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公共政策研究院
PUBLIC POLICY INSTITUTE

Application and Development of Artificial Intelligence (AI) in Primary and Secondary Education

Our Hong Kong Foundation

January 2026

Research • Advocate • Engage

研究 • 倡議 • 推動

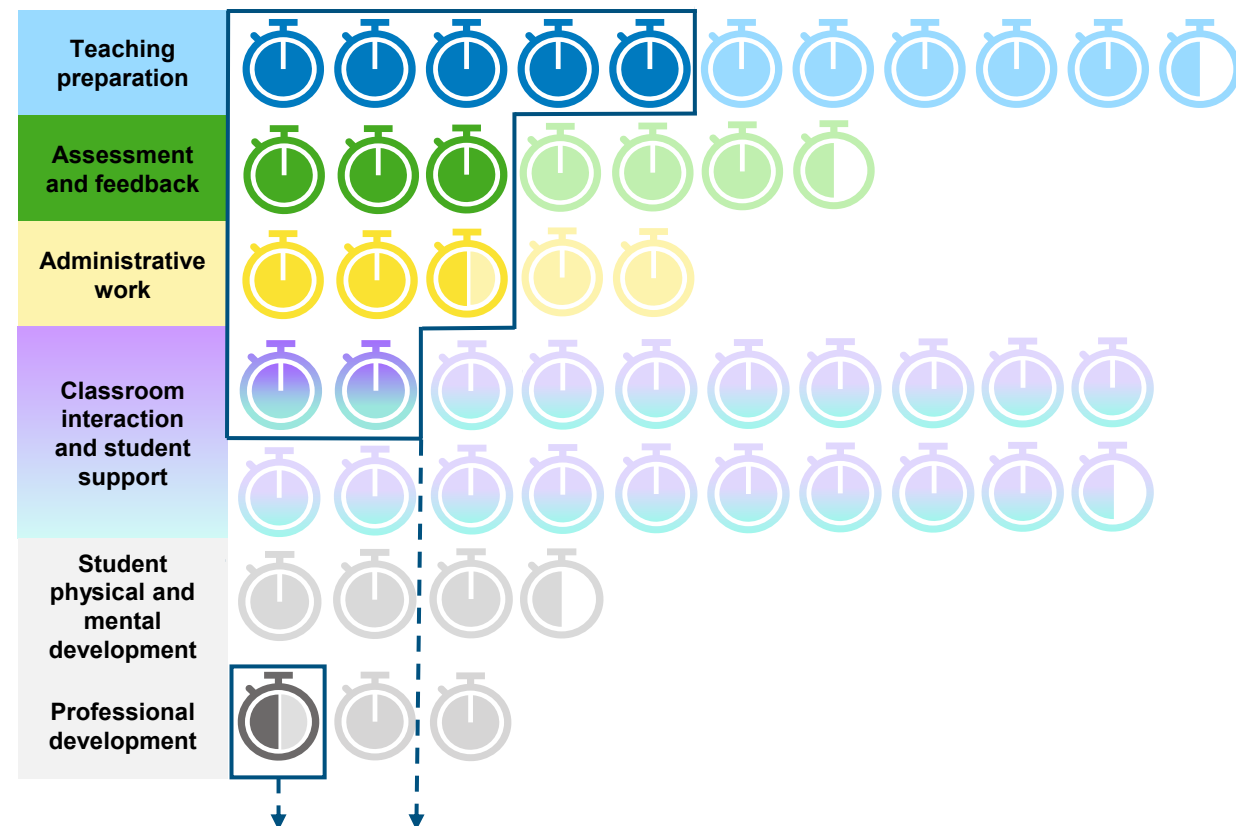
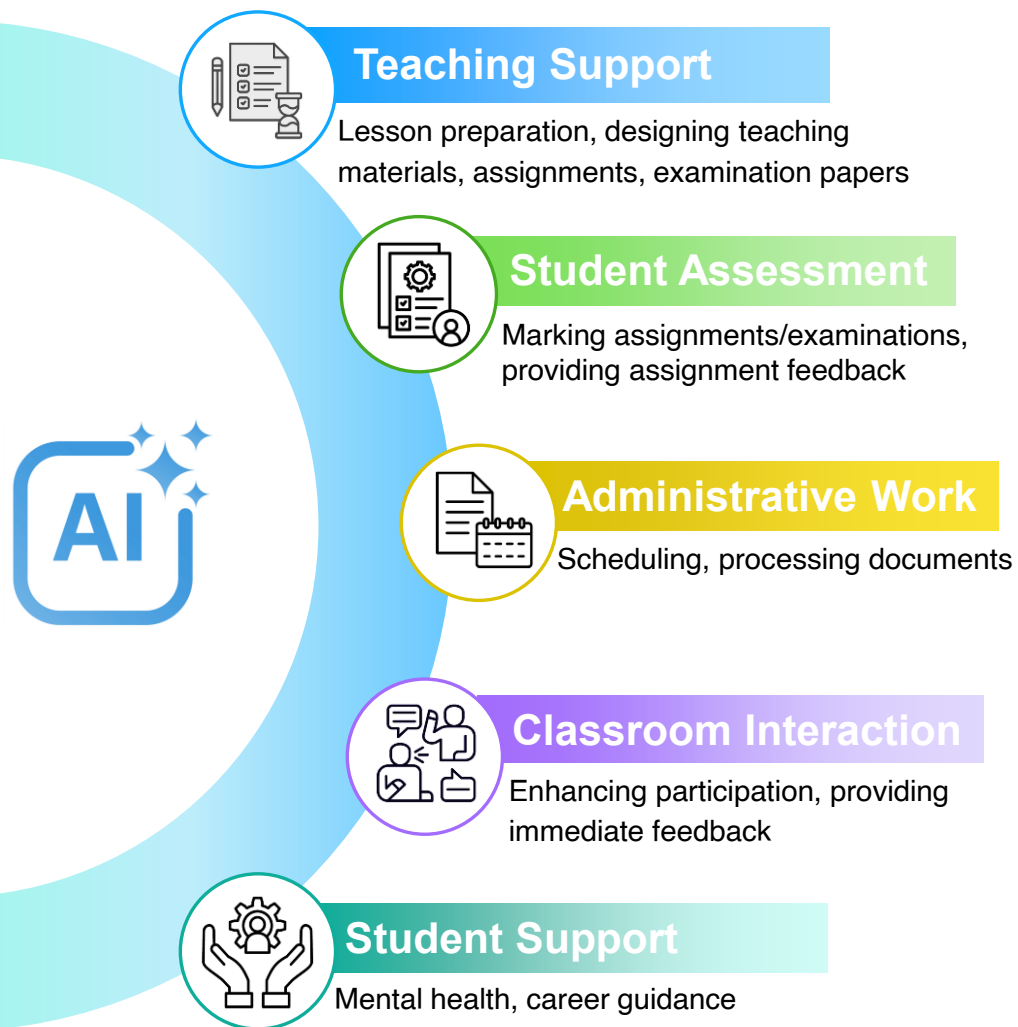


AI in Education ≠ AI Education

*This research focuses on how to use AI to enhance learning and teaching,
rather than learning about AI itself*

	AI in Education	AI Education
Objective	Use AI to assist teaching, reduce the workload of teachers, and enhance students' learning outcomes, e.g. AI virtual teaching assistants	Learn about the knowledge, principles, and techniques of AI, e.g. prompt engineering
Role of AI	Teaching or learning tool	Knowledge domain
Area of concerns	Privacy issues and accuracy of AI-generated information	Evolution of AI knowledge and its impacts on society

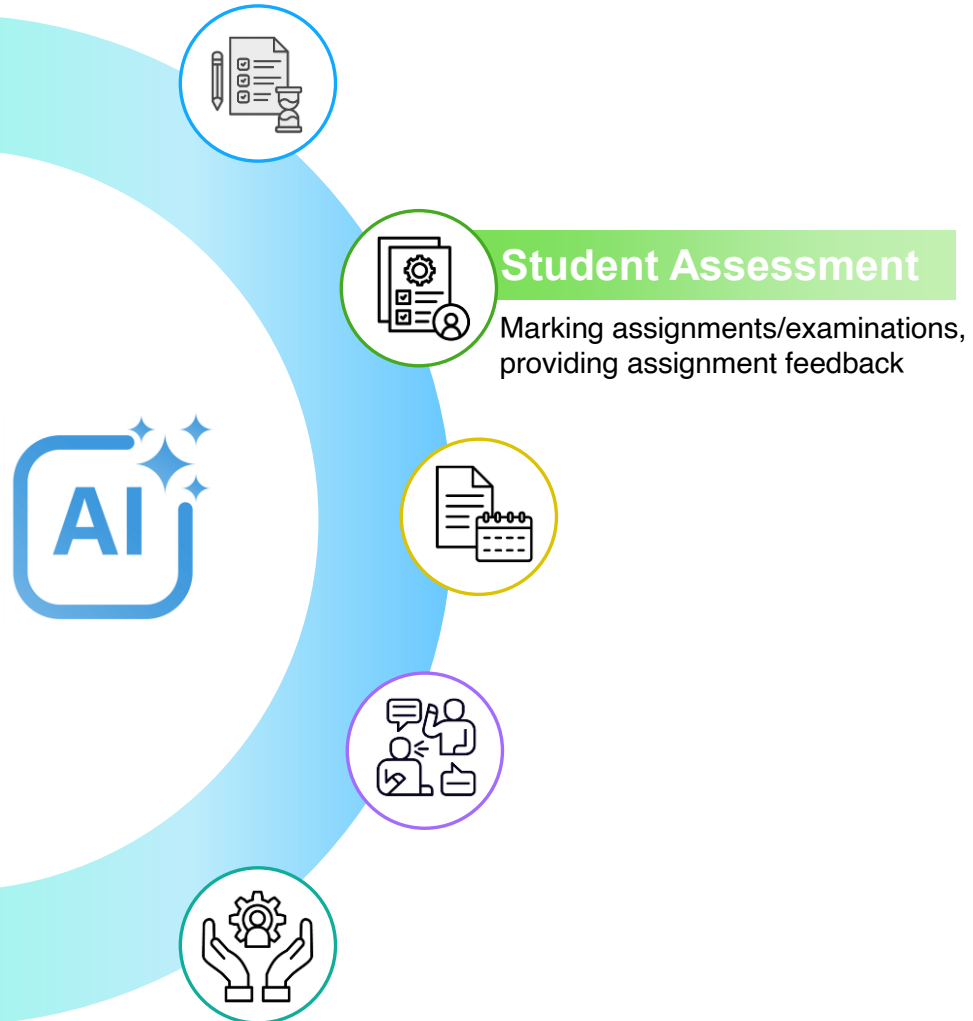
AI in Education



Source : McKinsey&Company (2020)

