

JST Science Agora Webinar Series – 26 October 2023

The Impact of Technology on Learning

Co-hosted by APARA and JST (Singapore Office)

The positive impact of technology on the learning model is undeniable. From increased flexibility and personalized learning to the ability to collaborate and access a wide range of resources, technology has transformed the way we learn and has opened up new possibilities for students and teachers alike. Traditional face-to-face classroom model have served as an effective method of learning and teaching for the longest time. It has produced visible and satisfactory results and hasn't been questioned until the world faced a common enemy, the Covid-19 pandemic that stopped everyone from attending the traditional in-person classes. Various models such as the Flipped Classroom, Hyflex amongst other models have hence evolved. Further, the emergence of new-edge technologies, especially generative AI, has a resounding impact on the way humans learn. This program will review some of the emerging technologies and its impact on the way we learn, reviewing cases studies in Southeast Asia and Western Europe.

The banner features the APARA logo on the left and the JST logo on the right. The central graphic has a yellow background with two cartoon characters, a robot-like figure on the left and a character with a magnifying glass on the right. Text in the center includes '科学と社会をつなぐ5日間' (5 days connecting science and society), 'サイエンスアゴラ 2023', and '©Alessandro Bioletti / 世界が広がる学問図鑑 (Gakken)'. Below the graphic, it lists 'オンライン 10月26日(木)~28日(土)' and '実地開催 11月18日(土)、19日(日)'. Below the banner, there are five circular portraits of speakers and moderators, each with their name and affiliation.

Introduction by

Ms Emi Kaneko
JST (Singapore)

SPEAKERS

Mr Oliver Tian
APARA (Singapore)

Mr Michael Chian
BeED (Malaysia)

Ms Iise White
Learnovate (Ireland)

PANEL Moderated by

Ms Elle Quan
APARA (Singapore)

The Impact of Technology on Learning
Date and time:
4:00pm to 5:30pm (UTC+9) on Thursday 26th October

Topics for Panel Discussion

- How will Gen-AI change the way we learn?
- What can learners and trainers do to leverage technology to enhance learning outcome?
- Critical Human factors in learning
- How can we assess technology-driven learning models?

The webinar attracted > 180 registrations and 95 online attendance for this 90 mins webinar. Very insightful and thought provoking, this webinar also received many compliments and live Q&A from the audience.

Technologically Driven Learning Models

By Mr Oliver Tian Director of Oliver Tian Associates (Singapore) / Honorary Advisor APARA

Technology has transformed the way we learn and has opened up new possibilities for students and teachers alike. It is timely that learning aims to focus on effectiveness rather than time-based. Specifically, this means that learners can use either a mix of e-learning platforms, digital lecturing, technology-augmented or in-person teaching to learn effectively. Further, the emergence of new-edge technologies, especially generative AI, has **a resounding impact on the way humans learn.**

This presentation shared how the learning models is changing expected to be more real-time and personalized. Some of the key questions which arise include:

- Is Technology improving the quality of an educator's day-to-day work? Are teachers experiencing less burden and more ability to focus and effectively teach their students?
- As Technology reduces the teaching burden, are we preventing new responsibilities or additional workloads being shifted and assigned to teachers in a manner that negates the potential benefits?
- Has classroom Technology providing teachers with more detailed insights on their students and their strengths while protecting their privacy?
- Are teachers exercising control in the use of Technology-enabled tools and systems appropriately or inappropriately yielding decision-making to these systems and tools?
- When Technology systems are being used to support teachers or to enhance instruction, are the protections against surveillance adequate?
- To what extent are teachers able to exercise voice and decision-making to improve equity, reduce bias, and increase cultural responsiveness in the use of Technology-enabled tools and systems?

The presentation also shed light on 6 essential skills of Learning more relevant in the context of Technology enabled learning, and these include:

1. Critical Thinking – the ability to align concepts to applications.
2. Clear Communications – the ability to prompt precise questions and articulate clearly.
3. Collaborative Learning – the ability to share knowledge and cross-pollinate learning.
4. Cultural Acceptance – the ability to embrace culture and accept diversity.
5. Creative Mindset – the ability to extrapolate and innovate.
6. Connectivity – the ability to know where to find information.

It is also important to leverage Technology not only to augment learning capabilities, but also to transform learning models – the SAMR model was discussed. The adoption of Technology must be designed for Human Experience and not for technology-sake alone. Finally, it has been emphasized that “Learning MUST be **F.U.N. – Flexible, Unlimited and Never-ending.**”

Question from the audience #01:

Why do humans need to lean when the machines have all the answers?

