australia India Institute. I'm speaking to you from the lands of the Wurundjeri people of the Kulin Nations, and I pay my respects to their elders, past, present and emerging. I also welcome all indigenous people who may be attending this webinar today. This InnovEd forum series is designed to bring together experts from both Australia and India to explore digital learning trends, challenges and opportunities. We will be hosting two round tables in Melbourne and Delhi and three webinars, the third of which is happening today.

Today's forum is the final one, and we'll explore the topic of Generative AI: Rethinking Learning Futures. It is now my pleasure to hand you over to our moderator and key partner for this series, Balaji Parthasarathy. Balaji is a Professor at the International Institute of Information Technology Bangalore, also known as IIIT-B, and co founder of IIIT-B's Center for Information Technology and Public Policy. His interests lie in economic geography and economic sociology, focusing on the relationships between technological change and innovation, economic globalisation and social transformation. Over to you. Balaji.

Prof. Balaji Parthasarathy, IIIT- Bangalore

Thank you, Priya. I am, as Priya mentioned, Balaji Parthasarathy from the International Institute of Information Technology, where I serve as a faculty member. Now in this third and final webinar of the InnovEd series, we'll focus on the emerging and rapidly evolving role of generative AI such as Chat GPT in content creation and delivery in higher education settings.

Before we sort of launch into discussing the various aspects of this phenomenon, it'll be my pleasure to introduce today's expert panelists, and I'll start with Srecko Joksimovic, who's an Associate Professor and an Associate Director at the Center for Change and Complexity in Learning at the University of South Australia. His research is centered around augmenting the abilities of individuals to solve complex problems in collaborative settings. We next have Sarajeet Kanungo, who's the Associate Vice President of University Partnerships and Strategic Alliances at upGrad, a leading Indian sort of online education platform. His experience includes brand strategy, new product launches and business development. We then have Dr. Antonette Shibani, who's a senior lecturer in the transdisciplinary school and a member of the Center for Research on Education in Digital Society at the University of Technology in Sydney. Shibani's research spans learning analytics, automated feedback on writing, ethical use of AI and AI literacy. Finally, last but not least, we have Dr. Sayantan Mandal, Assistant

Professor at the Department of Humanities and Social Sciences (HSS) in the Indian Institute of Technology Jammu, specialising in higher education, research and digital education.

So with a terrific panel like this, let's move on to examining some of the key issues associated with generative AI and its implications for education. Before we talk about generative AI, it might be useful to introduce the topic of or the concept of GPTs or general purpose technologies, which is a term used to describe technologies which have the potential to transform various socio economic domains and sectors. The arrival of a GPT of another kind, that is generative AI and in particular, Chat GPT, of course, GPT here refers to generative pre-trained transformer has generated a lot of excitement precisely because it has transformative potential, one which is, we're already sort of feeling in the domain of education. Now, the unique potential of generative AI lies in its ability to learn from a variety of data patterns given as input, you know, it could be text, audio, video, etc, to generate similar output patterns from other data. Thus, for those in the domain of education, there are questions about how learning driven by generative AI is forcing a reconceptualisation of more established concepts of learning.

Now it's against the sort of backdrop and sort of deploying generative AI, there are sort of, I'd like to sort of raise three questions, and I've sort of come up with sort of very simple questions to sort of provide further for discussion, if you will. First, what does it mean for inputs into the education process? In other words, how do we think about the backgrounds of students and instructors? Second, what does it mean for the pedagogical process, the teaching material, the techniques to be invoked in the classroom, in the laboratories and so on. And finally, what does it mean for the output that is the assessment of students and instructors, for the labor market and for teaching effectiveness? Now it is against this backdrop that I have sort of specific questions for each of our panelists, and what we'll do is we'll have them sort of speak to these questions about five to six minutes. And then I'll also invite the other panelists to sort of share their views on these questions, or maybe another four or five minutes. And finally, we'll have a roughly about 10 minutes for the audience to sort of have their doubts clarified, or seek sort of feedback from the experts. Okay, so moving moving ahead, I have two questions to start off with for Shibani right now. How might the use of generative AI vary by type of academic institution. You know, we talk about it as a monolith education, but you have large institutions, small institutions, full service universities with a specialised professional colleges. And the second question for you is, as a computer scientist in particular. That is generative AI likely to bring about fundamental changes in learning objectives. And I'm aware of this connection in a November 2023 report titled "Assessment Reform for the Age of rtificial intelligence that was published by the tertiary education quality and standards agency of the Australian Government. Does that report offer any pointers to this? Over to you, shivana,

Dr. Antonette Shibani, Senior Lecturer at Transdisciplinary School (TD School), University of Technology Sydney