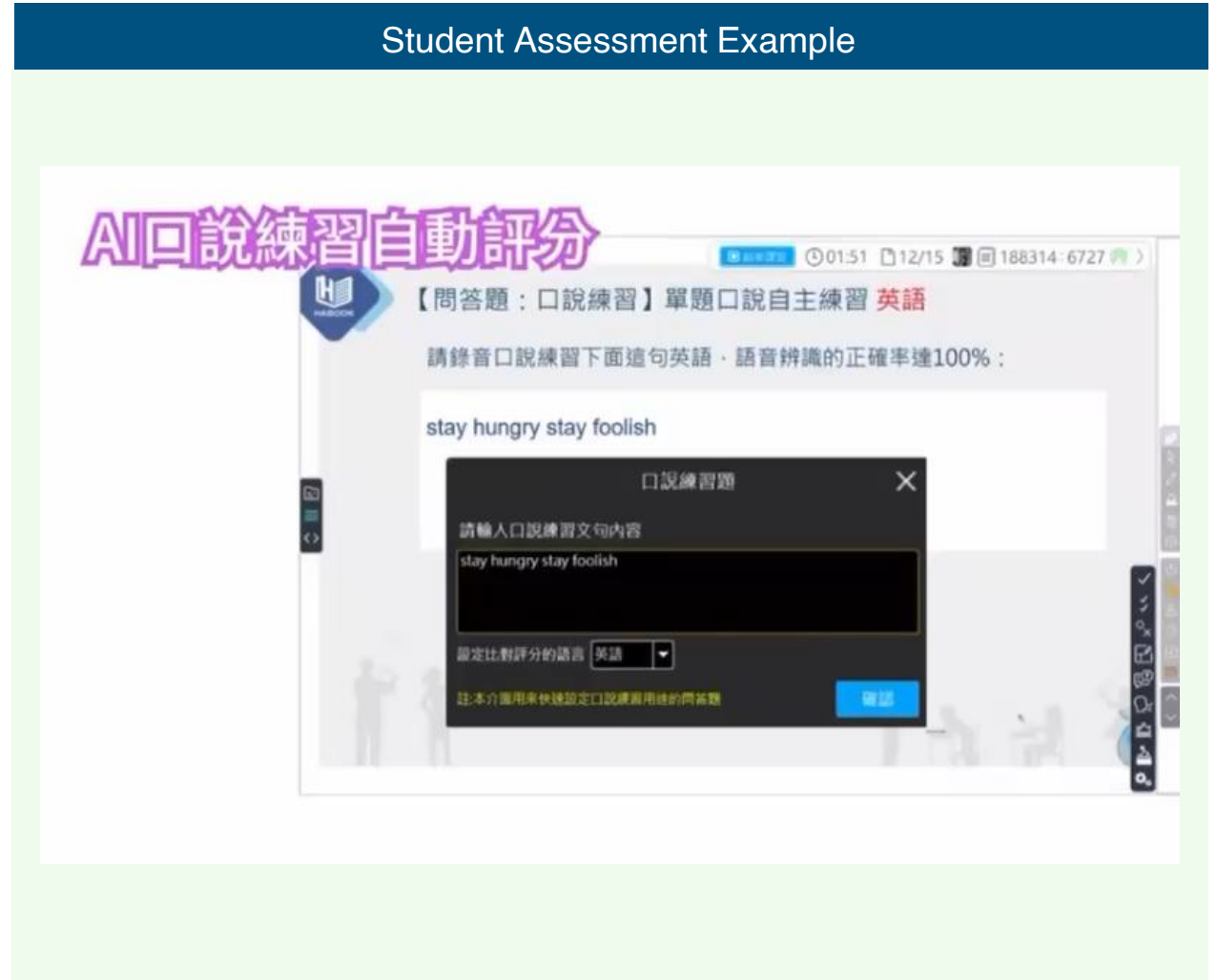
Note: McKinsey surveyed over 2,000 teachers from Canada, Singapore, UK and the US to quantify their time allocation across 37 core teaching activities. These four countries have relatively high adoption rates of education technology. Findings revealed that teachers worked an average of 50 hours per week. By assessing the technological capabilities at the time and conducting expert interviews, McKinsey further analysed the automation potential of each activity and estimated the amount of time that could be saved.

AI in Education

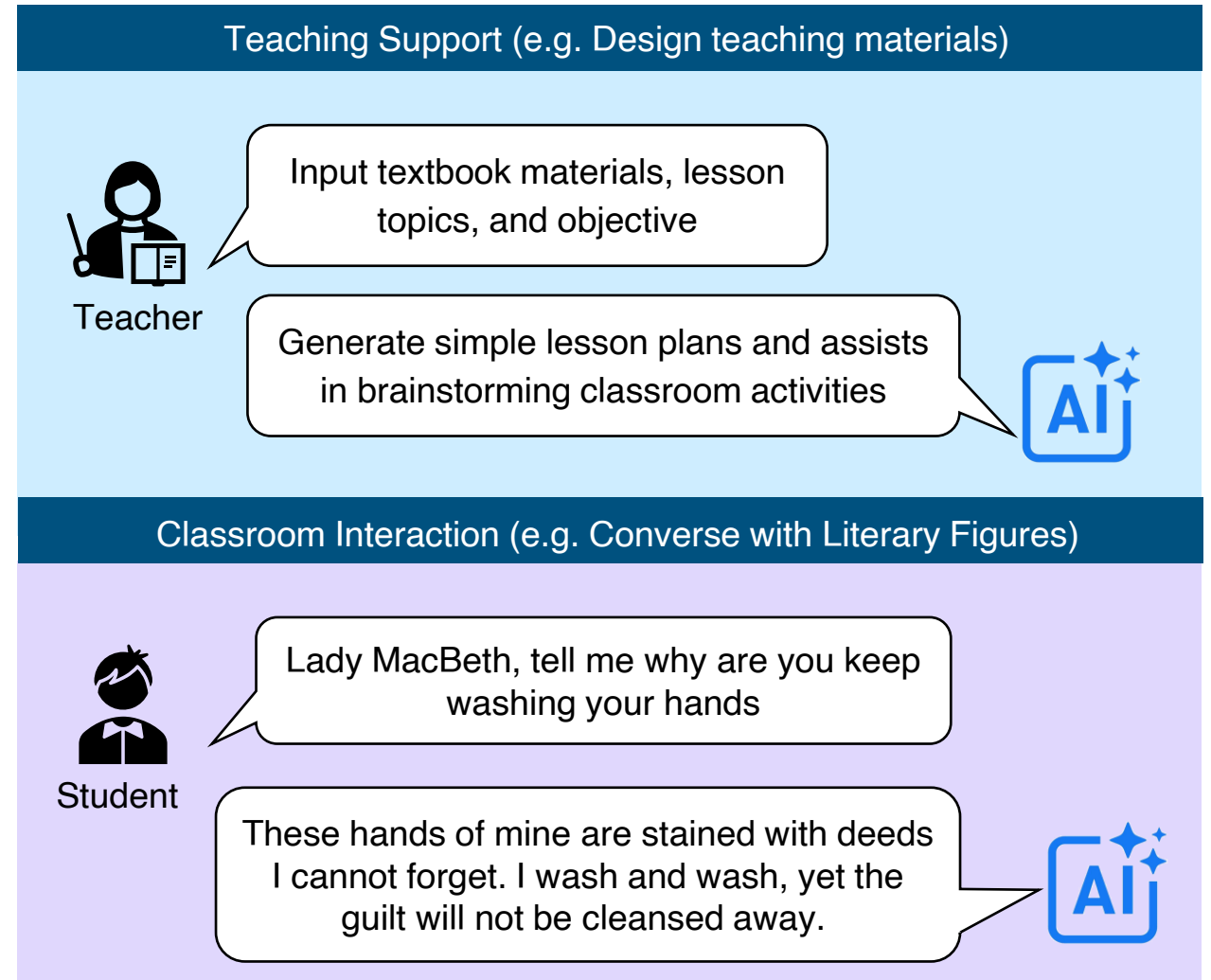
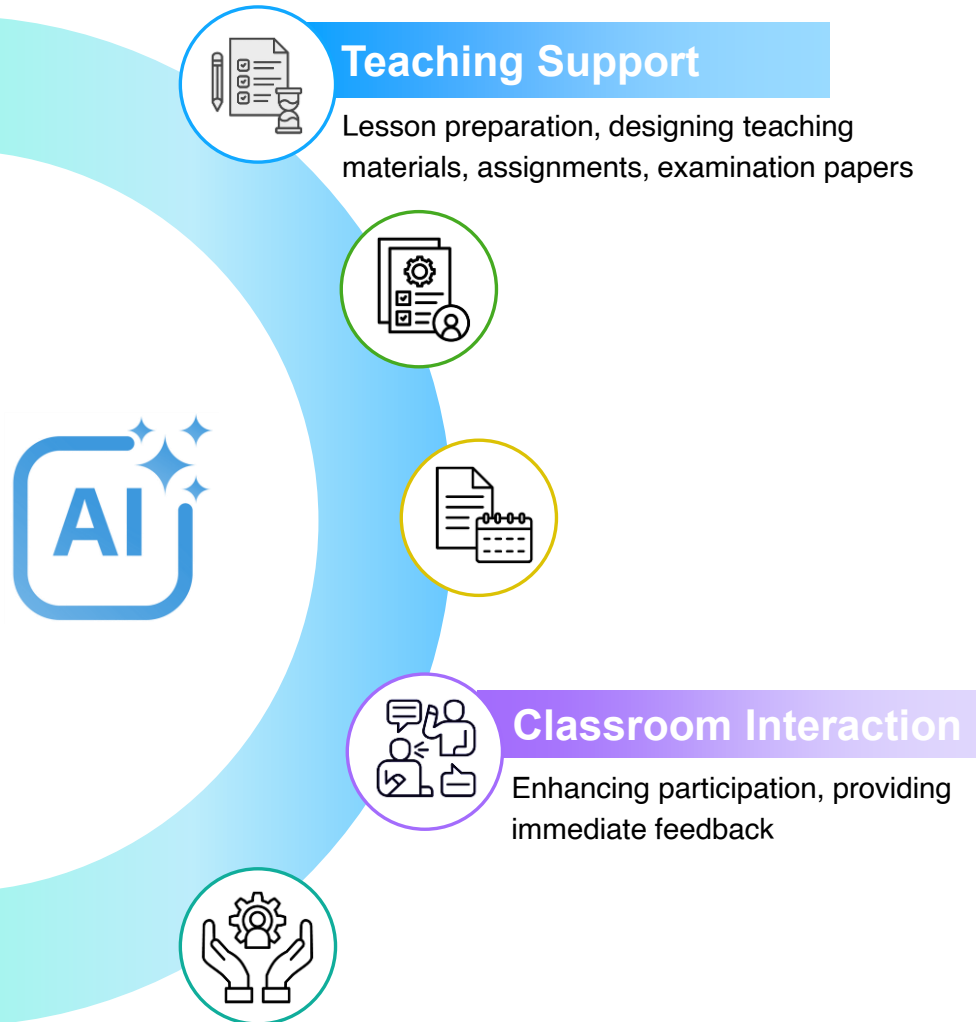


