

Cambridge's Vision for AI in Education

Digital Echoes in Education. Karachi, Pakistan

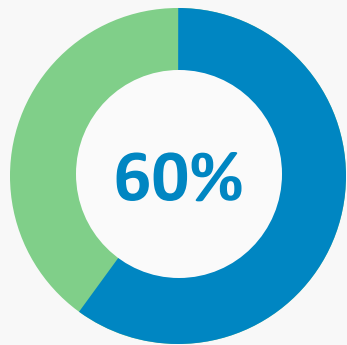
22 February 2025

Niall McNulty, Product Lead for Education Futures

Agenda

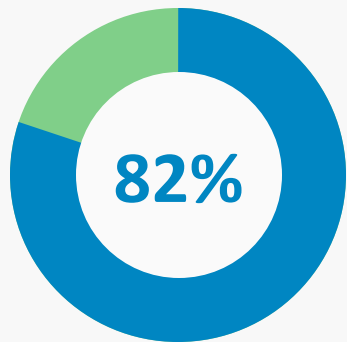
- AI Basics
- Global Context
- Implementation
- Stakeholder Voices
- Cambridge's Approach
- Teaching with AI

Preparing for Workforce Transformation



Jobs in advanced economies that will be complemented, or in extreme cases, replaced by AI.

[\(IMF, January 2024\)](#)



Leaders say their employees will need new skills to be prepared for the growth of AI.

[\(Microsoft, May 2023\)](#)

AI Basics

What is Artificial Intelligence?

AI refers to computer programs that simulate human intelligence by:

- Recognizing patterns in data and behaviour
- Making predictions based on analysed information
- Generating new content from learned patterns

Understanding AI NB for schools:

- Develop responsible AI usage policies
- Ensure equitable access across school systems
- Design effective AI integration strategies

The Evolution of AI

- **1950s:** AI emerges as a field to create intelligent systems
- **1980s:** Machine Learning enables computers by learning from examples
- **2010s:** Deep Learning transforms the field by using brain-inspired neural networks
- **2020s:** Large Language Models enable sophisticated language understanding and generation

Generative AI

Advanced AI systems that can create various content forms:

- Text generation and writing
- Image and visual content creation
- Video and multimedia production
- Musical composition

Concerns for educators:

- Limited transparency in how models make decisions
- Potential for bias in outputs and training data
- Risk of spreading misinformation
- Student overreliance on AI tools, or cheating

AI Literacy For Teachers and Students

- Grasp the fundamentals of how AI systems function and make decisions
- Develop skills to use AI tools ethically and effectively in appropriate contexts
- Recognize both societal and ethical implications of AI implementation
- Identify potential benefits and risks, while understanding strategies for risk mitigation

AI should be integrated into existing frameworks like active learning, assessment for learning, metacognition, and inclusive education.

