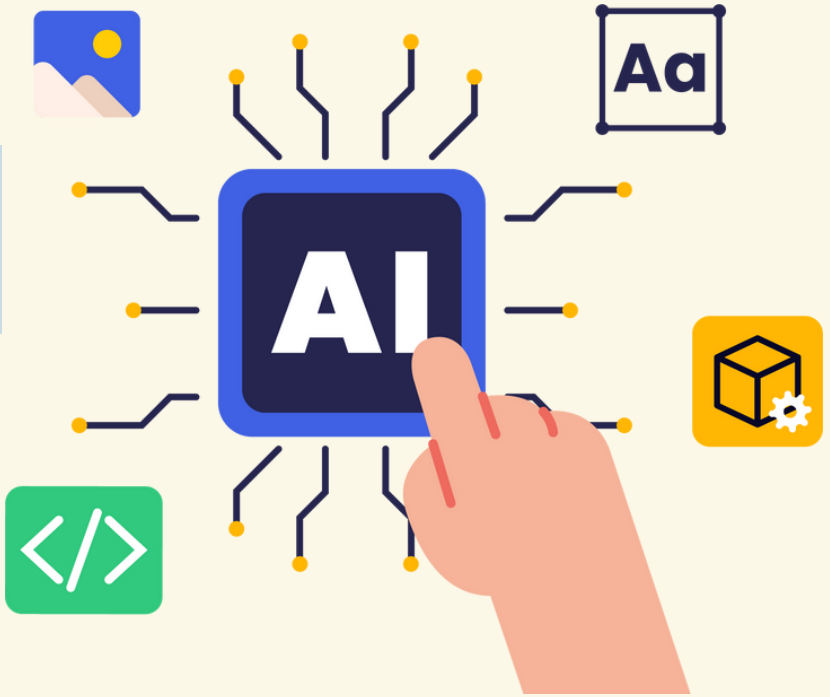
Navigating the Safe and Responsible Use of AIEd



MOE uses AI to do things better, and do better things

- With AI set to become ubiquitous, enhancing students' digital readiness for the future is an important priority.
- We use AI to (i) help our students learn better and deeper – whether it's through teacher mediated learning or self-directed learning, (ii) help our teachers teach and learn better, and (iii) automate or reduce mundane tasks for teachers to free up their time and mind space for (ii).
- The use of AI within the Masterplan initiatives are highlighted below:

Enable Our Student To Learn Better and Deeper

ST1: Empowering students through customization and personalization through:

- AIEd features in SLS that provide personalised learning pathways, customised and instantaneous feedback.
- Interactive Digital Textbooks (IDTs)

(See Annex F for SLS)

ST2: Strengthen students' development of Digital Literacy and Technological Skills (DLTS) through:

- DLTS curriculum (including AI literacy)
- MOE Cyberwellness strategy

ST3: Strengthen students' development of 21st Century Competencies (21CC) through:

- Exploring how tech can be used to assess and develop 'hard to assess' 21CC

Enable Teachers to Teach and Learn Better

ST4: Strengthen schools' and department culture of collaboration & EdTech practices through:

- Professional Learning Support for School Leaders and Key Personnel
- Thought Leadership by HQ Specialists through research and strategic partnerships

ST5: Strengthen teaching fraternity's EdTech practices through:

- Teachers' Professional learning Roadmap on e-Ped, DLTS, and Learning Analytics
- Provision of opportunities for sharing and recognition e.g. Presidents' Award for Teachers (PAT), Outstanding Youth in Education Award (OYEA) awards, Academy Awards (AA) for exemplary EdTech use

Automate or Reduce Mundane Tasks

P1. Learning Analytics & Data: Build analytic-by-design systems for data collection and analysis (e.g. learning data in SLS)

P2. EdTech infra & solutions to support schools processes and meet rapidly changing needs: Ensure system integrity and security (e.g. leverage Government on Commercial Cloud (GCC), Vulnerability Management System (VMS), Automated Baseline Log Review (ABLR))

P3. EdTech Ecosystem: To engage researchers (Areas of research interest in Annex G), industry partners, domain experts and other strategic partners (e.g. PRC & ROK MOE, industry)

Encourage buy-in and support change management

P4. Communications &Engagement (C&E) with teachers, parents, and students

Selection of AI tools in T&L is guided by pedagogy and educational value

- The greatest gains for T&L afforded by AI tools are

  (i) customisation & personalisation of learning;

  (ii) engaging in self-directed learning anywhere, anytime; and

  (iii) enabling data informed T&L decisions.