Source: habook.com

Student Assessment Example



AI in Education



AI in Education



Example of Supporting Student's Mental Health



I feel nervous about my class presentation.

Analyses emotion (e.g., anxiety) and provide non-diagnostic coping resources (e.g., try this one minute deep breathing exercise)



Example of Further Education Guidance



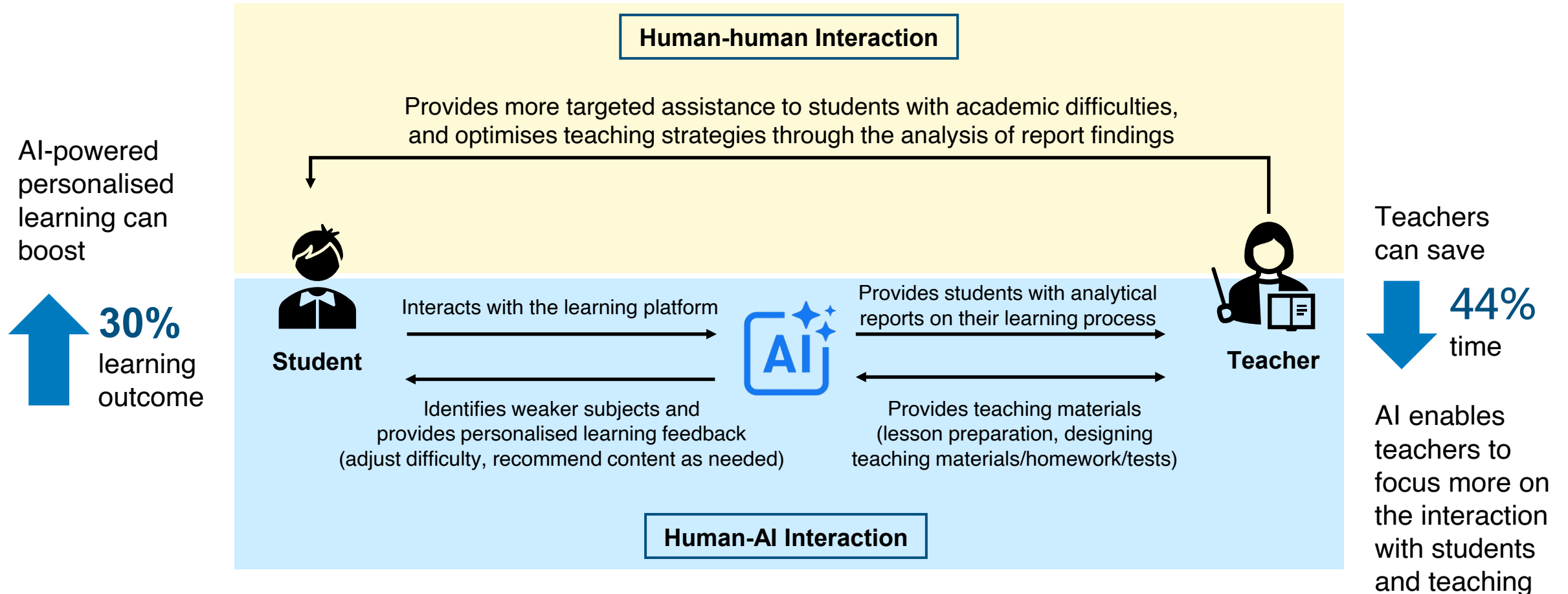
Input interests, exam results, and goals

Provide a list of local, mainland Chinese, and overseas universities, along with recommendations of extracurricular activities to pursue.



With the assistance of AI tools, teachers can focus more on optimising teaching strategies and assisting students in need

AI tools support teaching assistance, classroom interaction, and student assessment

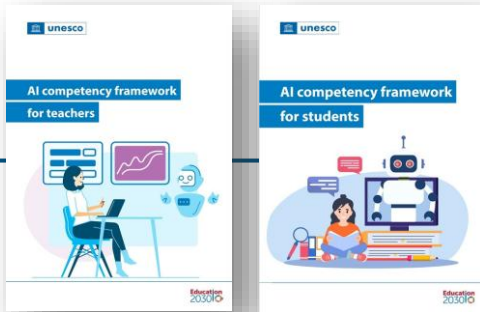


Source: Tan, L., Hu, S., Yeo, D. J., & Cheong, K. H. (2025); engageli.com (2025)

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AI integration in education is emerging as a global trend, with international and regional organisations launching dedicated action frameworks

UNESCO (2024)



Human-centred guidelines for teachers and students

- Teachers: **AI-enabled innovative pedagogies** and professional competency requirements
- Students: 12 **core competencies** (including creativity and problem-solving skills)
- > 50 countries have adopted this as a blueprint to developing their national approaches

OECD (2025)



Provide teaching and learning use cases

- Position learners as **active shapers and decision-makers** of AI
- Provide teaching application scenarios that can be **directly applied to existing primary and secondary school curricula**
- **Integrate AI literacy as an interdisciplinary theme** into subjects e.g. mathematics, social studies, and language arts

Mainland China (2025)



Enhance curricula and cultivate AI talent

- Promote the **systematisation and standardisation of AI education**, cultivating **innovative talents** capable of addressing future challenges
- Systematically enhance the next generation's AI literacy through **national curriculum standards and teacher training programmes**.

Medium to long-term goal of AI-in-education: All subjects in primary and secondary schools should be able to effectively utilise AI to assist teaching

2021

HK\$5 Billion Quality Education Fund
e-Learning Ancillary Facilities Programme

2023/2024

Launch the Enriched Module on Coding Education for Upper Primary Level and the Module on Artificial Intelligence for Junior Secondary Level



2025 Policy Address

- **Allocate HK\$20 billion** to support digital education in primary and secondary schools
- **Release Blueprint for Digital Education in Primary and Secondary Schools in 2026**, includes:
 - ✓ optimising the interface between primary and secondary curricula of Information Technology and I&T education
 - ✓ setting out an "AI literacy" learning framework
 - ✓ incorporating AI education into the core curriculum
 - ✓ enhancing AI training for teachers, and introducing corporate resources

2024

2025

2025/2026

Update the Information Literacy for Hong Kong Students Learning Framework

AI for Science Education Programme

- Publicly-funded secondary schools receive **a one-time grant of HK\$100,000**
- Arrange **junior secondary science teachers** to enrol in training courses offered by tertiary institutions/ professional bodies
- **220 schools+** participated



Establish the Steering Committee on Strategic Development of Digital Education

AI for Empowering Learning and Teaching Programme

- An allocation of **HK\$500 million** over three years
- Eligible schools will receive **a one-time grant of HK\$500,000** to purchase AI-related teaching tools and equipment.

Update the science curriculum for primary and junior secondary schools

- Add topics such as understanding the development and application of innovative technologies (e.g., AI, big data, Internet of Things)
- Extend to all grade levels by the 2027/28 school year.