Thank you, Professor Balaji, thank you for the lovely introduction, and thanks for having me in this panel. Before I talk about institutional usage, I want to highlight that we probably don't know the full extent of the general usage of generative AI tools, because tools like Chat GPT are publicly available for anyone to use for any purpose. Students may be using it to get ideas for assignments, explanations on topics, getting support for programming, debugging, writing emails. Educators might be creating

lesson plans, making quizzes, etc, so tasks that previously took many, many hours to complete, they're able to do it so much faster with the support of these tools. Universities, they care about supporting students and educators. They care about student success, engagement, helping them learn better. But they also have challenges with scale. So we are working with large cohorts of, say, 300, 400 or even 800 students, and it's humanly impossible for an educator teaching such a large cohort to give that continuous personalised attention to each student. And this is where technology can help. And at UTS, we've had learning analytics apps that can provide such personalised feedback at scale, long before generative AI. In fact, my PhD from five years ago was about giving 24/7 automated feedback on writing. What we have now is even more powerful capabilities. So generative AI is just a huge productivity aid, and it can even act as a personalised tutor for a student, if it's used well. And suppose we know that this new technology does aid learning and not harm it. And this is still a lot speculative. It's very nascent. Research is still emerging. We need strong evidence for answering many of those bigger questions, but suppose it does, and we know that some students have the privilege of paying extra money for some of these services from companies and others don't, should the universities provide equal access? And just like say, the suite of products from Microsoft, we have Word, Excel and other kinds of software. Should universities provide access to these latest models if we know that it can help support their learning, and not to mention there are costs associated with these, so they should be thinking about costs versus benefits. And some smaller institutions, they simply cannot afford to provide these resources, like the larger ones, they may not be technologically ready to, so there's an equity issue with this technology.

Now there's also a very much bigger question, which is, how do we design guardrails so that the generative AI tools can be used responsibly in education? So the public tools that we are mostly working with is not designed with learning in mind. So they're not designed for students. They're designed to give the answer the user wants. So I work a lot with prompting and evaluating large language models for building apps, and sometimes it's just hilarious to see the lengths they will go to please a user. So for instance, if I ask, Are you sure? Can you check again? It's very likely that a GPT four model will backflip and say, No, I'm sorry, you're right. Completely change its answers, simply because it's all based on probabilities. There's no ground truth to it. And the problem is, many end users don't realise that, right? They they don't know that these LLMs have limitations, that you know, they make up information, they might cite wrong sources, they are imperfect. And we might ban it in class, but students may still use it at home. So there's a huge need for AI literacy critical engagement to be taught so that students can use them effectively. And one of UT's principles is actually to equip students with skills so that they can engage critically and ethically with generative AI. And this is what I've done in my own research as well, where I basically give students permission to use it in their assessments, and which, in turn, has changed a whole heap of things around assessing and how we assess learning in the age of AI, which I think relates to your second question about assessment reform itself and how do we assess learning in the age of AI? And there are changes fundamentally in education, not just due to the emergence of generative AI, but even before that. So we've started shifting the focus and values of education. So it's not just about, if a student can memorize and reproduce it in an exam, but are they able to apply what they're learning, the knowledge in a professional setting and in other settings beyond the classroom and the educators role has changed quite considerably, too. It's not just about imparting knowledge, because information is available everywhere. What are the skills I'm equipping them with? Metacognitive skills, critical thinking skills,

lifelong learning skills, so that they learn to adapt in a changing environment. We don't even know what jobs will look like in another 20 years, but they should be able to be adapt to those changing environments.

Now, we also want to assess students learning reliably, because universities award qualifications. And for us, many of our subjects have moved away from traditional exams to more authentic assessments. So students are doing most of their work out of class. They're handing in submissions, and it almost became an existential threat for higher education because AI started to infiltrate these assessments. We can no longer tell with 100% certainty if what a student is submitting as an assignment is completely done by them, which parts of it come from AI and not. There are AI detectors, but they're not reliable again. So an assessment integrity is a big priority, because we want to ensure that students are having the learning outcomes, they are meeting them when they're graduating from a course. The great thing about the report and several other resources in Australia is we have several experts coming together to discuss this at length. So the Assessment Reform report is a great resource. There was also a parliamentary inquiry which was all about the use of Gen AI in education system. And New South Wales Department of Education is also working with schools and teachers. I just want to highlight one particular principle from that report, which is basically the shift in focus from assessment as a product or the final end product, to looking at it more as the whole process of learning. So for instance, instead of just asking a student to submit a final essay, we could ask them to document and reflect on the steps they took to come to that final output, the tools, the research data that gives a much better starting point for us to then judge their learning. And I highly encourage everyone to read that report, because it provides several such guiding principles for how we can change assessment practices for the age of AI.

Prof. Balaji Parthasarathy, IIIT- Bangalore

Thank you, Shibani, for that response. I think very quickly, you brought out some very important points, the role of generative AI, when you have scale issues, need for personalised attention, greater granularity. And also, of course, I think you said this, a lot of this is still very speculative. We don't know where it's going to take us and how quickly, therefore, the need for adaptability, specific kinds of assessment formats that move away from traditional examination, growth, memory, kind of approaches. And there are two other things that you also raise, which I think are pointers to the discussions or what we would expect from the next speakers. One is about the role of users and how they interact with this. And the whole second is the whole question of equity. But before I come to that, would any of the other panelists like to add to what Shibani just said, just in a couple of minutes? Anyone would you like to add to what she said?

