

GOVTECH DECODED

EPISODE 12 TRANSFORMING EDUCATION WITH TECH

Host: Adriana Chan

Guests: Harish Ravindrababu, Lee Lin Yee, Thuhaila Sainy

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[Adriana Chan] Not me.

(Intro music)

[Adriana Chan] Hi everyone, welcome to GovTech Decoded. In this series, we will discuss hot tech topics and how the Singapore government leverages technologies to build tech for public good. I'm GovTechie Adriana and your host for this episode. This episode is really interesting and relatable to, I think, every single one of us because it has to do with learning. Not to give away my age, but I know that classrooms have evolved continuously across the years, of course. So today we're going to be discussing digital tools, how AI is affecting and impacting classrooms of today, as well as tomorrow. To do that, I have these wonderful esteemed guests. May I get you to introduce yourself?

[Harish] I'm Harish. I'm a GovTech product lead for student learning space. I collaborate with MOE Professional Wing to design and build learning products.

[Lin Yee] Hi, I'm Lin Yee. I'm the Divisional Director for Educational Technology Division.

[Thuhaila] I'm Thuhaila. I'm a HOD ICT from Northworks Primary School. I teach English language as well as mathematics, and I champion the use of EDtech in the classroom, as well as helping my fellow colleagues adopt technology in teaching and learning.

[Adriana Chan] Okay, to get us started, we have a little game that we like to play. So the first one is a true or false question. More screen time leads to poorer learning. Okay, I'm interested to know this one.

[Lin Yee] I mean, for sure, I would have to say no, it's a false. I think we do need to recognise the difference between active screen use and passive screen use. So when we talk about passive screen use, it's, you know, some children will say brain rot, right? So you just like mindlessly scroll through the social media, and you're not actually engaging in the content. But actually, when you're actively trying to learn something, right, using digital content, that can actually be a powerful source of learning. So definitely false.

[Adriana Chan] Okay, so second one here. Also another true or false. We have e-learning is only useful for home-based learning.

[Thuhaila] I will disagree with that statement. E-learning is definitely not just useful for home-based learning, because I do e-learning in the classroom also. And in fact, actually, with e-learning, it can complement a lot of teaching resources in the classroom.

[Adriana Chan] Right, so it augments the physical experience in schools. Interesting. Okay, so true or false? AI can replace teachers.

[Harish] Okay, definitely not. AI or any piece of technology cannot replace what we do, especially in a classroom setting, right? It's there to basically help teachers with some tasks, like maybe grading or creating lesson plans and some content.

[Thuhaila] Yeah, I agree with Harish, because I think basically AI, our role as a teacher, right, is to really guide the students in terms of how to interpret the feedback, understand what they need to do. Things that AI can't do is like having that empathy, providing encouragement, as well as a human connection. That is something that AI cannot replicate, I feel.

[Adriana Chan] And last one here. So this one's a fill-in-the-blank type question. It reads, to me, we've done our job well to educate the next generation if...

[Thuhaila] If... my students are able to use technology responsibly and meaningfully.

[Lin Yee] So maybe I'll just add on. I think we would have done our jobs well if we help our children understand what it means to be human in an increasingly tech space. Because with more tech, actually, we need more human connections. And how do they move in and out of both the physical and the digital space? And to recognise both the strengths and the limitations, and to be able to harness that, I think that would be really powerful for our children.

[Adriana Chan] So these days, it's super common to hear of youth and even children using tech in the classrooms, right? I know that there was a study recently published about how three in four teachers are using AI in their classroom. So could you explain a little bit more about how tech is influencing and impacting our classrooms of today already?

[Thuhaila] I use [Student Learning Space](#), or SLS in short, in my teaching. And it's one of the main teaching platforms that I use. And it's actually one of MOE's key initiatives to actually transform how students learn in this digital age. So in terms of SLS, I actually design module-based lesson learning experiences for my students, and providing them a space where they can actually assess the resources, revisit what they've learned and all that.

[Adriana Chan] So I know that a lot of the teachers spend so much time doing admin tasks, right? A lot of time, I've spoken to... I have friends who are teachers. How is tech helping with that space of reducing some of this admin toil?

[Thuhaila] Definitely, AI and digital tools can actually help us in terms of certain administrative tools, such as automating the grading, providing instant feedback, and also creating learning content. Because in SLS, there's also the authoring copilot, where simply teacher will just need to upload a lesson module, or the SOW, the scheme of work, and then it will help to generate the content for the teachers.