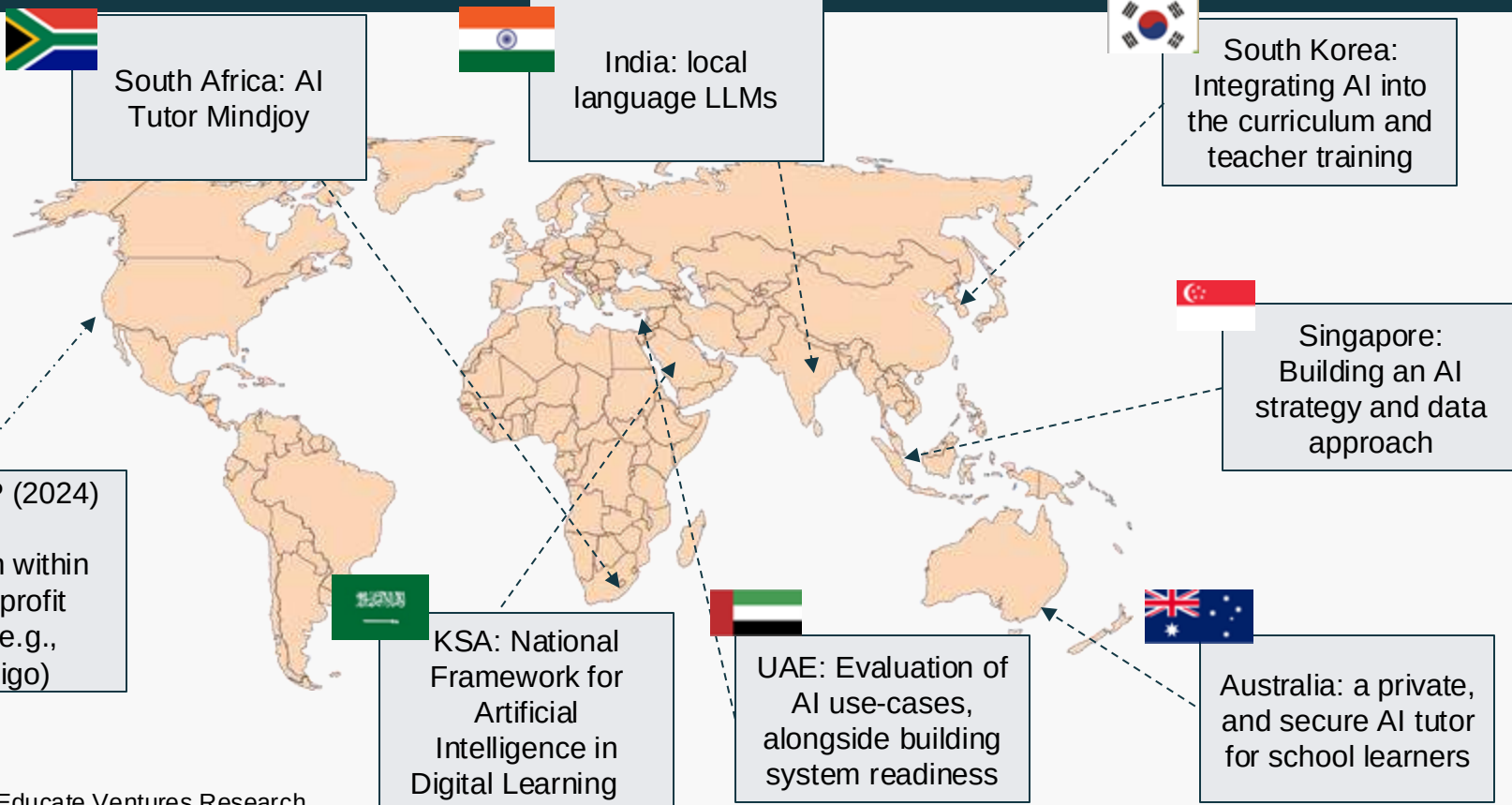
It's not a standalone solution—it's a tool within teaching practice.

Global Context

Examples of AI Use Cases

	Teacher admin	Lesson planning and enrichment	Lesson delivery	Student assessments	Teacher professional development and feedback
Potential AI use-cases	Streamlining administrative processes to boost productivity	Generate lessons in a range of topics, enrich lessons and boost productivity	Support teachers in lesson delivery AI tutoring	Automate assessments, diagnose gaps in learning and recommend tailored interventions	Evidence teacher skills and support mentor-teacher interactions. Identify areas for improvement
Examples of tools					
					

Global Education Snapshot



AI Across Schooling System

Curriculum: Policy development, resource allocation, guidelines

School Leadership: Implementation strategies, staff development, infrastructure planning

Teachers: AI-enhanced pedagogy, tool proficiency, ethical use in classrooms

Learners: AI literacy, critical thinking skills, responsible use of AI tools

Parents: Understanding AI's role in education, supporting children's AI literacy

UNESCO AI Competency Framework

Launched during Digital Learning Week, in September 2024.

- The **AI competency framework for teachers** defines the knowledge, skills and attitudes that teachers should possess to understand the roles of AI in education and use AI in their teaching practices in an ethical and effective manner.