Dr. Sayantan Mandal, Assistant Professor, Indian Institute of Technology Jammu

Just very briefly, though, Shibani has clearly pointed out the critical engagement part and I'll be focusing a little bit more, so I'll be complimenting, probably to her discussion, just that.

A/Prof. Srecko Joksimovic, Senior Lecturer in Data Science at the Education Futures, University of South Australia

There was a very good, I mean, there are two questions at the moment. I think one is for Shibani, so maybe you want to pick it up later. But Stephanie's question around students using generative AI for

certain tasks, and then still, they are very poor and prob design. That's something that that pretty much everyone I talked to noticed as well. And there is one thing that usually we talk about, if there is, if there is anything we're going to learn from our interactions with chatgpt and similar tools, is how to ask questions. Because if we if, in order to get, as Shivani said, in order to get you know answers you're looking for, you need to know how to ask questions. I don't think all our students would know that, especially in the in the first year, right when they're still learning how to learn and how to navigate around the university. So with Chat GPT, doesn't mean that we just move away all those, all those, all the necessity to know, to have the domain knowledge, to ask proper questions. We still need the domain knowledge, and we still need to know how to approach problem solving, how to, you know, to develop critical thinking and so on. So just to tackle that question briefly.

Prof. Balaji Parthasarathy, IIT- Bangalore

Thank you. Srecko, actually, you're going to an age old issue. You know, when you do research, asking the right question, is half the battle won. And even if you have to use a search engine, you have to know what terms to put in, what kinds of questions to ask. Thank you for sort of reinforcing that message very, very well. And you'll have, you know, you can speak about this, you know, when I turn to you a little later. Now, let's pick up on the question of equity and turn to Sayantan and Sayantan, you know, the challenges of inequitable access to education, and education process is very global, right? And these inequities can vary by, you know, gender, geography, income, you know, particularly the ability to pay and so on and various other social distinctions. And it's these sort of inequities are especially acute in countries such as India. Now, could you tell this, you know? Could you tell us how this might be evident with generative AI tools too, and is there any room for optimism that the world of education will become less equitable? So that's question number one for you. The second question that I have is, there is this sense that the education sector is trailing in the deployment of generative AI, right? But could it also be a case that some of the developments may just be so irrelevant for the larger educational purpose that you're probably better off ignoring them? Over to you.

Dr. Sayantan Mandal, Assistant Professor, Indian Institute of Technology Jammu

Thank you for the question, Professor Balaji. You know, first of all, answering to the first question, it is important for us to recognise the major shift that is happening in the higher education ecosystem. I mean, it's not just from the brick and mortar to the digital now, but to click and brick model. That means kind of an integrative approach. We need to take a blend of technology and learning, focusing on the learning as a primary focus in the evolving educational ecosystem. In the earlier forums, Professor Liz and I believe Professor Sheila has mentioned about this in a little great detail. So I'm not going there too much. The ecosystem, if you look at it, it's very diverse and not a level playing field and it has also been pointed out. Now these traits of diversity and inequality is more evident, as you have pointed out in the Global South, and India is, of course, a prime example. We are desperately trying to catch up and at the same time dealing with all the three levels of digital divides, the access divides, the usability divides and the empowerment divides simultaneously. And that's an important part. It is very diverse and very challenging indeed.

Now in this situation, while gen AI promises to bring revolutionary changes, and I'm not again going to the details, because it has been said in other forums and different discussions, what it claims is to free up spaces for higher order task and higher order thinking. Now, we should not forget that these benefits

to those who could overcome those first two levels of digital divides and did not have to deal with major other problems of access. For example, the access divides and their skills levels are also high enough to tap those benefits, even for them, AI provides a little non contextual, sometimes superficial and often diplomatic, dominant worldview, as also pointed out by Shibani, and by doing that, inherently perpetuate the status quo and without proper understanding and training. If you look at the teachers, they're becoming kind of the facilitators of AI curated content, undermining their expertise in the contextual educational landscape. Here the word context is very important, and I'll come back to that very briefly. Now, coming back again to the Global South, what we can see is that one distinct feature of these developing countries is the increasing income inequality and with intersecting, overlapping socio economic gender related barriers. Here, of course, the economically disadvantaged and the marginally position sections, especially women, people from remote rural region and recently or it has been, always been there, but it is, it is in focus. The people from the conflict zones are at the far end of the spectrum of the beneficiaries, and my guess is that they may move even farther, not only because of the access gap, of course, that is there, but also because the developed counterparts are moving much faster and using AI for a more sophisticated activities. Now, if and when, the other sections, if they catch up, the language will be set, I guess that will be softly coarse to speak the dominant language instead of their own. Now this will, or may create a major rift, not just between the North and the South, under developed and the underdeveloped, but within the developed region and within the developing region as well.