- Though schools and teachers can exercise autonomy in the choice of AI tools that best cater to their teacher or student profiles, the use of AI tools should:

  - For students: enable learning through personalised learning paths that encourages rather than impede learning progress;
  - For teachers: enable designing and implementing T&L that spans digital and non-digital spaces, making of data-informed T&L decisions

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We believe AI use, and more broadly tech use, in education should be guided by learning sciences and fundamentally be age-appropriate

General Education

- The use of AI in GenEd takes into account how children learn and the development of their brain.
- Our education design and curriculum must:

1. Be sequenced to enable cognitive processing (e.g. children will gradually progress from effortful knowledge recall to habitual, routine practice.)
2. Still include deep understanding of fundamental knowledge (that will be internalized into long-term working memory) as essential foundation to develop higher order cognitive processes e.g. synthesising and creating (Oakley et al., 2025).

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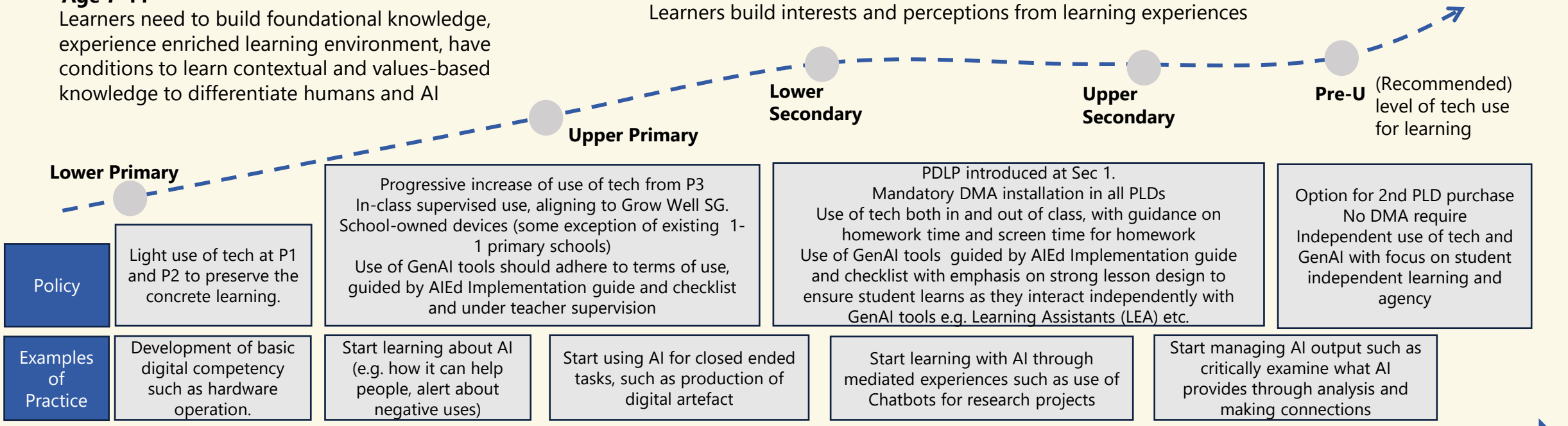
Use of AI, and more broadly EdTech, seeks to reap gains whilst mitigating risks

Age 7-11
Learners need to build foundational knowledge, experience enriched learning environment, have conditions to learn contextual and values-based knowledge to differentiate humans and AI

Age 12 & older
Learners are transiting from conscious retrieval to automatic recall. Concepts are getting increasingly abstract and learners requires more explicit instruction. Learning activities can be more autonomous. Learners build interests and perceptions from learning experiences



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A general guide on AI use for different age groups

P1 to P3	• Direct use of AI tools for teaching and learning (T&L) in unsupervised manner and/or for open-ended tasks is not advisable
P4 to P6	• **Age-appropriate AI tools introduced gradually under teacher supervision** • AI literacy include progressive students' responsibility over time as they develop ethical and purposeful approaches to using AI
Sec to Pre-U	• **Students take greater ownership of how they use AI to support their learning** • Strong focus on use of AI to scaffold metacognitive development to guard against cognitive offloading
Pre-U	• Students have developed executive function and strong knowledge foundations • Students empowered to innovate with AI as a collaborator