Progression Levels



Acquire

Basic AI literacy
(tool evaluation, ethical awareness).



Deepen

Advanced integration
(personalized learning design).



Create

Innovate with AI
(co-develop tools, lead policy discussions).

Best Practices When Using AI



Verify AI-generated content before using it in teaching materials



Teach students to cross-reference AI-provided information with reliable sources



Be cautious about sharing sensitive or personal information



Be aware of knowledge cutoff dates and potential biases in training data

How AI Changes Teaching

Teaching AI **With and About**

Teaching **with** AI focuses on practical integration where AI serves as a tool to:

- Support teachers in planning, assessment, and administrative tasks
- Enhance student learning through personalized guidance and feedback
- Streamline school operations and management systems

Teaching **about** AI emphasizes understanding AI fundamentals through:

- Core computer science and data science principles
- Cross-disciplinary connections across mathematics, science, and social studies
- Critical examination of AI's societal impact and ethical implications

Capabilities and Risks

What It's Good At:

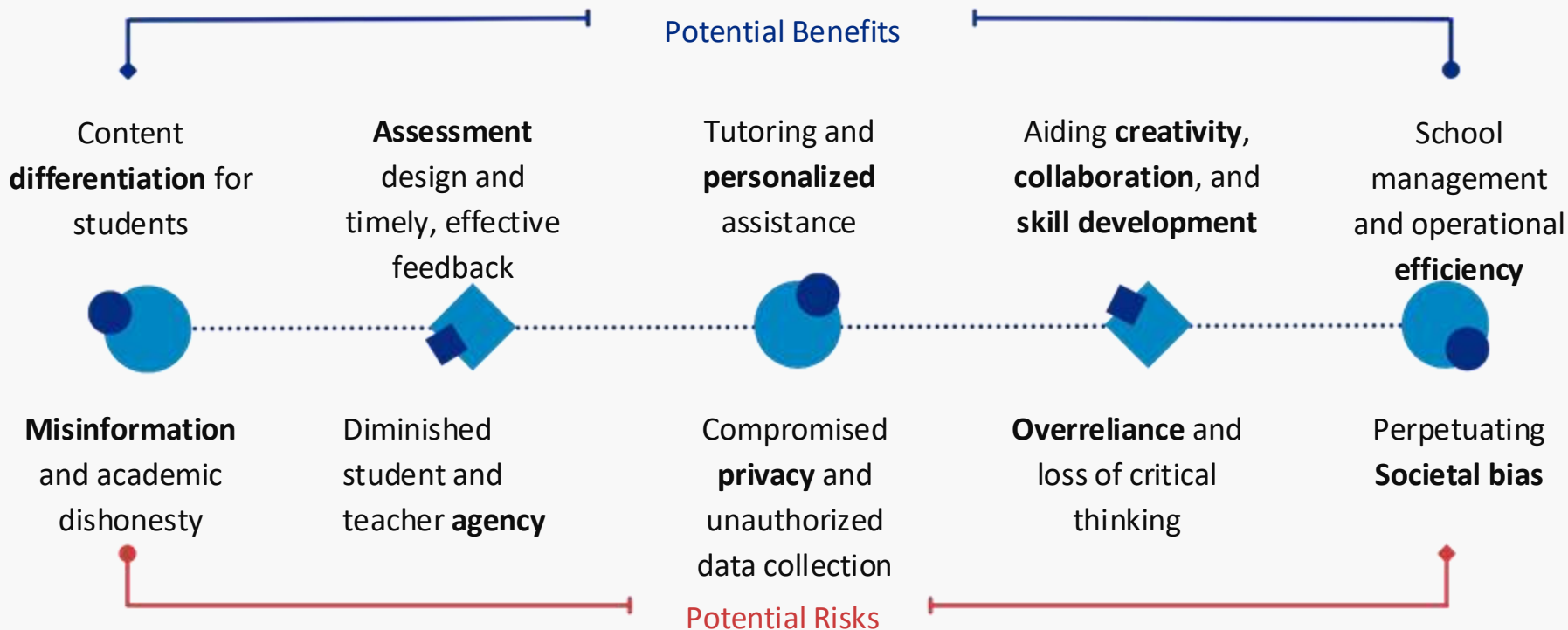
- Writing clear, grammatically correct text
- Explaining complex topics in simple terms
- Generating creative ideas
- Adapting its writing style for different audiences

What It Struggles With:

- Understanding deep context beyond its training
- Performing complex calculations
- Making ethical judgements

AI hallucinations where models generate content that is factually incorrect.