As I earlier pointed out, India has, and many countries have all three levels of digital divides at the same time because of the inequalities that persist there. Now we have seen that in some handful of cases, also that learners and teachers from geographically remote regions have just started using Gen AI, but it mostly came as a byproduct, you know, of newly set up internet connectivity. It is fascinating to them, you know, as it was fascinating to us when chat GPT was first introduced, it took the world by storm. But unfortunately, students and teachers from these simple rural setups have started considering gen AI as a guiding star, you know, if I can put it that way, or at a super bot. You know, this brings to a question of that inherent risk of uncritically adapting to the dominant mainstream narratives, which is very different from theirs. For example, the mainstream narrative, if I can take the example of that materialistic development, growth of highways and buildings and tourism, etc, are the only way of development is already started gaining traction in those remote region and overpowering their 1000s of years of indigenous knowledge and spiritual coexistence with nature. Now, from there earlier, less is more belief system, now, they have already started moving towards the dominant narrative is more is more. And we have seen this early signs of it in the higher education institutions located in very remote regions of the Himalayas, due to our empirical studies for the last four, five years. Now, this leads to a homogenisation of knowledge as the other source of knowledge is often not, you know, digitally documented and therefore out of reach of the gen AI.

But also, you know, if you look at it, the gen AI is built on averaging data from entire population. It may sideline minority and marginalised communities and their point of view to the discussion and not just the people. You know, when we look at the recent policies, the importance of AI has gone up many fold. If you look at Indian policies, or any other policies from developing countries or developed countries, it's roughly the similar picture on top of that some of the countries perceive, and their policies, perceive AI

rather uncritically. Now obviously the policies and guidelines stress on stopping the misuse of AI, such as malpractices, cheating and so on. But, you know, to me, those are logistic issues, and with time, we'll figure it out ways of how to, you know, rectify those. But the main point is that we have to question AI and look at it critically. And that's really the trail of optimism I bring to the forum. You asked whether is there an optimism or not. That's the slightest optimism I have. And if we as educators, policymakers, administrators, teachers or learners, also, we question this post digital technocracy and the totalising claim and fame of the Gen AI, then there is some ray of hope. And obviously generative AI is a powerful tool, no doubt about that, but with increasing reliance on AI, not just for the content, but also designing curriculum, as we are discussing on the other day, checking assignments, assistance on TA work, automated grading, we are letting AI to decide the rule of the game. And that's not all, if you look at it, Gen AI relies on platforms which consumes huge resources and therefore are controlled by a handful of private corporations, often having very close ties with the dominant political minds. We really are at a crucial juncture where AI carries the traits of the contemporary techno political superpowers, deliberate censorship and re establishment of the status quo.

Prof. Balaji Parthasarathy, IIIT- Bangalore

Sayantana, I'm going to have to be this sort of mean and nasty moderator. I would want our other speakers to also have time. But you know, you made some very sort of compelling points. And I'm going to be and let me just sort of highlight the two or three that struck me before I asked the other panelists to respond or say, you know, add their views. One is, of course, you say that this has come with this policy of, sort of this promise, not policy of freeing us to do higher order tasks, you know, but in effect, generative AI can reinforce the discourse of the dominant powers, and there is a clear danger of uncritical adoption, which sort of reproduces the status quo. So that, in essence, is sort of the key point that you made very powerfully. And I wondered if any of the other panelists would like to add a couple of thoughts to what Sayantan just told us.

Dr. Antonette Shibani, Senior Lecturer at Transdisciplinary School (TD School), University of Technology Sydney

I think they're really great points. I completely agree with a lot of them. And one thing I wanted to highlight was some of these issues. Again, they're not very specific to generative AI. In fact, they are just exacerbated by it. All of those biases and many of those large language models are built on prior NLP technologies, which have had these issues for ages. The thing is, there are many, many communities which are starting to talk about this, and we are adding more global perspectives, particularly from the Global South. In fact, a majority of the technologies are built by the Western society, and they do have those ideals which are embedded in the data, in the models. And there is a lot of talk, in fact, about image generation models. So if you Google, or if you generate an image of someone from ethnicity, it might look very stereotypical, and these images then become data for the next generation of world, and people just believe that is the truth. So I completely agree about the critical way of looking at it and knowing the limitations is just one core part of the AI literacy and critical engagement, and also about the higher order thinking. Yes, a lot of people do also some of the lower level cognitive thinking abilities to or administrative tasks to those large language model, little tasks that they can do, but there's also a lot of higher order thinking that it can enable us to do if we are using it in the right way. And that's why I think we need to give people agency and try to get our students to work with it, because that's the only way they learn to use that in more meaningful, productive ways. And again, like Srecko mentioned,

yeah, the whole learning to prompt is a big thing, and learning to ask the right question, and even testing your own assumptions, because, you know, we have lots of assumptions within our own questions, and it can be a tool to help teachers out. It has the ability, and there are tools that can help them do that in a way that augments our intelligence in that sense.

