

All IHL students to learn AI skills via compulsory modules by 2027

Beyond using AI, graduates must learn to lead, master and question it, says minister

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By 2027, all students from institutes of higher learning (IHLs) in Singapore will have opportunities to develop artificial intelligence skills within their disciplines.

The IHLs have identified baseline AI competencies, which will be infused into compulsory modules for all incoming students by the academic year 2027.

One set of competencies has been developed for the autonomous universities, and another for the polytechnics and the Institute of Technical Education (ITE).

Announcing these moves at the National University of Singapore's (NUS) 120 Distinguished Speaker Series on May 21, Education Minister Desmond Lee said the aim is to ensure that every student in Singapore – regardless of which institution they attend – receives a consistent and strong foundation in AI competencies.

What is important is “the mastery to combine and apply both AI and their deep knowledge meaningfully within their own discipline”, he said.

In April, Mr Lee announced the formation of a committee to guide AI use in Singapore's higher education sector, to support the work of the National AI Council – an inter-ministerial council to help Singapore tap AI as a strategic advantage.

“We are designing this as a deliberate step-up from the AI exposure students will receive in our secondary schools and junior colleges,” Mr Lee said at the event

held at the Sea Building on NUS' Kent Ridge campus.

The sets of competencies cover a range of skills, including understanding AI's limitations, and using it to learn in ways that deepen understanding rather than replace thinking.

IHL students will also use AI for problem-solving while critically evaluating its ethical, social and legal implications.

Students are still taught the fundamentals – deep disciplinary knowledge and design judgment, said Mr Lee.

“This allows them to apply such domain knowledge when using AI to create and critically evaluate output, refining or rejecting those that fall short of user needs or design objectives,” he added.

For example, students in the product design and innovation module at NUS' College of Design and Engineering are taught to use AI tools the same way the industry does.

When defining problem statements, they consult large language models like ChatGPT to sharpen and refine their thinking. Other tools like Miro are used during brainstorming to help students rapidly generate ideas and organise them into clear themes. Tools like Figma Make then allow them to turn written descriptions into prototypes, without having to build everything from scratch.

Mr Lee said the IHLs have begun refreshing their curricula to incorporate these skills.

For example, all first-year ITE students undergo a learning module on AI prompt engineering, where they are taught how to craft appropriate questions to ob-



Education Minister Desmond Lee speaking at the NUS120 Distinguished Speaker Series on May 21. Although AI can short-circuit the learning process, Mr Lee said students must be given opportunities to experience learning struggles. ST PHOTO: BRIAN TEO

SUPPORT, NOT SUPPLANT

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EDUCATION MINISTER DESMOND LEE, on how technology should serve rather than replace learning.

tain relevant responses from AI systems.

At the Nanyang Technological University (NTU), AI is used to teach, personalise learning, and solve real-world problems across 40 per cent of its undergraduate courses. All NTU students will also take a mandatory course – Science and Technology for Humanity – which emphasises the responsible use of AI.

Speaking to NUS students and staff in the audience, Mr Lee gave an example of a first-year NUS undergraduate, who uses AI not

as a tool to cut corners but to deepen his learning.

Mr Dylan Pon, who is studying business economics and political science, said he uses AI as a “thinking and debating partner” in his academics as well as for student life activities.

“It helps me to challenge preconceived notions and test assumptions, provides a platform to test arguments and ask better questions when I work on my papers,” said Mr Pon, adding that this has transformed the way he learns.

Even as AI is integrated into curricula, Mr Lee said pedagogy must drive how technology is applied to education and not the other way round.

“We must be clear that AI must never replace deep, human learning in our schools and institutes of higher learning,” he said.

Mr Lee referenced a commentary in *The Straits Times* by NUS president Tan Eng Chye about how the struggle of learning, which includes researching, questioning and grappling, is a fundamental part of learning and education.

Even though AI can short-circuit this process with quick answers and access to information, Mr Lee said IHLs need to give students opportunities to experience such learning struggles.

“Ultimately, our graduates should not just be competent and confident users of AI, which are tools, powerful tools. But people who can lead it, master it, control it, steer it and question it,” he said.

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