Discussion:

Learning is not about content reproduction in which machines can do a better job than humans. Learning is about know enough to take action and response to situations in our daily lives such as problem solving. Ultimately, humans must become masters of technology and be in control of decision making. Human must also know enough and more than the machines so that we are able to ensure and be responsible for our own livelihood.

Emerging models of Learning Leveraging Technology in Education

Mr Michael Chian. Chairman of BeED World (Malaysia)

As technology continues to advance and reshape education, we must ask ourselves if we, as edtech providers, **are ethically creating technology that is accessible to economically disadvantaged or differently abled children**. Are we, as educators, **responsibly utilizing technology to enhance learning**, or are we becoming overly reliant on it, relinquishing control of our own development as humans and allowing AI to shape it instead? **Edtech solutions need to be focused on pedagogy to be effective and reproduce the effective learning strategies flexibly to ensure patency in learning.**

- All Edtech solutions should be looked at as a whole and not the unique parts where pedagogy should be at the centre of focus.
- Edtech solutions must be flexible to adapt to pedagogical needs that vary from learner to learner. Thus, the technology adapts to the educator's will and not vice versa.
- When looking at a solution, avoid systems that are prescriptive to the teaching process but rather suggestive so that flexibility should be at the forefront of education.
- Edtech solutions need to consider that 60 – 70 per cent of the world does not fall in the upper 10% of the economic scale and thus would have resource and infrastructure challenges. Therefore, the system must be robust enough to function in all scenarios.
- The SAMR modules should be viewed as a classification of current technological use where we want to evolve towards redefinition. This does not mean that substitution cannot happen, but meaningful evolution should move upwards through the process.
- When considering Edtech solutions, one should avoid gimmicks like aesthetics and focus on the core of utility.
- Another consideration of edtech solutions is that sometimes flexibility requires an investment of time whereby this time invested will result in future efficiency savings. Avoid taking the easy road for the sake of convenience.
- Following the above points, when BeED offers solutions, we couple them with Curricular consultancy and support to ensure educators use the technology meaningfully.
- BeED will be developing an AI solution that would engage students through personalised learning, which stems from emotional reactions, demographic input, localisation data and BeED's internal database of learning materials.

Question from the audience #02:

Hello Michael-san, thank you for your wonderful presentation. I have a question. How do we apply SAMR when it comes to teaching few topics such as technological apps/software for technological users?

Discussion:

The first action that I would propose would be that you well exposed to the many systems that are out there at the moment. Not that you are going to use it. It is like a chef that is well versed with all the types of food herbs and kitchen tools that are available for you to use.

Next when you start to teach, ask HOW you would teach it in the absence technology.

Next see out tools that allow you to substitute and only apply it if it allows you to create a learning experience that would not necessarily possible WITHOUT the tool.

Test it and see how the children reach to it and then as yourself how you would do it differently by going back to the first step.

After a few rounds I'm sure you will start to see the beauty of your lesson evolving naturally and not forced due to the need of just using technology in learning. Always go back to the basics. I hope that answers the question.

<reply> Thanks, Michael-san. It seems tools are important for technological needs. This should be a helpful idea.

Technology Innovation in Learning & Development (An Irish Perspective)

Ms Ilse White Corporate Learning Researcher of Learnovate (Ireland)

In only a very short space of time generative AI has become a huge talking point, sparking debate in fields ranging from the creative arts to the legal profession to education. Education institutions have already needed to react to the potential for students to use generative AI to produce assignments. This change in assessment practices can often be seen in a negative light but others have seen the potential for generative AI to have other more positive impacts. **Technology has had an impact on learning in both formal educational and corporate contexts. We explore how technology has had an impact on how and what we learn, and what the future might look like.**

The relationship between humanity and learning technology

- A fundamental relationship between humanity and learning technology exists. Homo Sapiens translates as 'Knowing man' or 'Knowing human'. We are the people that *Learn to Know*.
- What underlies our progress and the intervention of all other technologies is learning technology. Learning technology is fundamental to the progress of our species because without learning, we have no cultural transmission and progress.

What is the value of learning technology?

An important thing to remember is that learning technology *supports* the effectiveness of learning

- It can support the learning in their personal learning process
- It can support the educator in facilitating the learning process
- It can support the leader in developing the policies, strategy and decisions to support the learning process

Learning technology should always be in service of the learning.

How useful and impactful is learning technology in our world?

Learning technology has a lot of positive affordances such as interactivity, adaptability and providing feedback to learners to name a few. Over the past 2 decades, the field of learning science has developed rapidly and we know more about how people learn than ever before which means we can apply the use of learning technologies to improve learning effectiveness. Though the jury is still out about how effective the use of learning technology has been up until now. We are still learning!

Best practice for decision making. What is the right learning technology for you?