Prof. Balaji Parthasarathy, IIIT- Bangalore

Thank you, Shibani, thank you for that. So let's move on to Srecko, and I have a couple of questions for him, particularly around the question of users and how you interact with this. So first, of course, there's a sort of a background question, if you will. And you know this whole excitement surrounding generative AI, Chat GPT, etc, suggest there were no real prior efforts to create AI based tools or to incorporate them in education. It's almost as if just dropped down from the sky in 2022 right? Could you provide a more nuanced historical perspective as somebody who's working in this area of such efforts and how they led us to where we stand today? I mean, that's one question. And the second one is, of course, most initiatives to sort of incorporate generative AI are fragmented, and this refers to a point that I think Shibani just made, or about a lot of these are driven by individual firms offering their technologies, or different governments trying to set their own standards. So in effect, you have fragmentation, and in turn, it sort of generates a very wide range of expectations from users. Now how could we possibly develop a more systemic approach to ensure that we have policies to effectively and collectively benefit from the potential of generative AI in education. Over to you Srecko.

A/Prof. Srecko Joksimovic, Senior Lecturer in Data Science at the Education Futures, University of South Australia

These are all great questions, Professor Balaji, I mean, thank you for this. And if I ever find answers to those, I will write a book, and that's going to be the best seller. But these are, these are definitely great questions. I mean, and you're, you're right. I mean, we, all of a sudden, we talk about generative AI and AI like, Hey, this is something totally new. Well, no, it's not. I mean, we've been talking about artificial intelligence since 1940s, 1950s and we know about AI from, you know, movies and popular culture and so on. But now, all of a sudden, we can actually do something with AI. And now for the first time, I mean, Shibani and I have been involved with learning analytics, research and education data mining for since almost, you know, for the last decade or so. But nobody asked us to talk as much about learning analytics as much as we are being asked to talk about AI and generative AI in general. I guess I will talk a little bit about the difference, but, but this is, this is not something that just happened all of a sudden. I mean, when we think, and also, besides learning analytics and educational data mining, we have education as a research field that celebrates, like 30 years. I think this year or it was last year. So we've been doing some research and some work there for many decades now, and now, all of a sudden we have, we have all the discussion, hey, this is something amazing. What do we do about this? There is a reason why there's the case but, but when you, even when you when you build, when you look deeper into learning analytics only, we basically the field started back in 2011, 2012 but there are developments across psychometrics, across cognitive sciences, cognitive evolution and so on that led to the development of this field. Similar thing happened with AI as well.

But as you, as you mentioned, something is obviously, and everyone here, as we, as we all agree something is different this time, and what was the biggest difference is that all of a sudden, you have students, you have educators, you have everyone, pretty much being able to use AI and do something

with it. We can put it in some kind of practical use without having to deploy a system within the university. I mean, both Shibani and I have been familiar with the on task system and similar systems that have been developed in learning analytics, where basically it takes a lot of stakeholder involvement, involvement to deploy a system, and then you need few educators who would try that in their course. And then to scale that further, it takes a lot of work. With Chat GPT, things seem to be different, right? And there is, there are several reasons why this time, there is a difference from what we had before. And one of those, one of the one of the aspects, of course, easy access to it, but this time we also seems like that we are developing that we have a partner to think with. So it's not just that when we deployed learning management systems, for example, there was a content for us to consume. This time we have something or someone, hopefully not yet someone, to think with, and we can drop ideas at Chat GPT and us help us to brainstorm, and so on, so on. So we're kind of developing that relationship, and we have that qualitative shift from just consuming the content to actually developing something. The point I wanted to make, and to your second question, basically, what needs to happen? My biggest concern is that we are again responding to something that happened back in 2010 in 2011 or early 2000s when we started introducing learning management systems in education, we said, oh, this is going to change everything. And then we had fields like learning analytics, educational data mining, and others that may use of these data to inform learning and teaching. The problem is those systems will not develop to support learning, but to deliver content. And there is a difference there. So when we capture the log data in learning measurement system. That's those data, those logs, are there to serve the for the testing of the system, not to tell us much about learning, although we found ways to understand learning as well. Now again, it's similar. There is something that's pushed at us, and we are trying to make use of it. We didn't sit down and think through what do we need as education, as institution.

For example, here at my institution, we didn't say how we are going to incorporate AI in our everyday practices, how we going to support our students, our teachers, our staff, and everything. We just, we are forced to use something. And the difference, again, compared to learning analytics, for example, it takes a lot of funding to put something in practice, a lot of resources. This time, resources didn't come from institutions. They came from big companies. They came from Google, from Microsoft, from, you know, open ideas, again, Microsoft, Nvidia. So there are billions of dollars invested into this, so people can use it. And my biggest concern, and we all talked about that, Sayantan and Shibani as well, equity. So what we did here, we said, Okay, we're going to deploy a chatbot for students, and deployed schools. It was deployed with richest schools, and then when we asked what needs to happen to deploy across all the schools, nobody knew the answer, because we don't have that system thinking approach towards adopting technology and incorporating it to support us not to respond to something that happened outside. And I think the biggest challenges that we will be facing is how we will be addressing that. I mean, when you look at the education technology at the moment, most of it are point based solutions, a lot of chatbots that are just another wrapper for open AI, API.

