



AI in Education: Pathway from Singapore

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*This presentation summarises publicly available MOE materials and
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Background: Why Education Systems Need Governance

Across many education systems, AI tools are being introduced for practice, feedback, and explanations



- This is not only a new tool. It changes the learning environment, so governance and implementation guidance matter
- Instant answers can reduce reasoning and productive struggle.
- Learning outcomes depend not only on content quality. They also depend on teacher oversight, task structure, and feedback delivery.

Education systems therefore face not merely a new tool, but a new instructional environment that must be governed. Governance frameworks become a necessary foundation, not an optional addition.

General AI ≠ Educational AI

Generative AI can produce fluent and accurate responses, but effective learning support depends on how it is used in teaching.

- General-purpose GenAI is optimised to generate responses. Educational use prioritises reasoning, understanding and metacognition
- Providing full answers immediately may reduce productive struggle, which is important for learning in subjects such as mathematics
- So educational AI must be evaluated and used differently: with teacher guidance, clear task boundaries and feedback design

Content generation is not the same as supporting learning. Educational contexts therefore require different evaluation and usage principles from general-purpose AI.

Singapore's Approach: Educational AI as Part of a Learning System

In practice, educational AI in Singapore is considered part of the teaching and learning system rather than a standalone tool.

- AI is used to support teachers and learning activities while classroom instruction remains teacher-led.
- Learning outcomes depend on instructional design, task structure, and teacher guidance, not only model capability.
- Therefore, clear roles and responsibilities among teachers, students, and the system need to be considered when implementing AI in education.

In Singapore, governance and design guidance help ensure that educational AI is used with clear responsibilities and learning objectives.

What Is the AI in Education Ethics Framework?

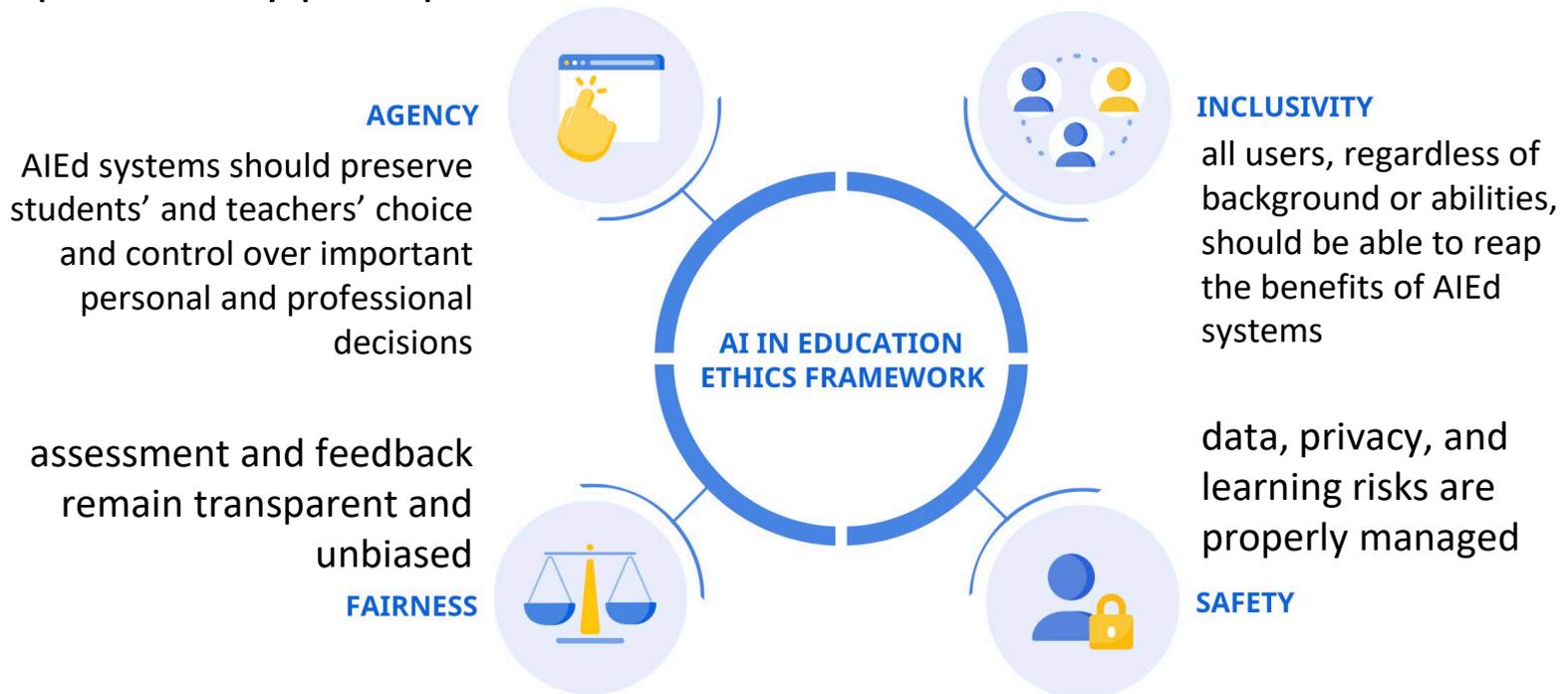
The AI in Education Ethics Framework by Singapore's Ministry of Education is a practical guidance resource that supports how AI can be used in teaching and learning.

- It helps schools and teachers consider potential impacts and risks when introducing AI tools.
- It helps schools understand roles and responsibilities among teachers, students, and the system.
- It supports consistent and transparent use of AI across different learning contexts.

The framework provides guidance to support safe and responsible use of AI in education, while helping educators maintain learning quality and student development.

Four Core Principles: Overview

The framework defines the appropriate role of AI in education through four complementary principles.



Together, the four principles provide complementary perspectives for thinking about how AI should be used in education: instructional roles, learning access, learning processes, and system safety.

Safety, Governance & Accountability

The key issue is not to eliminate AI use, but to ensure that the education system can manage and take responsibility for it.

Governance mechanisms

- Student data is securely protected with appropriate access controls and anonymization
- AI-generated feedback remains visible and reviewable under teacher oversight
- Clear reporting and escalation processes support institutional accountability

Usage boundaries

- AI is not deployed for high-stakes decisions such as determining academic pathways without human judgment
- Applications affecting students' well-being require professional human involvement
- Student safety and well-being guide the selection and approval of use cases

Safety means AI is deployed within clear institutional governance and teacher oversight, ensuring responsible use rather than risk elimination.

From Principles to Practice

Singapore's experience shows that successful educational AI depends not only on technical capability, but also on how AI is integrated into teaching practices, curriculum design, and school processes.

How the Framework Is Implemented

- Principles should be operationalized through real classroom systems
- Teachers' professional judgment should remain central
- Learning outcomes depend not only on model capability, but also on platform and curriculum design

Implementation Challenges

- Rapid technological change requires ongoing policy adaptation
- Schools require ongoing teacher professional development
- Policy support needs to be sustained over time

In practice, the framework is operationalized through concrete implementation strategies and also reveals practical challenges in real classrooms that must be addressed.

Future Outlook

We strive to use AI to strengthen learning and teacher practice, while

- keeping pedagogy first,
- student-centric with age-appropriate boundaries, and
- clear accountability.

Looking ahead: capability will grow, but governance and pedagogy must scale with it!

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