Note:
Level of teacher supervision will depend on the technology powering the tool (less supervision needed for rules-based vs closer supervision for GenAI), and the use case (e.g. less supervision for single exchange like marking tools vs closer supervision for iterative/open-ended tasks like use of dialogic agents)

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Going back to first principle…

- As AI becomes more pervasive, we need to equip our teachers and students to use AI in an age-appropriate, safe and fit-for-purpose manner to achieve the desired learning outcomes, in preparation for a technology-transformed world.
- Students should understand how AI works, its benefits and risks, and be able to leverage AI to enhance their learning, without being over-reliant on technology and compromising the development of foundational knowledge and skills.
- While AI can enhance and support teaching and learning, teachers – guided by sound pedagogy and the curriculum needs – must continue to exercise professional judgment in lesson planning, enactment, and assessment.

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MOE AIEd Ethics Framework and Practical Strategies

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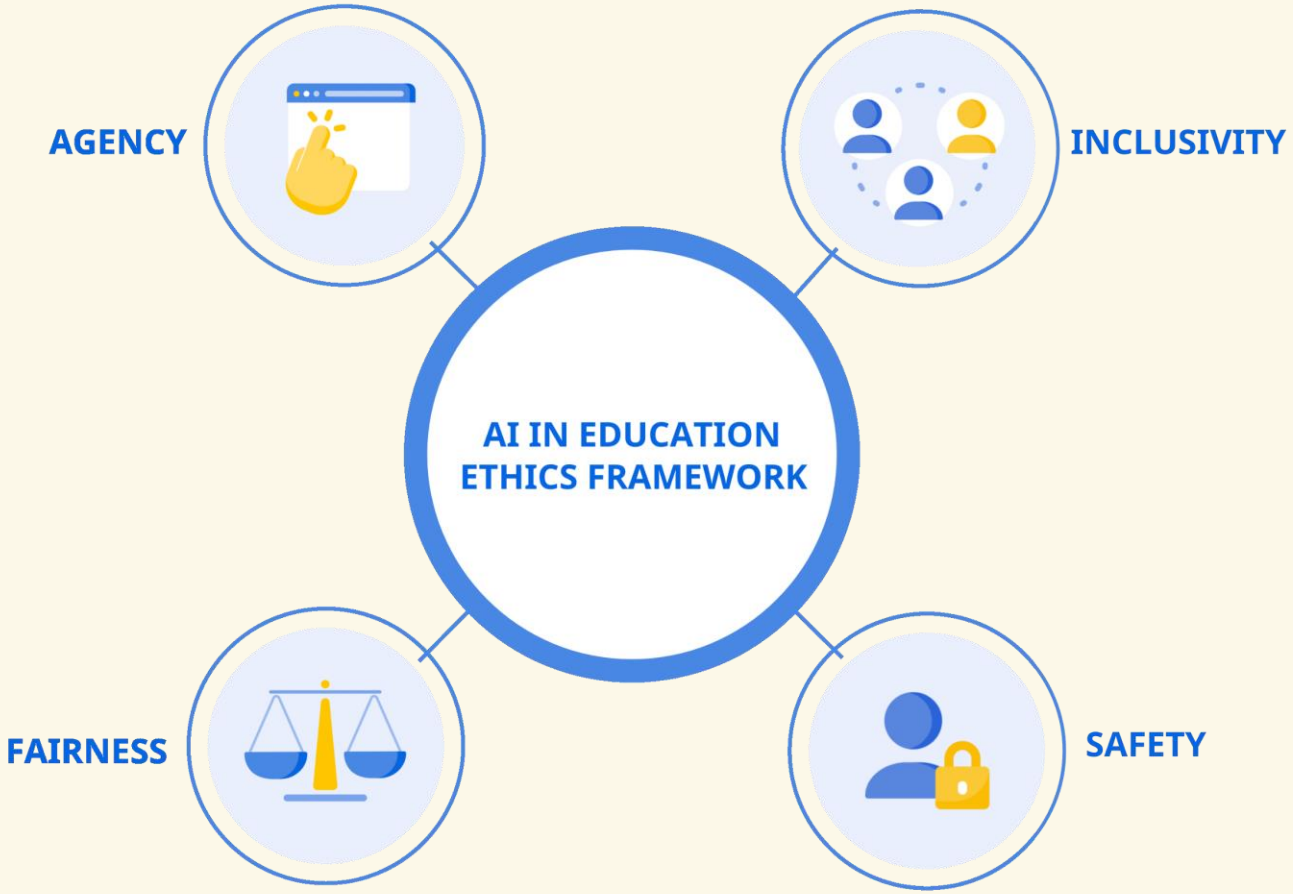
A Recap of the MOE AIEd Ethics Framework



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AGENCY

Preserve teachers' and students' choice and control.