AI is profoundly reshaping the landscape of education. OHKF initiates research on the application of AI in teaching and learning



Research Partner



- Explore the impact of AI applications on primary and secondary school teachers and students, aiming to cultivate future talents for the era of AI and prepare for the digital future
- From July to December 2025, we have conducted a survey titled “The Application of Artificial Intelligence (AI) Tools in Teaching and Learning in Hong Kong” among primary and secondary school principals, teachers, and students, and have carried out stakeholder interviews
- We hope to understand the status, needs, and challenges of teachers and students in using AI tools, in order to develop appropriate strategies and utilise AI to empower education



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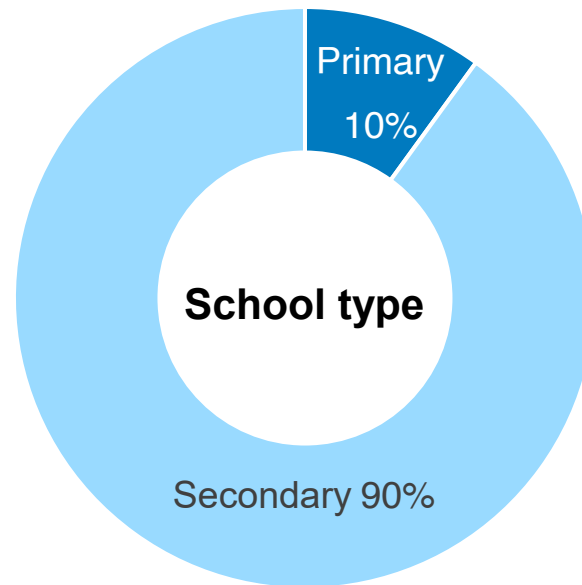
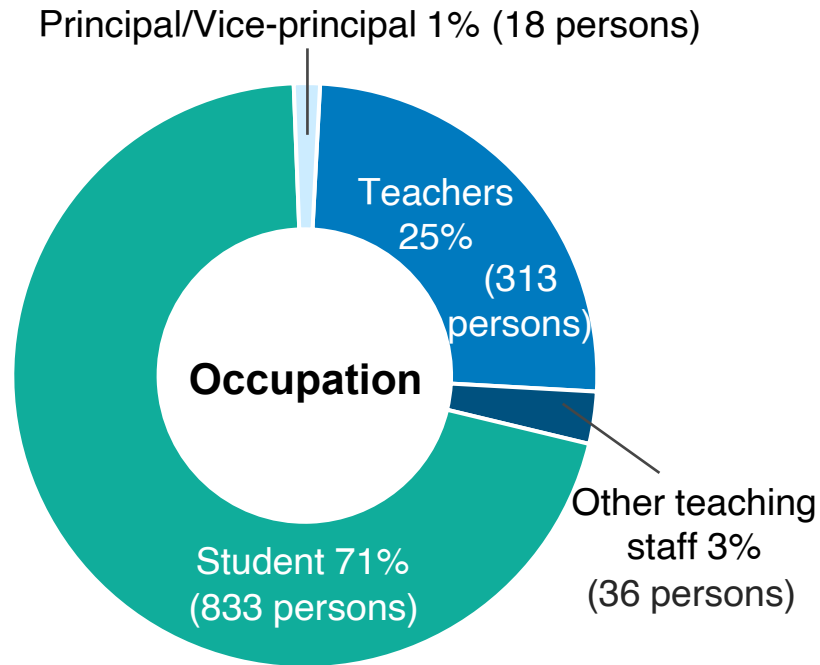


Part 1:

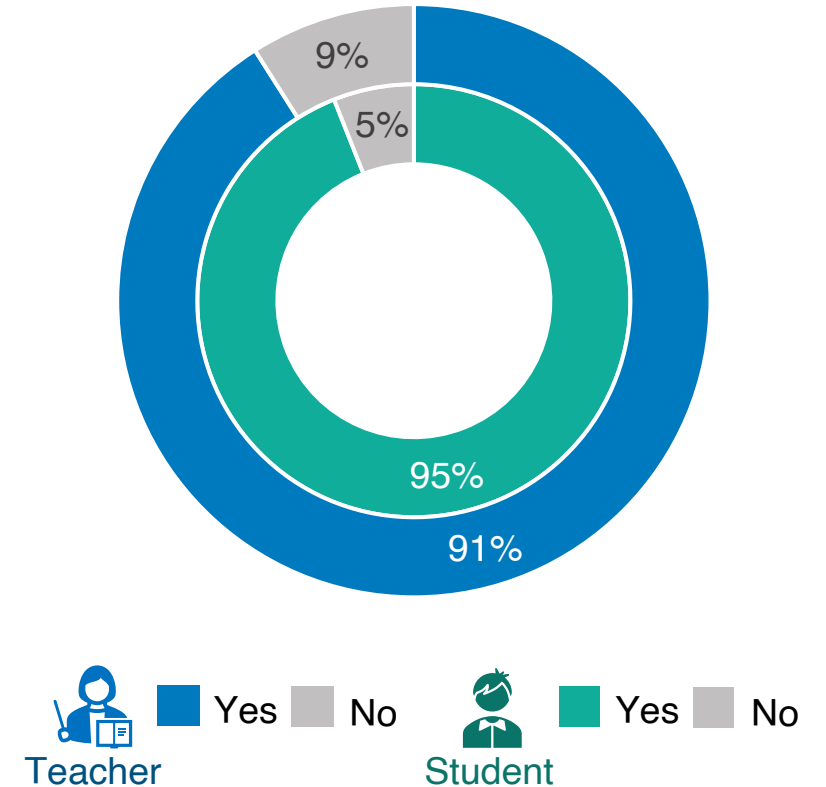
Survey Results and Analysis

Observation 1: AI is deeply integrated into teaching and learning, with over 90% of teachers and students using AI

Source of Respondents (n=1200)



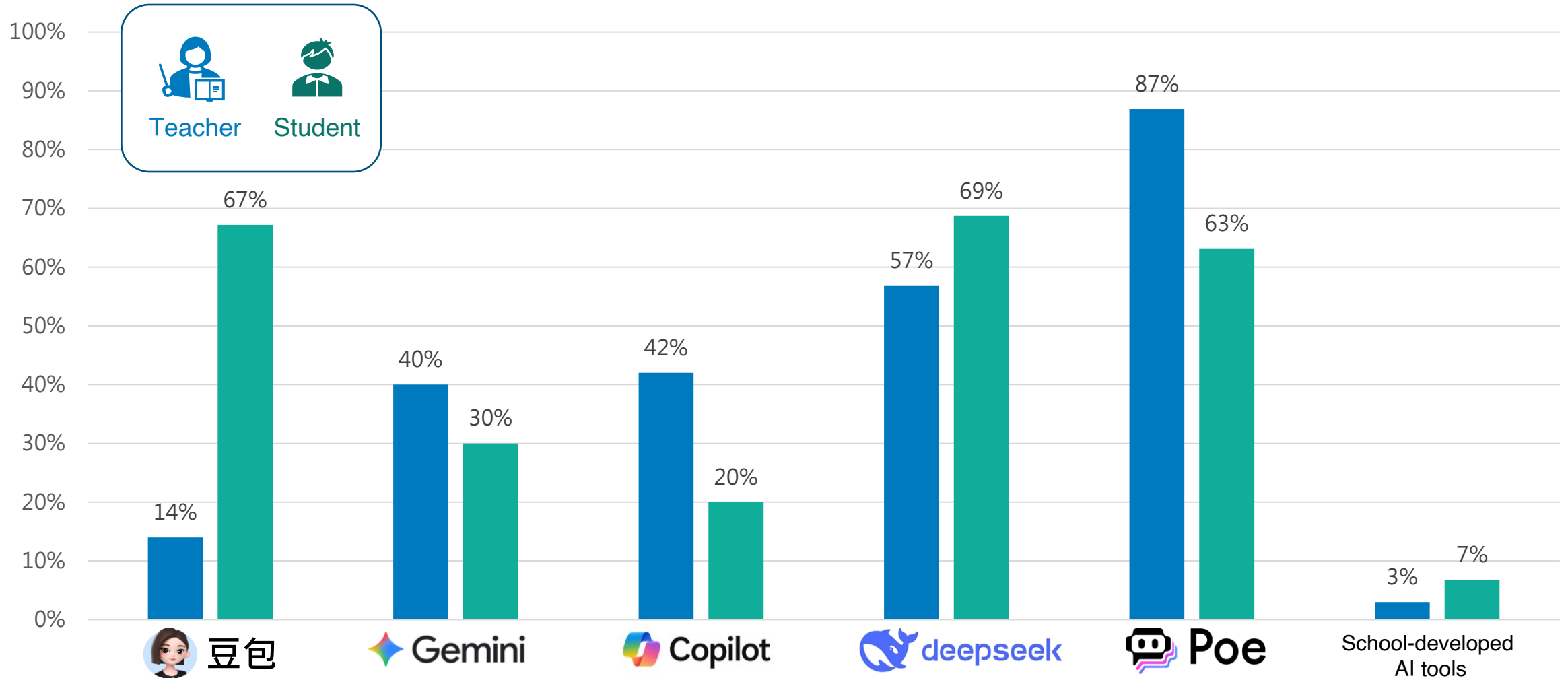
90% of teaching staff and students have used AI tools during teaching or learning activities



Note 1: A total of 1,200 valid questionnaires were collected in this survey (as of December 31, 2025)