Prof. Balaji Parthasarathy, IIT- Bangalore

I'm going to have to interrupt so that I can just say a couple of words and I ask other panelists to comment on that. I mean, I think the points that you seem to make, one is that you seem to suggest the development of a growing cognitive relationship with generative AI, where you can actually develop ideas along with it, but at the same time, you point to the changes of just being reactive when you're not

able to make the distinction between delivering content was actually encouraging learning with this. I think the larger issue, which for those of us who looked at it from the vantage economic sociology or sociology, is, there's a whole question of how you embed technology within a society so that you're actually able to take advantage of its potential and in an equitable fashion. There are two components to this. So does anybody else want to sort of make a very sort of quick comment on this before we move on to Sarajeet, anybody? Just like a minute, no more.

Dr. Sayantan Mandal, Assistant Professor, Indian Institute of Technology Jammu

Well, very quickly, if I may, as Srecko has pointed out, you know, and also you have mentioned about it, the system thinking approach. And before really we move into that, we need to really ask the basic question that, what is the problem to which AI is a solution, and it can be everything. And I was reading an article the other day, and Professor Leon[?] has pointed out that if you know, ask to imagine a world without AI, what would that be? And for that, obviously we can ask each other, or we can ask GPT, any GPT model, for example, and the GPT model can write anything about it. But the point is that, are we developing our critical abilities, or are we developing the AI to learn on the point based system? That's my small comment to it.

Prof. Balaji Parthasarathy, IIT- Bangalore

The whole question of, you know, generative AI led learning versus our more sort of traditional concepts of pedagogy and learning. Thank you for that. So over to Sarajeet, given that you're with upGrad, I have a couple of questions for you. First, now generative AI offers many sort of analytical tools to sift through. You know, student work very granularly, and you guys really do things at scale. Now, can you provide examples where students with difficulties can be helped more effectively with Gen AI than through conventional methods, and that's the first question. The second one is actually an extension of that, which is the use of, you know, 24/7 tutoring tools, right. Now, how can these best sort of complement current approaches to tutoring, especially since the use of human teaching assistants cannot be done away with. And why is that? Because tutoring experience is a very integral part of training the next generation of instructors, right? So we can't just sort of forget about that. We are sort of dooming ourselves. We did that. So let me post both these questions to you, and it's over to you.

Sarajeet Kanungo, Director, University Partnerships, upGrad

Thank you so much for the opportunity and it's very, very enlightening listening to everyone. I think, to the first question that you asked, even before I talk about the ability of AI, or generative AI, to sift through students data, I think it has tremendous potential, and we are leveraging that potential to a certain extent in our work with working professionals and undergraduate students as well, is to help students who are coming with some kind of disabilities or challenges, whether it be students who are hard of hearing or students who are at the autistic end of the spectrum. AI driven tools are well, very well developed and improving quite fast on being able to provide real time captions for students, and not just in English, this is helping students and educators convert materials for students with disabilities into different languages, and hence adjust the content better to suit the students with these learning languages, in turn, helping break down barrier. Not so much in the Indian context, but in the world that we do with students outside of India, especially for in the US, for students of colour and non native English speakers, these translation tools and learning tools are providing invaluable support. So for example, somebody who does not have English as a first language may have a generative AI bilingual

session plan created to match their skill level and hence offer an optimal pace of learning. Professors with many non English speaking immigrants in their classrooms we are seeing in various universities and colleges in the US, and to a certain extent, in India as well, can create culturally relevant curriculum that speaks to these students. And as I said, several AI enhanced word to speech programs are helping students with disabilities to hear from textbooks, articles and periodicals that is helping them to visualise this content, to facilitate the learning and understanding. And now we are seeing developments in that space to enhance these tools with different voices, delivery speeds, tones, to customise the overall learning experience. So obviously the potential is immense.

I think it's as some of the other speakers also talked about, the ability to deploy these to the most effective use cases and use them, keeping the cultural background of the student in mind and devising the best solution that will actually determine how effective some of these technologies can be. When it comes to the concept of AI tutor, I will say it harks back to the point that one of the speakers made, which was about the ability of AI to create a personalised learning journey for the students by analysing a student's background and a performance to create bespoke lesson plans, activities and assessments. So traditionally, if you think about it, the way tutoring or the way assessment, for that matter, of any student, used to happen was through classroom observations plus assessment schools and some projects and assignments basis which a student would be graded either exceeding, meeting, progressing or starting out. Compared to that in the new approach, apart from all of these, aided by artificial intelligence and the ability that it brings to continue to assess and support students outside of the classroom through interactions that can happen through the AI powered chat bot, where 24/7 you can have an AI power chat, but able to respond to the learners queries, understand their behavior, understand that habits of learnings, you are able to create a better framework altogether for helping the students and analysing them. So I think the objective here should not be to substitute, but complement the tutoring or the in person support, but bringing the ability of personalised learning and adaptive infrastructure so teachers themselves can benefit from real time frame feedback and assessment tools powered by multiple open AI and chatgpt platforms. It can help simplify exam creation as well. And I think the greatest power is that a personalised AI tutor obviously has the potential to adapt to each student's level of knowledge, speed of learning and desired goals. And we are seeing such tools getting developed which allow an autonomous AI tutor to be available 24/7, so that brings down student frustration a lot, especially in the field of working professionals. So we work with given that they are consuming the content at their space and logging into the platform at different points of time, the ability of a human being to be able to answer their questions and doubts 24/7 is very, very difficult. So that is where we are leveraging AI power tools to support the otherwise TARs that are designated and bring more 24/7 support. So it will, in a way, bring in a lot of equity into the opportunities for live interaction that were otherwise pretty limited. So I think those would be my thoughts, happy to sort of hear from the others in any question.