Exercise curriculum leadership. Focus on where the valuable Potential Benefits are and guard against Potential Risks e.g.

Putting Students into **Zone of Proximal Development** but guard against **over-reliance on AI** (e.g. not internalising their learning, leading to atrophy of key skills) through strong AI tools design and how teachers design for the use.

Teachers create **better T&L resources and lesson ideas**, but not outsource key teaching tasks to AI to the extent of **stunting professional growth** in the longer term by maintaining teacher professional conversations!

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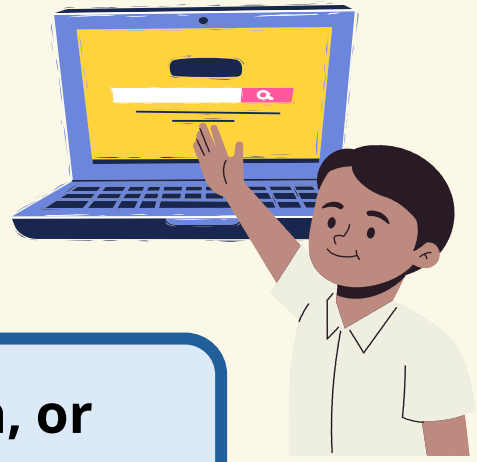
Practical Strategies (Agency)

Practise having human input over AI's.



Have students to complete an **initial response, idea generation, or problem-solving step before using AI** for feedback.

Design tasks that require students' original thinking, such as requiring them to include a personal example or viewpoint

Require human reflection on AI output, such as the accuracy and appropriateness of AI's suggestions.

Teachers using AI for marking, feedback or lesson planning should **always review AI's suggestions based on their contextual understanding.**

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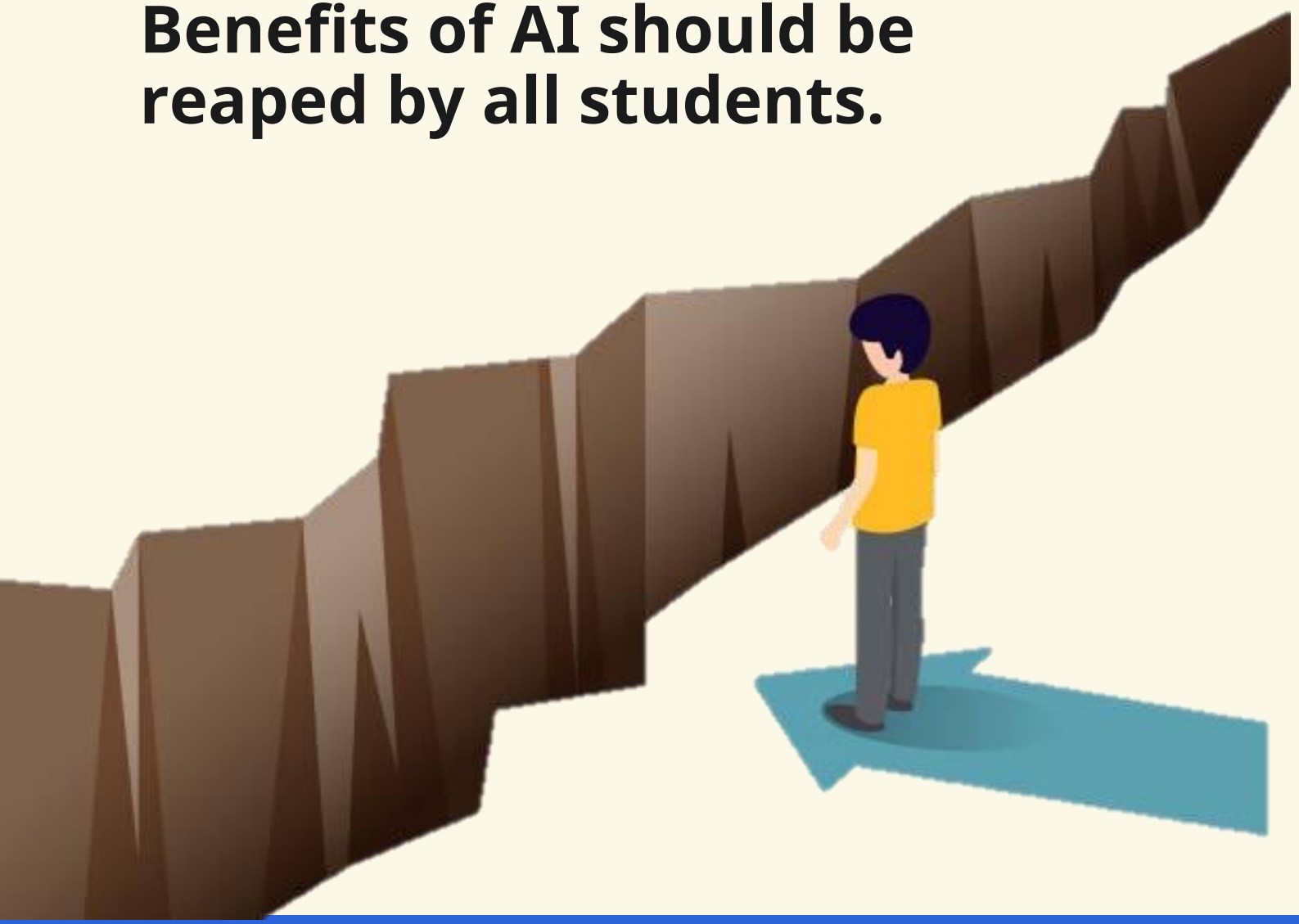
INCLUSIVITY