Note 2: Percentage figures have been rounded to the nearest whole number

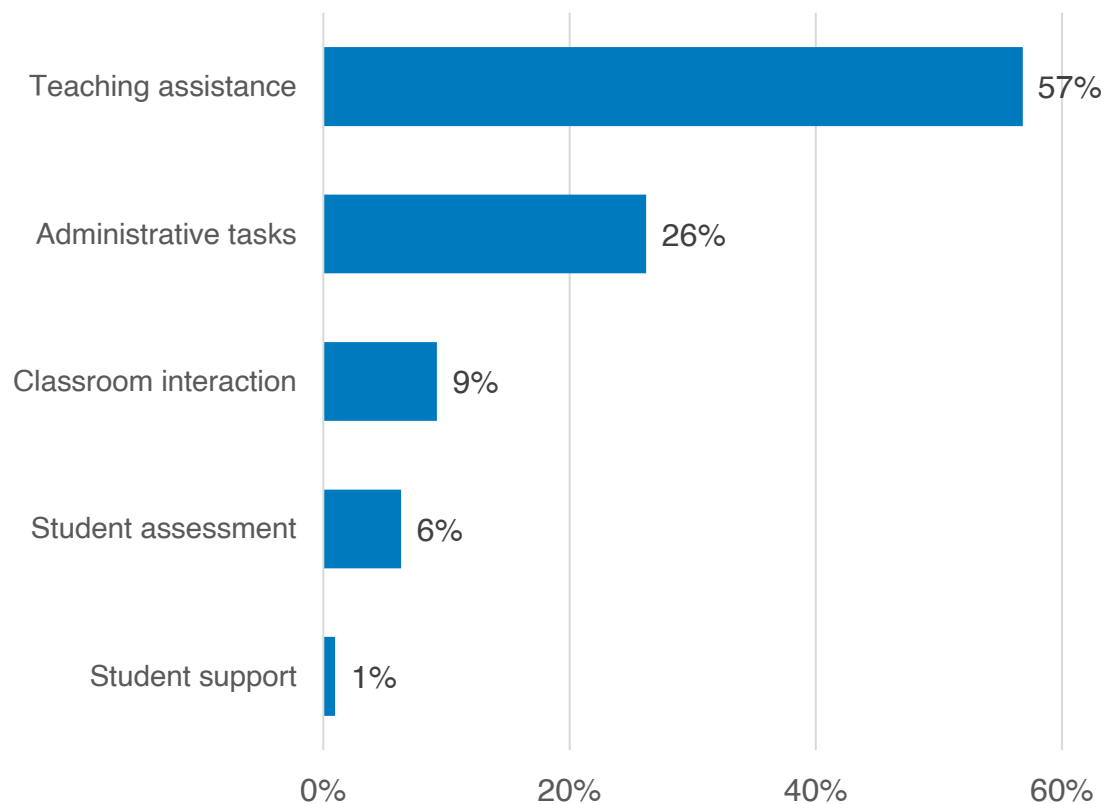
Most frequently used tools are POE and Deepseek, but AI tool preferences reflect a generational difference



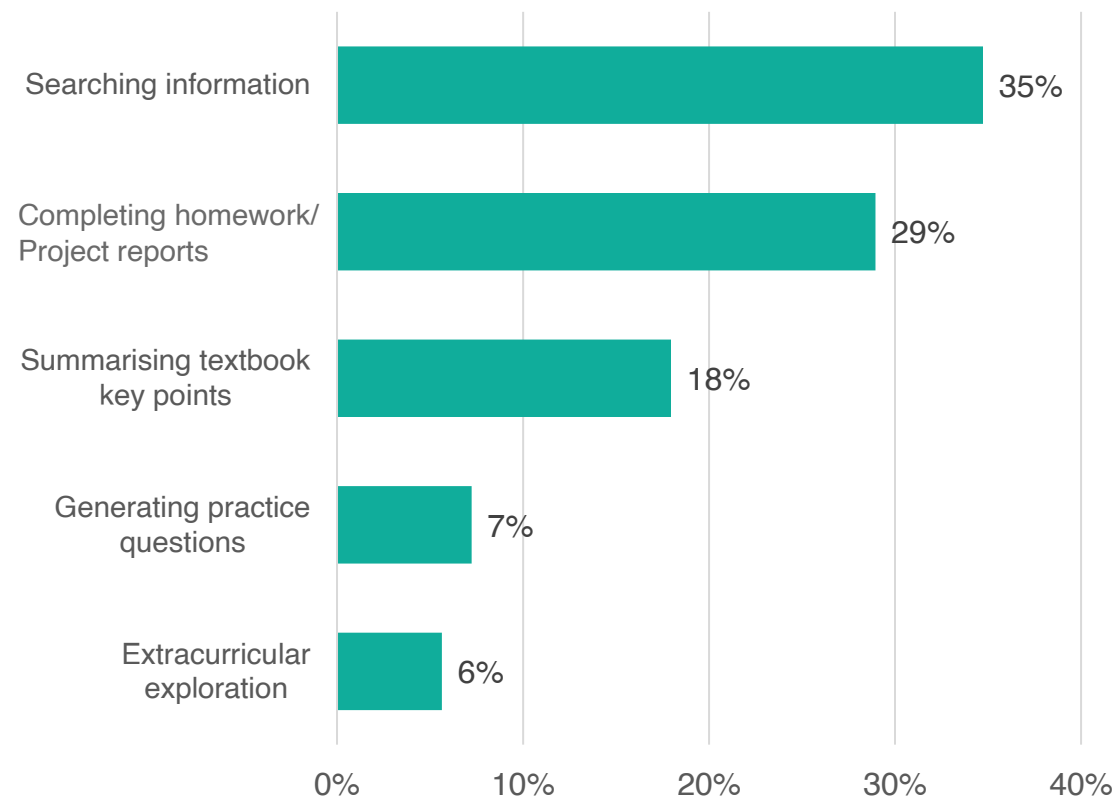
Note: Some AI tools are not shown in the chart due to an insufficient sample size.

Primary purposes of AI for teachers and students

Teachers mainly use AI to assist teaching and handle administrative tasks, rather than for student support

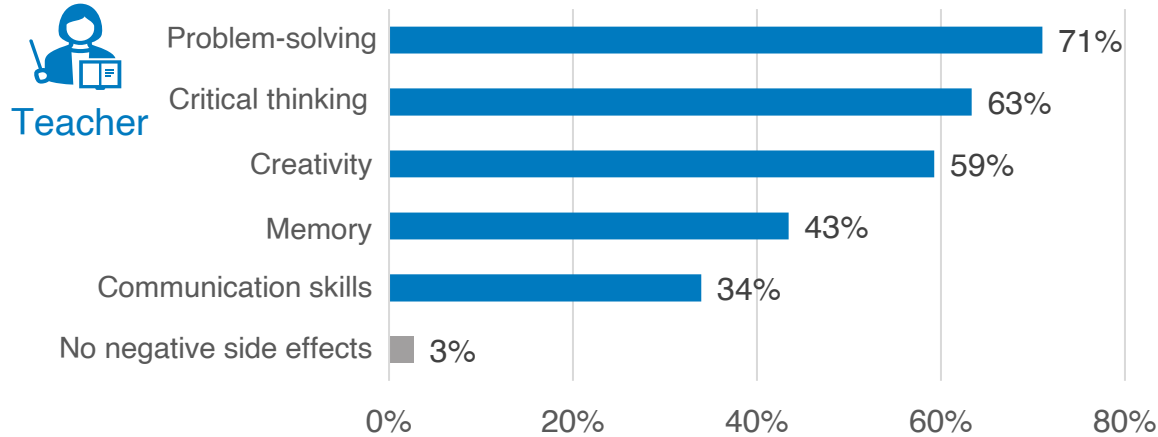


Students primarily use AI for researching and doing homework, less for extracurricular exploration

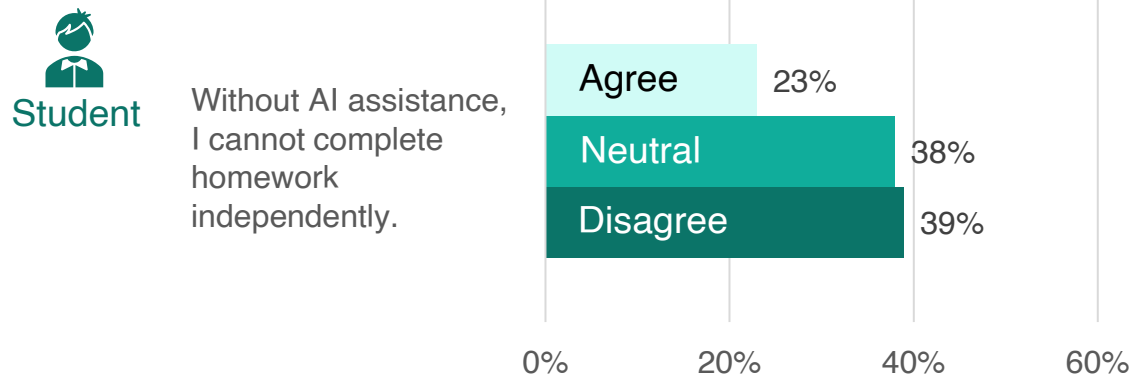


Observation 2a: AI tools may pose potential risks to students' cognitive development

Teachers are concerned that AI over-reliance will hinder students' problem-solving skills and critical thinking



Nearly 1 in 4 students say they can't complete homework without AI assistance



Overusing AI can lead to cognitive regression, accumulating "cognitive debt" in the long-term



"Cognitive debt"

Short-sighted trade-off: sacrificing long-term cognitive development for short term convenience



A study of the influence of AI-assisted writing on cognitive abilities

Participants are assigned into three groups:



- **83%** failed to quote the essays they had just written
- Compared to the brain-only group, there was a **47% decline** in brain activity and neural connectivity
- Participants' writing skills regressed to a beginner level after removing AI support

Research method: Divided 54 students and teaching staff from top universities in Boston into 3 groups. Participants wrote multiple essays over the span of 4 months.