[Lin Yee] So one example would be, in terms of giving feedback, I think teachers often, especially for oral practice, they do have difficulties seeing to all 40 students at the same time, right? But in SLS, we have the speech evaluation tool, which means that actually concurrently, the whole class, the students could be practising their oracy, and then being given direct feedback, while the teacher is able to then subsequently look at the performance of the students across board, and then use the data assistant to kind of analyse how the children or the students within their class have performed. So that saves the time that the teachers need to spend doing one-to-one, and for the students, it also actually makes the feedback come back faster for them.

[Harish] But I'd like to add on that, when we started SLS as a product, it was in a small way. But when COVID hit, and home-based learning became quite a key focus, and how do we help teachers continue to teach, and the students should not lose out, just because they're bound by home, right? So SLS team stepped up to a very large extent, and they brought a slew of tools and capabilities to help teachers teach, and the students were able to continue to learn. And this was a great achievement. So now SLS has grown into a trusted, reliable platform, not just tools that we build in-house. It's very meaningful for me as a techie to be able to drive this impact for teachers and students.

[Adriana Chan] Is there something that you're especially proud of with SLS? Is there something that SLS does particularly well?

[Harish] Definitely. We started off with the key purpose that we must provide equitable access to quality learning materials and content to all the students of all schools. Not just that, we have differentiated ourselves from the global products and commercial products who basically cater for a general audience of students. But SLS caters specifically to Singapore's context. There are a lot of subjects like mother tongue languages, and citizenship and character education, which is very local. So it's not possible to expect global products to cater to those needs.

[Lin Yee] So maybe just to add on, I think because it caters to the local context, the children can find the content more relatable. Because, for example, my daughter, she's in primary school, so she uses the adaptive learning system in SLS. And the questions, because it's written by our teachers, she actually can relate to the problems that are given within the adaptive learning system. And because she knows I'm in charge of SLS, she actually would sometimes do the question, and when she gets the feedback, she thinks the feedback is wrong. So she'll come to mummy and say, Mummy, can you fix SLS? But when I look at her, I say, "Hey, excuse me, you're the one who's not understanding the explanation is correct." So I think that is where you also see a little bit of that technology together with the human coming together and then strengthening the learning process.

[Harish] I totally relate to that. And specifically for mother tongue language, we don't speak Tamil at home. But the teacher is helping that in a very big way by using SLS. So my son learned how to pronounce the right way and speak good language, Tamil language, by just using the lessons and pronunciations that the teachers curated specifically for P2. And that's great. I'm also learning with him, to be very honest.

[Adriana Chan] So what I'm hearing is that there's so many benefits for students. Can we hear a little bit more about SLS helping teachers?

[Lin Yee] So earlier, you would have heard Thuhaila share about some of the SLS features that actually helps teachers in terms of preparing learning materials. So there's an authoring co-pilot that helps them prepare the SLS lessons for the students. The auto-marking and the feedback features. And I think based on our current estimate, the feedback assistants have actually saved about close to over 30 hours per teacher in a year, just purely for the purpose of giving feedback. But I think we have to recognise that the number of hours saved may not always translate into real hours saved because teachers do want the best for their students. And if the marking is taken over by the system, actually what the teachers do is they do higher value work. They're able to get to know their students better.

[Thuhaila] Yeah, I think for me, the freed up time is really, really very precious and good for me because as a teacher, right, previously when I marked compositions, it would take weeks for them to get back their feedback. With that freed up time, I'm able to actually help this group of students who require probably more interpreting in terms of what the feedback is about, how to act on the feedback.

[Adriana Chan] So in this era where digital tools are so powerful, how are we looking at guardrails for AI? In previous episodes, we've also been talking about the huge potential that we want to harness, but there are also some risks behind this, right? So what kind of safety measures are we putting in? What role does AI have in those classroom spaces?

[Lin Yee] When it comes to any new technology, I think the emphasis is always on education. I think specifically for our teachers, we actually have a lot of emphasis on what we call e-pedagogy. So guiding the teachers on how they actually use technology together with non-technology blended methods so that the students are able to learn through a variety. We also have resources that we have provided for parents. So for example, we actually have the MOH guidance on screen use. I think that has been released not too long ago. A parenting for wellness website, as well as a parent hub and families for life portals. And I think these are also ways where we partner parents together with us to ensure that our children continue to remain safe as more and more technology and more and more AI comes into their day-to-day lives.