Benefits of AI should be reaped by all students.



Policies to ensure equitable access and avoid widening gaps e.g.

Ensure equitable access to AI through devices and network provisioning, and digital literacies to allow all to benefit from AI.

Lift the bottom, without capping the top.
Self-directed and motivated students may benefit more from AI, **widening digital literacy gaps.** Monitor AI use and provide greater scaffolds for less motivated or weaker learners.

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2

Practical Strategies (Inclusivity)

Promote broad access and support students' use of AI, regardless of background.

Check that all students have access to the devices and solutions needed, and design learning tasks accordingly.

Provide support structures for students who are less adept at the use of AI, such as building their AI literacy, using scaffolded prompts and templates, or assign peer support.

Provide professional learning for teachers so that they can guide and model effective AI use, such as explicitly teaching students how to ask AI a good question and how to use AI's feedback.

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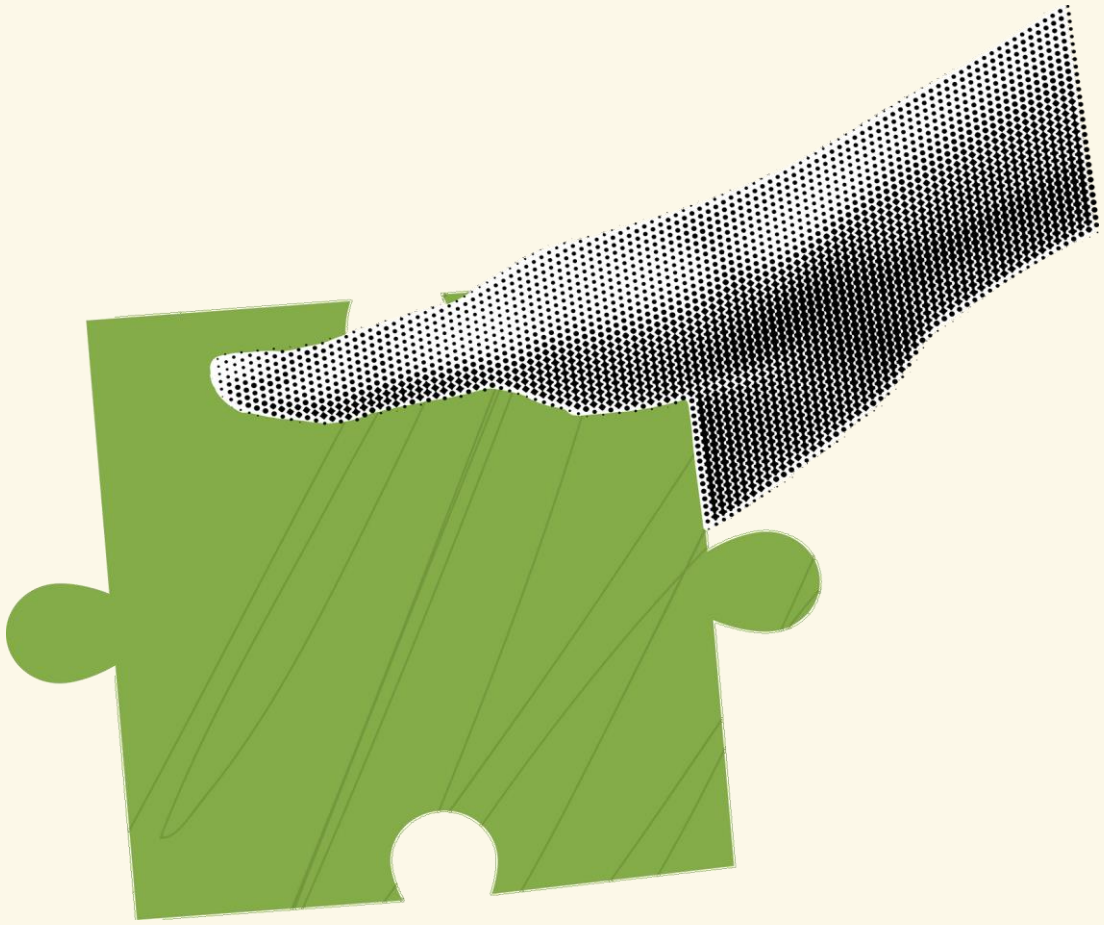
Fairness

Establish transparency in the use and design of AIEd.



Development of AI Literacy of teachers so that they can understand the first principles and good decisions are made at every level. Be alert...

Biased training data may affect **accuracy and fairness of AI outputs**, reinforcing stereotypes.

Students could be **wrongly tracked or denied opportunities if decisions** are based solely on AI outputs.

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3

Practical Strategies (Fairness)

Always verify and adapt AI-generated output.

Educate students to develop healthy scepticism. Learn about AI bias and to always question if AI's output is balanced and fair.

Remind teachers to always cross-check AI recommendations with up-to-date teacher observations, and never use it singularly to make decisions about students' educational progress.

Favour the choice of AI tools that are able to **explain its thought processes, or be able to cite its references** (i.e., transparent and explainable tools)