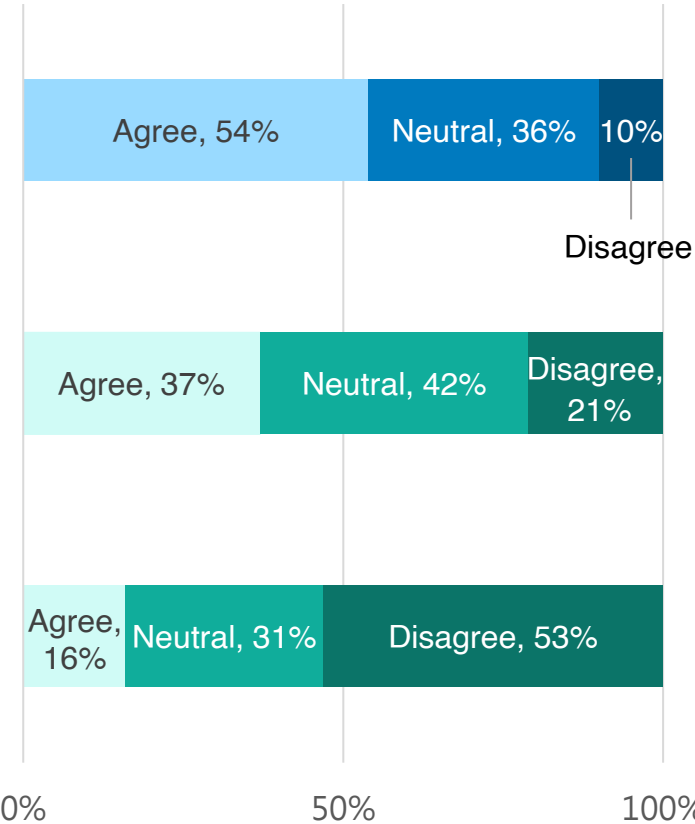
Source: Nataliya Kosmyrna et al., "Your Brain on ChatGPT: Accumulation of Cognitive Debt when Using an AI Assistant for Essay Writing Task"(2025)

Observation 2b: Students' awareness of privacy and security risks associated with AI tools needs to be strengthened



Teacher

I am worried about the privacy and security risks associated with using AI tools, such as data leakage and misuse

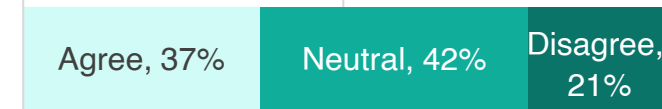


- Over half of the teachers expressed concerns over AI related privacy risks



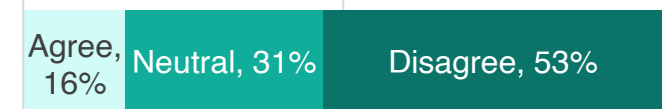
Student

I am concerned that AI tools may disclose to others the questions and information I input



- 37% of students are concerned that AI tools may lead to private data leakage

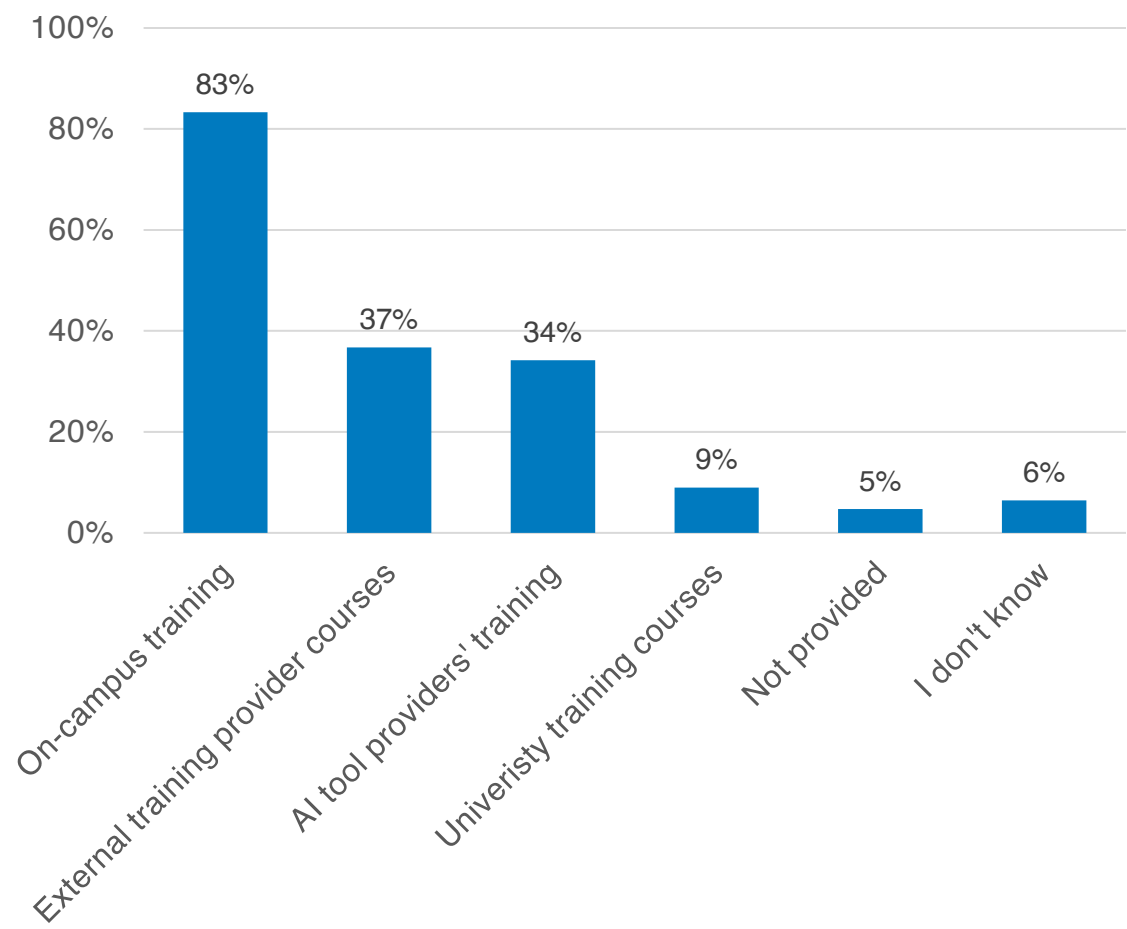
I will enter my personal information, such as my home address or phone number, into AI tools



- 16% of students indicated that they would enter personal information into AI tools

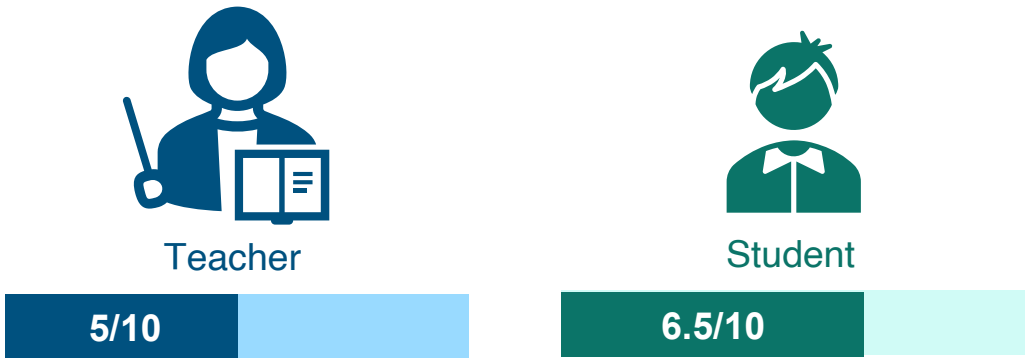
Observation 3: Current teacher training may be insufficient to build effective AI skills among teachers and students

Does your school provide the following AI-related training for the staff?