Prof. Balaji Parthasarathy, IIIT- Bangalore

Thank you, Sarajeet. I think the two important points that you raised, one is the possibility of addressing diverse needs. You mentioned disability, people of different backgrounds, bilingual education, all those sorts of things. And while that's still, you know, the examples you gave were from North America, hopefully that will spread across the world and will allow us to address these challenges, inequities and diversity, you know, in poorer, less affluent countries and settings. The other point that you also make

as a consequence of that is, of course, the diversity is related, is this, you're essentially hinting at a certain vertical disintegration of the education system by the being able to offer personalised attention through tutoring systems, rather than rely relying on large, monolithic sort of, you know, classes and, you know, and defined forms of teaching. It's where, instead of taking a one size fits all, you're saying that these are possibilities that are really opening up, which I think are extremely things that we need to ponder over and wonder how we can best take advantage of. But again, I'm going to ask the other panelists if they have a comment or two on this before we move on to the Q and A session and the interaction with the audience. Anybody would like to add to what Sarjeet just said on these two issues about the use of AI tools for better helping students and this whole question of 24/7 tutoring.

Dr. Antonette Shibani, Senior Lecturer at Transdisciplinary School (TD School), University of Technology Sydney

I think that's a point very well made. I just wanted to emphasise something that Sarajeet was mentioning, which was about complementing expertise of tutors and involving human tutors in the loop. Because I think that's an important thing to remember as we start to bring more and more AI into mainstream, that it should not be like an escape route that we use for poor systemic practices, like, we don't have enough tutors, or they're expensive to hire. So should, should we just deploy AI tutors, just replacing them? I think then we are doomed. Like, like you said, Professor Balaji, yeah, so it should be always used as that additional tool that is helping us augment our practices and helping us complement our approaches, where we still use the human expertise to use where we are doing things best, the emotional support, for instance, and and all of the other things that the students really need from tutors and educators that they're after that the AI simply cannot provide. So it definitely should not be replacing it at any point. It's something I really wanted to emphasise.

Dr. Sayantan Mandal, Assistant Professor, Indian Institute of Technology Jammu

So just a counterpoint to what Shibani has said, and I also have, I was also thinking about it, isn't it happening already that for the low paying courses, the teachers is already replaced, whereas for the high paying courses, the teacher is still there, and that is creating an elitism, and, of course, the rift in the, again, in the socio economic fabric. So just a point to add, also a point to think about, yeah.

Prof. Balaji Parthasarathy, IIT- Bangalore

I guess the the seduction of technology must not line its ability to lower costs as much as its ability to deliver content and, you know, learning capabilities more effectively. Okay, so I think we're on time now, and we've had a lot of raw material and sort of, you know, food for thought given to us by the panelists. Let me turn the floor over to the audience, and you know, they sort of, please ask you questions. Okay. Stephanie Holt says, As an educator, I found students have embraced gen AI for secretary duties and basic level recall. However, I'm finding that the students are poor at prompt design and poor at using generative AI to its full capabilities. The work they do is focused on the lower level thinking skills. What do you think the roles are in 16 plus education and preparing students for tertiary education? Anybody wants to take a stab at this? It doesn't seem like it was directed to anybody. So I think it goes back to question, or an issue that Srecko raised about knowing how to use the technology the right prompts and so on. Srecko, maybe you were going to respond to this?

A/Prof. Srecko Joksimovic, Senior Lecturer in Data Science at the Education Futures, University of South Australia

I think I was replying to that when I, when I first had the chance to jump in, that was actually my point. We kind of, there are questions now even around computer science, right? And should we teach programming? And I would say yes, absolutely yes, because programming is not just about learning syntax and how you, you know, write Python but it's it's also about how we solve problems. So there is probably more than ever that need to teach the skills such as problem solving, critical thinking and other domains. So just understanding how to approach problem solving, how to ask questions, you also need the main knowledge as well. So it's a tricky question. Just having the opportunity there, it's having the Chat GPT available out there, doesn't mean that we solved all our problems. So yeah, that's why I think we still need humans. So yeah, am I was referring to that question, when I when I first, when I first yeah, answered.

Prof. Balaji Parthasarathy, IIT- Bangalore

Okay, thanks. There's a comment from Samir Sinha, who wanted a response from Shibani on] some Gen AI based tool that they've developed. But he also has a question directed at Sarajeet, which says, you know, any thoughts on what functionalities can be built into the outside of classroom? Personalised tutor, what are the capabilities that generative AI is now making possible? Sarajeet, would you want to take a stab at that?