[Harish] We don't shy away from using AI, to be honest, but we use it in a very deliberate and purposeful way so that AI or any piece of technology does not take away the essence of learning, right? For example, we just launched Learning Assistant, which has got an AI component working behind the scenes. It's a dialogic assistant to help students learn after school, right? I mean, all students are used to using these, you know, a lot of commercial tools out there, right? But we want to bring a meaningful use of that. So we limit the time. We also limit the number of questions they can ask so that they don't get too addicted or over-reliant on AI alone. Apart from that, if they go off topic, let's say the 6-7 topic of the current trend, you know, if they want to talk about 6-7 with this Learning Assistant, it will bring them gently back to the main topic of learning. And that's quite important for us. So there are many guardrails of this sort. And we have also worked with GovTech products like [Sentinel](#) and [Litmus](#) to ensure that the responses coming back from the AI is aligned with the content and the curriculum and pedagogy that MOE established. So we have got enough security measures as well to ensure that the responses are aligned with what we want.

[Thuhaila] So I do balance the use of tech and non-tech in my classrooms. So I also implement things like, for example, discussions, conferencing with them, unpacking what the feedback means and all that to help them understand. So at the end of it, while the AI helps the students and myself, but I stay as a central role in guiding the students.

[Lin Yee] So what actually Harish and Thuhaila mentioned, are quite intentional system designs when we actually built SLS. So when we built SLS, we were quite intentional to ensure that through either some hard-coded prompts or the way we design the workflow, that the pedagogical considerations are actually taken care of. So the teacher actually remains controlled as to whether or not the feedback or some of the interactions are directly between the student and the system and what remains that is actually mediated through the teacher. So I think when we design a product that is from an educator's lens, I think we are able to have a lot more of a controllability and explainability. But any system will be bound to be hacked or circumvented by our students who are clearly creative. And I think when people kind of say that, oh, our students will offload, they will just ask AI to solve the problems for them and so on, I think all of us have been students before. In our days, we would just grab someone else's homework to copy it, if at all, right?

[Adriana Chan] Not me.

(Guests and Host laugh)

[Adriana Chan] At least I wouldn't admit that.

[Lin Yee] And when I was teaching, there were already some tools like Photomath and I remember my students also just taking pictures of it and uploading and just copying out the answers. So whether you like it or not, the children, the students, when they're hard-pressed for time, sometimes they do try to find other ways out and educating the students, therefore, is as important as system prompts. I think the system prompts or the system design can only go so far. And when the child or the student actually truly understands that this is for their own benefit, when they struggle a little bit with the learning, that's when they will be able to actually harness the AI well and to be able to truly learn from that process.

[Harish] That reminds me, when I was a student, I used to take shortcuts as well. I think now it's more easier for students to take shortcuts with AI and many other chatbots, right? But we have deliberately designed SLS and all the AI components such that the students go through the struggle of learning because every child must go through that learning effort.

[Adriana Chan] I love what you said about learning, taking effort. And we all know that AI is really about reducing effort. How is the system or the product built to have this learning effort put inside?

[Harish] When we design a learning assistant, which is directly interfacing with the students, we ensure that the backend prompts or the system prompts, which we call, do not give the answers straight away, no matter how many times a student tries. So we design it such that it asks probing questions. So if you try to take a shortcut, it will politely acknowledge you and bring you back to the topic to make you think what could be the potential answers. Very funny situation where one of the teachers noticed that when she was going through the chat log or the conversations by a student, he tried a lot to get the answers in different ways, but

our LEA is not like any other chatbot. So it was after a couple of tries, it brought him back to questioning and good enough that he was able to go into a thinking process that made him learn and also respond, completing that activity. So yeah, it is very fulfilling to see that learning assistant or AI is used in a very meaningful way.

[Lin Yee] And it's not just confined to trying to get the answers out of LEA, right? Another typical thing we always see when the students use the learning assistant is they'll say, I'm bored or can I chat with you? And then the LEA will gently say, oh, I understand, but I do think that you need to come back on task. And after two or three rounds, the student finally gave up and said, okay, fine, I will answer the question that I'm supposed to answer. So that was actually really nice as well.

[Adriana Chan] And of course, we hear so many stories about how people are now making friends or forming bonds with AI chatbots. Is that a concern for you as a product developer, as a parent, as an educator?