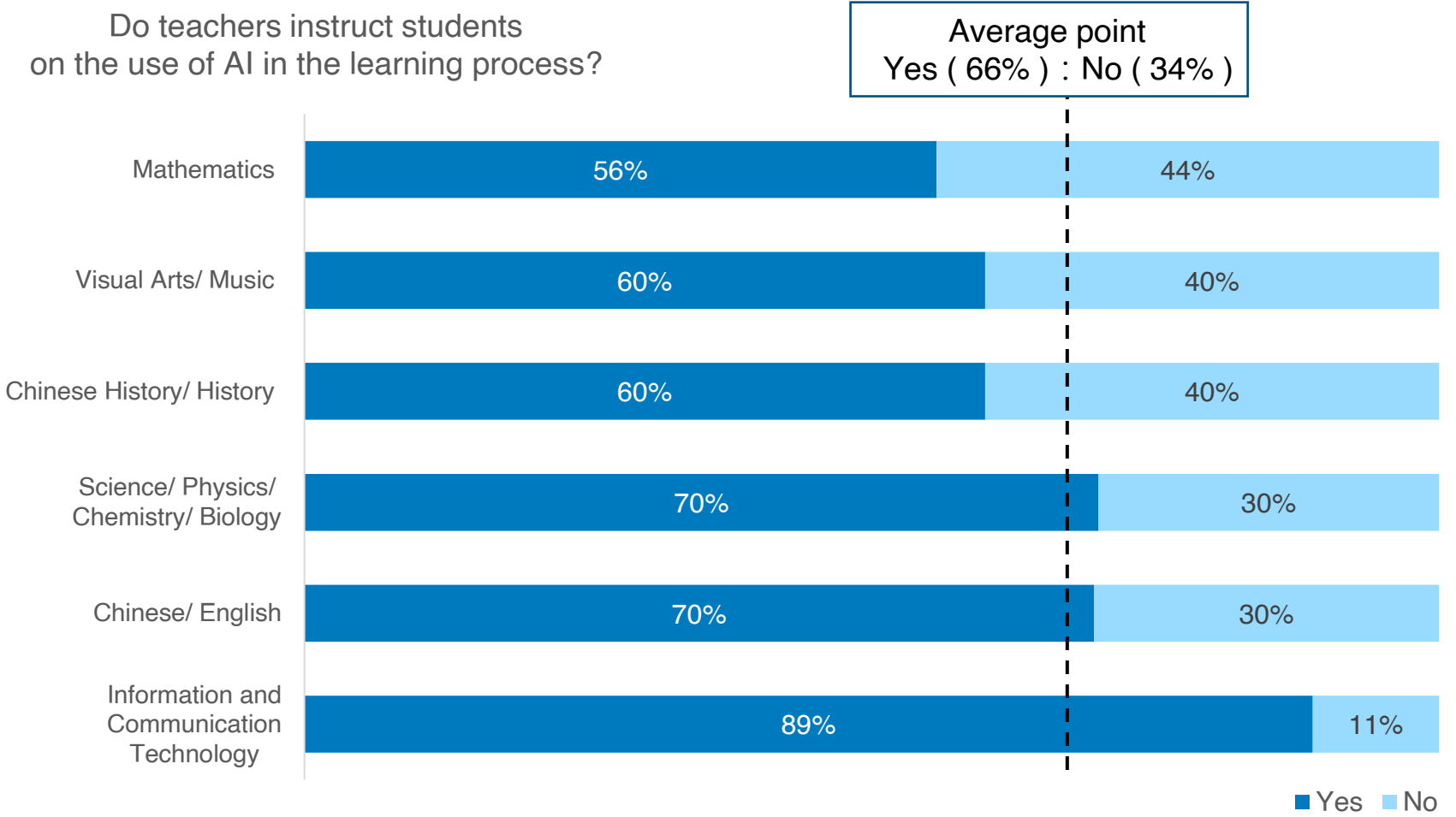
Note: On-campus training (e.g., workshops, sharing sessions)

Teachers and students' self-assessed AI proficiency has room for improvement



Observation 3: Current teacher training may be insufficient to build effective AI skills among teachers and students

There are differences in subjects in teachers instructing students on the use of AI tools in the learning process



Subjects with lower AI integration in teaching

- Is the nature of the subject not suitable for AI assistance?
- Are teachers unable to explore methods for integrating AI into teaching?
- Do teachers lack resources and time?

Subjects with higher AI integration in teaching

- Is AI being used appropriately and effectively to enhance teaching and learning outcomes?
- Or is it being used merely for the sake of using it?

Survey Analysis Summary

1

AI is deeply integrated into teaching and learning, with over 90% of teachers and students using AI tools

- Teachers and students are predominantly using international open-sourced AI platforms, such as POE and DeepSeek
- Teachers mainly use AI for teaching assistance (57%) and handling administrative tasks (26%); students mainly use AI to search for information (35%) and complete homework and reports (29%)

2

AI tools may pose potential risks to students' cognitive development and privacy

- Teachers are generally concerned that students' over-reliance on AI could undermine students' problem-solving skills and critical thinking
- 54% of teachers are worried about the privacy issues posed by AI tools; 37% of students are concerned that AI tools might disclose their inputted questions and data to others

3

Current teacher training may be insufficient to build effective AI skills among teachers and students

- On a self-reported scale of 1 to 10, teachers rated their AI proficiency at 5, while students rated theirs at 6.5
- Variation exists across subjects regarding whether teachers instruct students on using AI tools in the learning process



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Part 2: Future Policy Directions



Future Policy Directions

Survey Findings

1

AI is deeply integrated in teaching and learning, with over 90% of teachers and students using AI tools

2

AI tools may pose potential risks to students' cognitive development and privacy protection

3

Current teacher training may be insufficient to build effective AI skills among teachers and students

Future Policy Directions

1. Develop an AI in Education Application Framework

Without clear guidelines, the use of AI may pose data security and privacy risks and fail to deliver intended learning outcomes

2. Create a Territory-wide AI in Education Learning Resources Platform

A centralised platform can prevent resource duplication and enhance teaching effectiveness through integrated data analysis

3. Construct a Progressive AI Literacy Curriculum Framework

Integrate AI literacy across all primary and secondary school learning stages to foster responsible use of AI and develop higher-order skills (e.g. critical thinking, problem-solving, and creativity)

4. Enhance Teacher Professional Development for AI Knowledge and Pedagogical Application

Support in-service teachers in integrating AI more effectively into teaching

5. Strengthen Pre-service Teachers' AI Training

Enhance pre-service teachers' ability to use AI tools and strengthen related competencies

Direction 1: Develop an AI in Education Application Framework



- 90% of teachers and students use AI tools, primarily international open-sourced platforms not designed for education and lacking adequate minor protections
- HK currently lacks guidelines on AI risks in educational settings

Singapore: AI-in-Education Ethics Framework



Fairness

AI education tools must be **trained using local data**



Safety

Data transferred to 3rd parties must be **anonymised**



Inclusivity

All primary & secondary students can access national learning platform

SINGAPORE
Student Learning Space

Finland: AI Guide for Teachers



FINNISH NATIONAL
AGENCY FOR EDUCATION



Diversity & Equity

Ensure AI tools do not reinforce bias/ discrimination



Pedagogy based

Use AI at age-appropriate levels where it adds learning value



Privacy protection

AI vendors must explain student data collection process to teachers

OECD: AI Literacy Framework for Primary and Secondary Education



Provide practical, school-based application scenarios for teachers

Learning objective: Analyse how AI protects or undermines authenticity and intellectual property

Primary school scenario:

Compare student-created work with AI-generated poems to explore what constitutes “originality”

Secondary school scenario:

Explore how specific artists’ styles appear in AI-generated works and discuss whether such use requires the artist’s consent



- In developing an AI application framework for education, the EDB can **draw on practices from Singapore, Finland, and the OECD to regulate fairness, safety and accessibility of AI tools, supported by practical use cases.**
- The framework should be reviewed and updated regularly in response to technological developments.

Direction 2: Create a Territory-wide AI in Education Learning Resources Platform



- Schools adopt AI tools independently, leaving student data fragmented across platforms and creating security risks
- Duplicate procurement, subscriptions, or development of similar AI tools across schools leads to resource waste

Singapore: National Learning Platform – Student Learning Space (SLS)

SINGAPORE Student Learning Space



Co-developed by MOE and GovTech, free for all public-school teachers and students

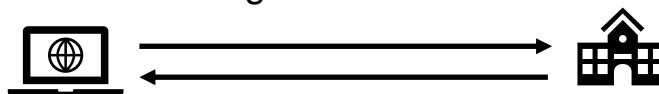
- **One-stop platform:** no need to migrate materials across systems, saving teachers effort
- **Secure:** 300+ approved applications
- **Optimised teaching and learning:** centralised student data enables data-informed teaching

Beijing: Public education resource sharing platform



Aggregates digital education resources across Beijing for citywide access

- Exhibit **best practices** in digital education and smart campus development
- A **unified resource platform:** schools can access and integrate > 1.2 million digital education resources



upload and share teaching resources with other schools

Estonia: ChatGPT Edu



Co-developed by MOE and OpenAI, free for all Grade 10-11 students and their teachers

- **Secure:** GDPR* compliance, enterprise-level security
- **Optimised teaching and learning:** Provides education use cases, e.g. student support, lesson preparation and customised feedback

*GDPR: EU General Data Protection Regulation



- **Build a city-wide AI learning resource platform** on EduCity, in consultation with principals and teachers and aligned with the AI literacy framework
- Integrate AI teaching resources and user data to support schools in optimising teaching strategies

Direction 3: Construct a Progressive AI Literacy Curriculum Framework



- Teachers fear AI overuse may weaken higher-order skills (including critical thinking, problem solving, and creativity)
- 1 in 5 students report being unable to complete assignments independently without AI

Primary 1-2

3-4

5-6

Secondary Form 1-3

Form 4-6

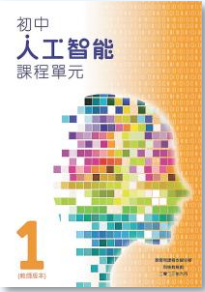
Enriched Module on Coding Education for Upper Primary Level

Module on AI for Junior Secondary Level

Applied Learning Subject (ApL)

"KOL Marketing and Generative AI"