Sarajeet Kanungo, Director, University Partnerships, upGrad

So I think apart from the 24/7 availability aspect that I talked about, I think what generative AI is also helping to do is categorising by looking at the data that is getting generated through the questions that are getting most frequently asked by learners. Categorising and creating a band of frequently asked questions and updating that on a very regular basis, and also becoming better in terms of its intelligence and accuracy, by going through the responses and going through the kinds of questions that are being asked and the answers that are being provided by the physical tutors as well, to better train the model to be more accurate. Other than that, I think when it comes to even more operational questions, as to assignment, submission, deadlines or instructions that are provided in the in the guidebook, which the learners are struggling to understand, being able to provide second level answers or questions around that is also something I think we are using generative AI a lot around when it comes to the tutoring.

Prof. Balaji Parthasarathy, IIT- Bangalore

Thank you. Sarajeet. We move to a question from Delvin Burgess. This is directed to Srecko. First, he says he commends Srecko for a really refreshing take on how we can learn from previous trends, including from within learning analytics. And he says, At my institution, which is Monash Copilot, as a tool, I presume, has been rolled out to all students and staff. Do you have any ideas and opportunities where AI can support with identifying at risk students, particularly in contexts like Australian universities where there are large student cohorts?

A/Prof. Srecko Joksimovic, Senior Lecturer in Data Science at the Education Futures, University of South Australia

I was typing to that question, but it's better to pick it up this way. Monash has one of the largest learning analytics groups here, I mean, around the world, because Australia, to be fair, Australia is quite big on AI education and learning analytics. We have several large groups in Sydney, Melbourne and here in Adelaide, basically, with large groups of researchers in the field. And that question about at risk students that has been, we've been asking these questions for ages now, right? And there is no simple answer. What we are doing at the moment is we are trying to enable that radical user agency, in a sense that we are trying to find problems and or insights that might be problems, and present them back to students in a way, and teachers, and they decide whether they want to go in that direction and whether they think it's a problem or not. I mean, just to give you an example, because we are now talking about something that, how we use AI to support holistic human development, where we don't just help learners to learn certain competencies, but also to develop as humans. For example, I want to learn Python, but then we know about you, and we collect a bunch of quite a lot of data these days. We know that you don't exercise a lot and you don't sleep well. So the problem is, okay, you're quite on track with your learning. You have an exam next week, but we try to suggest you, Hey, how about you exercise a little bit? And how we, how about we focus on developing that part of or, you know, help you develop that part. It's still up to learner to say, Yep, let's do it. Let's put you know, I want to exercise Tuesdays and Thursdays, I have half an hour, how I go about about it? But there is also that user learner agency. They can say, Look, I have this exam next Friday. I want to focus on learning only. So we are trying to give that agency to learners and to educate the teachers as well in the log. But there is no, what currently has been done, and Shibani knows that quite a bit as well. I mean, what currently has been done is we are attracting what's available from those learning management systems, and then most of the time, we rely on simple metrics, such as, you know how much time you spent learning, how many resources you accessed when you submitted quizzes, and so on and so on, so very shallow proxies of learning. And that was the point I was trying to raise as well, even back then.

Prof. Balaji Parthasarathy, IIIT- Bangalore

Can I just, can I just interrupt you here for a moment? Sorry about that, one more question, which I want a very brief answer to, and then you have to close the question. There is a question for Shibani. He says we have seen the first fully autonomous AI software engineer developed by cognition AI called Devon. Do you think having these gen AI tools will take on more tech jobs and create anxiety among developers, any thoughts of being more relevant in this gen AI world? And I just want a 45 second answer from you, Shibani, because we are running out of time. Sorry about that.

Dr. Antonette Shibani, Senior Lecturer at Transdisciplinary School (TD School), University of Technology Sydney

Sure, I think the very short answer is yes, to be more relevant in this generic world I think we need to not just turn away from AI or knowing that we still continue to do things the same way, but I think we should also learn and adapt and learn to use those AI tools, because there's a very common like tech saying that people say, like with regards to jobs, particularly in technology, that AI might not replace you, but someone using AI might, which is something I actually share with my students when I teach data science. But that doesn't mean that you completely don't need coding or programming skills anymore, but that's fundamentally required. But apart from that, you also need to learn how to use some of these new tools and technology. So you keep upgrading your skills, you get new skill sets, and that's the only way we can continue to be relevant. And I think it's not just a software engineers. It's

pretty much every job that we need to have that continuous learning mindset and keep learning and upgrading as we go.

Prof. Balaji Parthasarathy, IIT- Bangalore

Thank you Shibani, and thank you to all the panelists as we approach the hour. So today was the sort of the last webinar in the event series. And I want to thank all the you know speakers, not only in this panel, but in the earlier ones too and you know, participants, audience, etc, thank you so much. This session was recorded and will be available through the Australia India Institute. And I think this represents a sort of a collaborative process, an exchange of ideas between Australia and India. And this is going to lead on to two roundtables, one in Melbourne and one in Delhi. And look forward to extending more ideas on this topic, this rapidly growing area. And thanks once again, to everybody, to all the institutions, organisations, people involved, for your enthusiasm, dedication in ensuring that we've carried this partnership ahead.