- Choices for the use of learning technology should be *evidence* based
- Effective use requires careful planning and implementation so that the technology affects learning

How does innovation in learning technology and learning and development happen?

The learning technology landscape is moving all the time, and new technologies are coming thick and fast! How do we keep up with the pace? Our advice:

- It won't happen overnight – it is an ongoing process and area of continued focus
- Innovation doesn't always equal new technology
- Novel approaches to older technology can work too as long as the learning is considered
- Mind the 'magpie trap' and the 'follow all trends approach'
- Consider how new or existing tech solutions fit in your L&D *and* Business strategy
- Start small, measure, iterate and scale
- Involve the right stakeholders

Question from the audience #03:

Hello Ilse-san, thank you for the wonderful presentation. How do they apply Pedagogical and Content knowledge with goals?

Discussion:

Hi Joshua, thank you. I think the goals in formal education are set by curriculum requirements or the ethos and goals of the school. But they are also informed by the cultural context of the students which will inform specific needs they might have. For example, if there is a classroom with non-native speakers, the goal will be to improve literacy in that language. This is where the teacher combines content knowledge with pedagogical knowledge (scaffolding).

Panel Discussion

Moderated by Ms Elle Quan, Vice-President of APARA

Question from the audience #04:

What are the Challenges AI bring to Learning?

Discussion:

1. RESISTANCE to Adapt due to Lack of Understanding ... "I do not understand, so I do not need to try ..."
2. Availability of Support INFRASTRUCTURE ... "ready access and connectivity ..."
3. IGNORANCE: Mind-set change - "since it worked before, it will work for the future ..."

Question from the audience #05:

Do AIs have autonomous knowledge as humans' metacognitive thinking? How come Ais think faster than humans?

Discussion:

At the current stage, AGI (Artificial General Intelligence) is not a reality. It is a concept in abeyance. Who knows... 10 years, 20 years, 50 years or more, maybe we will come close to it. I am personally not so concerned about AI's autonomous knowledge that is equivalent to human cognitive thinking ... Welcome any other comments.

Question from the audience #06:

Thank you for your wonderful presentation. Also, SAMR model and 6C's of Learning is very impressive. I would like to as you about this as a topic for a panel discussion.

Assuming that each generation last five years, people will live over more than 20 generations in the up-coming "120-year life period". In such a "society with many transitions", considering the continuity and development of life as a whole for each individual, what should be the guideline for "new learning" or especially for "generative AI"?

Discussion:

Thank you for your question. I agree that the learning cycle is getting shorter and hence, I firmly believe that learning must be F.U.N. (Flexible, Unlimited and Never-ending) ... When learning is FUN, humans will transcend into a state that regardless of our lifespan, learning never ends ...

Regarding the questions on SAMR and 6C's of learning, I would be happy to share more when time permits, or if there is a specific question that you have, please let me know.

<reply> Tian-sensei, thank you for your reply. I understood the importance of "F.U.N. (Flexible, Unlimited and Never-ending)". I'm looking forward to the lectures and discussion that follow.

Question from the audience #07:

In the Philippines, our K-12 and Higher Ed programs are highly regulated. Would anyone have success stories where schools are able to transition from traditional teaching and learning to more "modern" approach of just in time learning or using technology platforms for learning?

Discussion:

I would be most happy to explore how we can introduce new learning models to the Philippines market. In the past 6 months, I have visited your country 3 times, and spoken to administrators in Perpetual Help, Adamson Batangas and Santa Tomas. I believe there is a motivation to evolve. Let's work together on such a transformation.

Question from the audience #08:

素晴らしい講演をありがとうございます。「何でも機械ができるから学ばなくていいや」に対して良い手立てがあればコメントいただけると幸いです。 *Thank you for your wonderful lecture. I would appreciate it if you could leave a comment if you have a good solution for "I don't need to learn anything because machines can do it".*

Discussion:

Haha... I know some people who believe this... I will reference the movie "Wall-e" and "Star Trek"... I will also answer the question live.

Question from the audience #09:

This is a comment. Generative AI provides tools for learning or teaching, but for students receiving education, what remains in their minds is what will have a big impact on them, regardless of the tool. I believe that the enthusiasm of educators and the spirit of service to students remain more important than tools.

Discussion:

This is a very relevant question. The teacher will play a very important role to build the enthusiasm of learning. We need to have teachers to show the way on the appropriate way of leveraging technology and not push it away.

Question from the audience #10:

How will AI help in teaching students with "special needs"?

Discussion:

This is where it is important that access to technology is equitable to begin with. When it is, I believe that technology might be able to meet the learner where they are at and create a personalised learning experience based on their ability. It could help students understand their own metacognition (how they learn) and enables them hopefully to still be part of a 'mainstream' educational experience.