Hong Kong



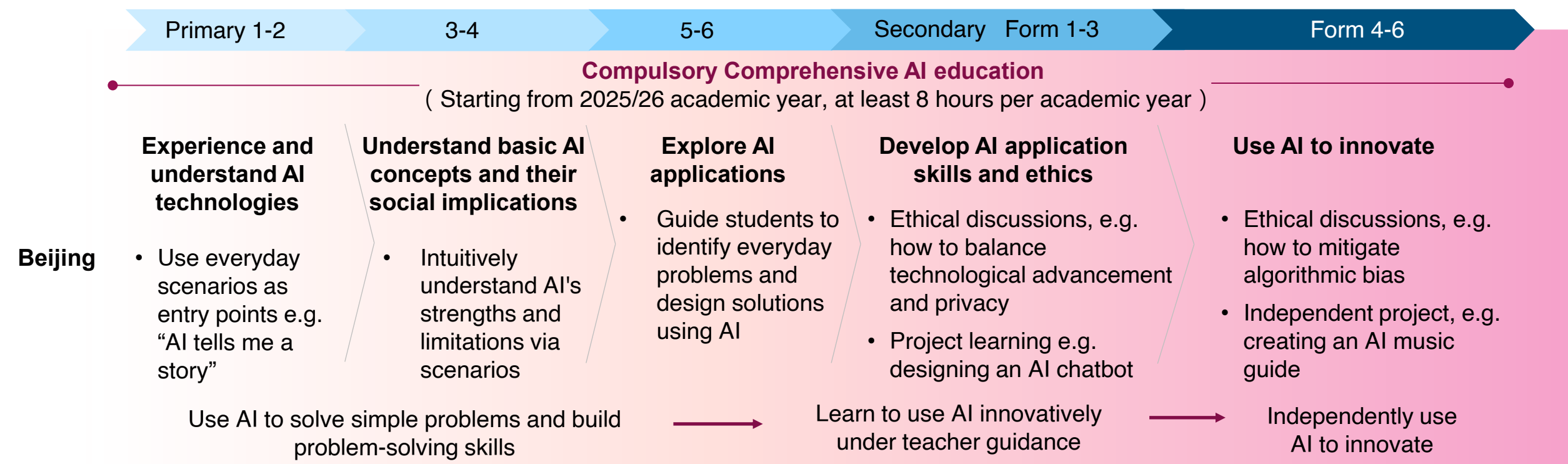
- Non-compulsory**; 98% primary schools implemented
- 10-14 hours per academic year
- Introduces basic programming and computational thinking
- Project-based tasks using coding to solve everyday problems
- Not directly related to AI

- Compulsory**
- 10-14 hours at junior secondary level
- Covers AI fundamentals, ethics, and applications
- Practical elements, e.g. using chatbots to support CV writing

- Covers basic AI ethics and data privacy
- Lacks a clear learning progression with the junior secondary AI module
- ApL enrolment remains lower than traditional subjects*

Note*: In 2025, 7,891 students enrolled across 59 ApL subjects, with more than half of the subjects attracting <100 candidates*

Direction 3: Construct a Progressive AI Literacy Curriculum Framework



EDB could **update curriculum and assessment guidelines through the Curriculum Development Council**, and **establish an appropriate, step-by-step AI curriculum framework across different learning stages**, to promote students' AI literacy and ethics awareness, and cultivate higher-order skills such as critical thinking, problem-solving, and creativity.

Direction 4: Enhance Teacher Professional Development for AI Knowledge and Pedagogical Application



Current AI training with application elements **primarily targets science teachers**;
Most of the training focuses mainly on basic AI knowledge through classes or seminars

“AI for Science Education” Funding programme



Junior
Secondary
Science
Teachers

- **HKD 100,000 grant** per school to enrol in AI training programmes offered by higher education institutions / professional bodies
- Over 220 schools participating
- Requirement:
2+ AI-enabled teaching use cases +
1 open lesson and experience-sharing session (internal or external)

“Digital Education Professional Development Programmes”



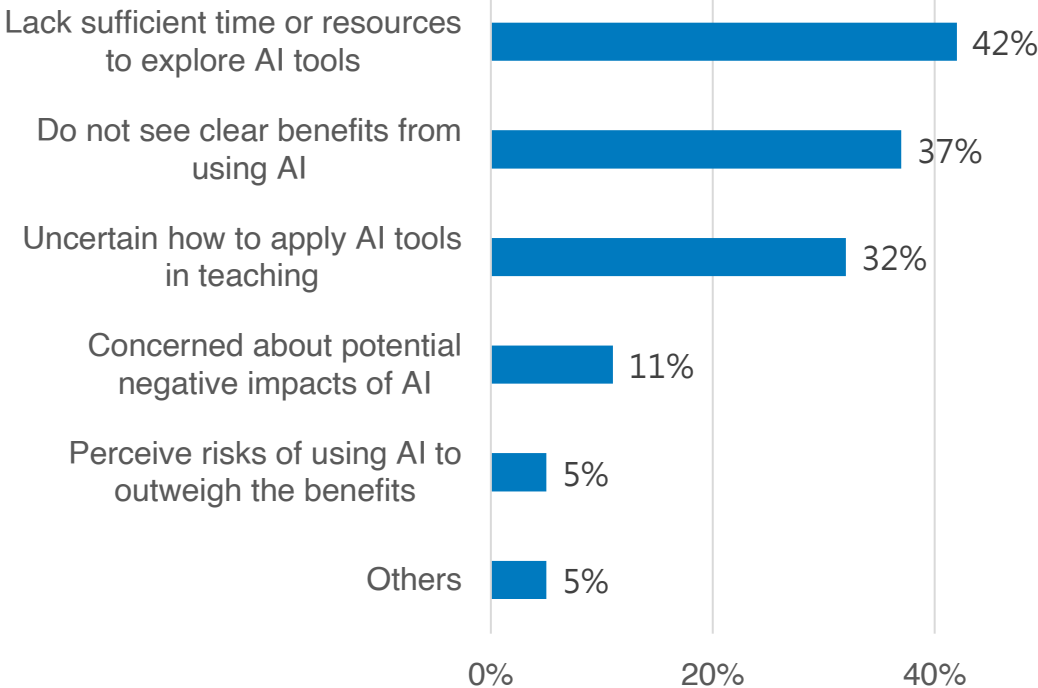
All Teachers

- **Lectures and webinars**
- Introducing the “Information Literacy Framework for HK students” and teaching examples



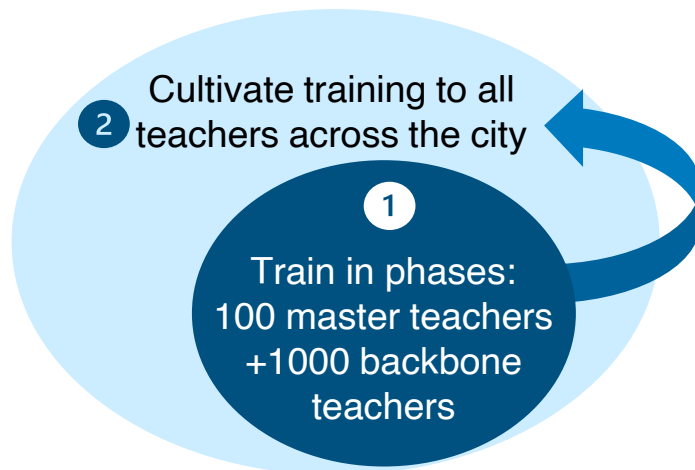
42% of teachers who do not use AI in teaching cite a lack of time or resources to explore AI tools

Reasons teachers do not use AI tools in teaching



Direction 4: Enhance Teacher Professional Development for AI Knowledge and Pedagogical Application

Beijing Municipal Government: Hundred–Thousand Seed Programme



US: National Academy for AI Instruction



**NATIONAL ACADEMY
FOR AI INSTRUCTION**

- Founded by the American Federation of Teachers (2025)
- **Co-designed by AI experts and educators**
- Aims to equip 400,000 K-12 teachers in practical AI usage via workshops, online courses and hands-on training
- Members include:



ANTHROPIC



HK: CoolThink@Jockey Club

Cool/Think @ JC
賽馬會運算思維教育

Teachers Support

In-class support

Training programs

- **Train 700+ STEM students as teaching assistants**
- Provide pre-lesson technical support and student troubleshooting



- **Extend “AI for Science Education” Funding programme to teachers of all subjects across primary and secondary schools, with participating teachers sharing practices across schools** to uplift AI capabilities territory-wide
- **Co-design “Digital education professional development programmes” with industry** to support AI integration into teaching
- **Collaborate with universities to train STEM students as AI teaching assistants**, freeing up teachers’ capacity to explore and adopt AI-enabled pedagogy

Direction 5: Enhance Pre-service Teacher AI Training

? **34% of early-career teachers (aged 20-29)** have not taught students to use AI tools to support their learning, indicating potential gaps in pre-service training

HK: Only EduHK explicitly requires AI literacy as a compulsory subject for pre-service primary and secondary teachers



香港教育大學
The Education University of Hong Kong



PGDE



Bachelor of Education (BEd)

Basic		Advanced
AI Literacy for Educational Professionals		Exploring real-life AI application development for Educational Professionals
AI Literacy	Digital Literacy	Exploring real-life AI application development

*Applicable to to full-time students admitted in the 2025/26 academic year or after

Compulsory Elective

Other four institutions offering PGDE/ BEd programmes



香港浸會大學
HONG KONG BAPTIST UNIVERSITY



Singapore: Ensure all pre-service teachers are equipped to use AI in teaching



NIE
NATIONAL INSTITUTE OF EDUCATION
SINGAPORE

An Institute of



NANYANG TECHNOLOGICAL UNIVERSITY
SINGAPORE

Singapore's sole teacher education institute



Technology for Meaningful Learning

+



Promoting Computational Thinking through Microbit

Compulsory module: Technology for Meaningful Learning

Train Diploma in Education (DipEd) students to integrate technology (AI) into teaching practice

Self-directed Learning: AI in Education Chapter

DipEd students organise seminars to share best practices for applying AI in teaching

 Drawing on EdUHK and Singapore practices, **incorporate AI literacy and its pedagogical applications into the mandatory curriculum for pre-service teachers** to strengthen their abilities to apply AI in teaching.

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Future Policy Directions

Survey Findings

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Enhance pre-service teachers' ability to use AI tools and strengthen related competencies

Thank you!