[Harish] Yeah, I think before a product lead or product developer, I am very concerned as a parent. I would not want my child to become over-dependent on a piece of technology, which comes at a price of human relationships and bonding. I've heard a lot of stories from my friends, where the students get addicted to the ever-pleasing responses by the chatbot and they get emotionally attached. That to me is very scary, at a young age.

[Lin Yee] So from a policy angle, we actually do not advise the use of AI or for that matter, technology at the younger ages. So no use of AI from primary one to primary three. Primary four to primary six, they get some exposure in class, supervised by the teachers, but again, not advised for independent use. And there are of course, AI literacy modules that the students go through as they start to use AI independently from the secondary school. And maybe one more interesting point is that when we started to build the learning assistant, we were trying to decide whether the image that comes with the learning assistant should be a person, a cartoon or all the different permutations. And after testing it for a while, we finally landed on using a cute little cat just to also avoid some of the situations where the younger learners actually kind of look at it and say, is that actually a person that's talking to me?

[Harish] I think I'm quite happy with the way in which the policies are set aside to safeguard and use in a meaningful way. I'll give you a personal experience that happened just yesterday. I was on a call with one of the telcos. I couldn't get a real agent. So I was in the car and a loudspeaker. At the end of the call, my eight-year-old who was in P2 asked me a question, was it an agent? Was it AI that was talking to you? I was quite surprised that he was able to pick that up. And I never taught him all these things. And I asked him, how did you pick it up? Because then he said that the teachers taught him how to differentiate AI from a human. He doesn't have to become an expert in AI right away. But if he's able to differentiate, he can take good judgement even at that age. I think that I'm happy that we are teaching meaningful stuff.

[Adriana Chan] I'd like to end the episode with sort of like a prospective question. What do you think is the future of tech in classrooms, the advancement of digital tools and putting that into our pedagogy?

[Thuhaila] I think for me as a teacher, I will continue to stay attuned with the developments in technology that's evolving really very fast. So I hope to actually better enhance learning for my students to cater to the different needs of the students in terms of the resourcing so that they can actually learn at their own pace at their own time also at the same time.

[Harish] I think there are many opportunities that we can still apply technology or AI for that matter. We come from more the perspective of how many problems are we yet to solve. And I think there's quite a few because every student's learning journey has got a few things that the technology can potentially help. For example, right now, we're looking into the problem space of how do we help JC students learn economics in a better way. This is the first time they're getting exposed to the topic, the subject as a whole. So we have heard from the students that they do find it slightly difficult to understand the concepts. So our job here is to how do we marry use of technology that they're familiar with, but still align it with curriculum, content and the pedagogy.

[Lin Yee] And I think in such an environment or such a future, it is impossible for us to shield our children away from the presence of AI and the presence of technology. So while we may put in guardrails to say, you know, they don't interact directly with the AIs and so on at a certain age, so on and so forth. I think we have to really start educating them that the AI will be ever present, whether obviously, or it's embedded in something else, right? And when they actually realise that that muscle that they built, right, to have a certain healthy scepticism to everything that they see is actually super critical, right? When you see something at the back of your mind, you actually have to build a natural intuition to ask yourself, is this really something that is valid? And the future of education really has to build that ingrained muscle in our children.

[Thuhaila] So as a teacher, I think there are certain times where, because especially for a language teacher for myself, I can't be conducting a lesson using technology 100% of the time. So there should be a balance of tech and non-tech use. That's where I think the importance of having that conversation, one-to-one conversation with one another is very important.

[Lin Yee] I really like that point because I think there will be a lot of promises of AI, right, that you can actually learn as an individual and everything is very much customised to you or personalised to yourself. But I think we must recognise that we continue to exist in a community, in a society, and learning has to be a social process. And I think to guard that space where our children can still interact tech-free is something that we have to continue to do, whether in our schools or even in our homes.

(Bell rings)

[Adriana Chan] Oh, did you hear that? That's the school bell! That just means that our episode has sadly come to an end. I want to thank you for sharing your expertise and your wisdom with us. If you are keen to find out any more about what we've discussed today, you can head to go.gov.sg/GovTechDecoded. If you really liked the episode, consider sharing it out with your family and your friends. Speaking of friends, you can add my new friends on their LinkedIn pages. If you want to connect with GovTech, you can go ahead and go to go.gov.sg/connectwithGovTech. Don't worry, all those links are going to be in the description. I'm Adriana, and I'll *cache* you soon. Bye!

(Outro music)