Continuously review the AI tool's accuracy and fairness to decide whether and how the tool should be used.

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Safety

Protect students' interests, privacy and well-being.

Develop awareness among staff on importance of ensuring AI tools are safe; AI literacy of students

Always check the data handling terms and remind staff and students of data classification before use. E.g. Personal information uploaded to public GenAI tools could lead to data misuse or leaks.

Ensuring safety and well-being of students, especially education specific risks. E.g. Students may misunderstand the role of AI, forming unhealthy attachment or viewing AI as authority.

Checking on accuracy and quality of AI output. E.g. Students may be exposed to inappropriate or inaccurate content from AI, compromising their learning and well-being.

5

Practical Strategies (Safety)

Prioritise safety and supervise students' use.

Model healthy interaction with AI, emphasising that it is not human, and show how to use it to support learning.

Check and abide by the application's 'Terms of Use' for age advisory and possible storage of student data**.** Do not assume that all reputable AI tools have data privacy and security measures in place.

Take a more cautious approach when handling student data, such as anonymising identifiable information and only use AI applications which are permitted for the security and sensitivity classification of the input data.

Test AI tools before student use to ensure responses are safe and appropriate, and strengthen backend guardrails.

Supervise and monitor students' interaction with AI to evaluate its pedagogical effectiveness, and check on students' social and emotional well-being.

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6

Practical Strategies (Safety)

Bolster parental confidence for the use of AIEd.

Be open to share what AI tools are used, for what purpose, and how it is used to **support learning processes and 21CC development**.

Emphasise the safeguards that have been put in place (such as reinforcing commercial chatbots with safety guardrails and ensuring data privacy).

Stress the importance of **use of AI with adult supervision or oversight,** especially for younger learners.

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