Benefits and Risks



Slide from TeachAI

Stakeholder Voices

Students' Concerns:

- 62% worry about data privacy and security
- 72% seek guidance on responsible use of AI in academics

Teachers' Perspectives:

- 60% recognize AI literacy as crucial for future employment
- 79% report lack of clear AI policies in their schools

Parents' Outlook:

- 67% see AI benefits as equal to or outweighing risks
- Only 53% believe schools are preparing students for an AI future

“AI can also help educators identify gaps in student knowledge and provide targeted interventions to help students overcome their weaknesses.”

Cambridge Teacher

Are Teachers Prepared?

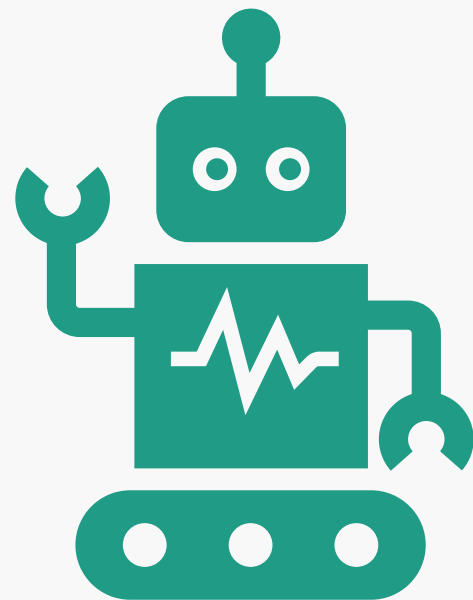
Teacher AI Readiness Gap

- Only 20% of teachers feel prepared to use Generative AI in their teaching, while just 29% have received any AI-related training
- Urban schools and lower-income districts show lower rates of AI professional development
- Primary grade teachers have less access to AI training than their secondary counterparts

Cambridge's Approach

What is Cambridge doing?

- Regular and ongoing engagement with Cambridge teachers on the use of AI
- Researching how generative AI can be used by students to complete assignments
- Researching the efficacy of AI tutors
- Exploring AI-assisted marking
- Building chatbots to support teachers
- Getting Started with Artificial Intelligence – out end February 2025



Getting Started with AI

About the guide

A practical resource designed to help teachers understand and implement AI in their classrooms, regardless of their technical expertise. It covers fundamental concepts, benefits, challenges, and practical implementation strategies.

This guide aims to:

- Help teachers understand AI and its role in education
- Provide practical strategies for classroom implementation
- Address common concerns and misconceptions
- Support the responsible and effective use of AI in teaching
- Maintain focus on pedagogical excellence while leveraging AI tools

Implementation in the Classroom

Benefits of AI in the Classroom

Personalised learning: adapt lessons and activities to each student's level.

Increased engagement: immerse students in interactive environments.

Support for diverse needs: assist students with disabilities, language barriers or specific learning challenges.

Data-driven insights: analytics on student performance, enabling targeted intervention.

Time saving: automated grading and administrative tasks.

Concerns

Will AI replace teachers? Unlikely. AI is a tool to assist, not substitute, the empathy and creativity teachers provide.

Training & Costs: Not all AI tools are expensive or complicated. Many user-friendly or free tools exist.

Data Privacy: Critical to choose reputable platforms that protect student data. Communicate clearly about what data is collected.

Accuracy Issues: AI may produce incorrect or biased answers. Always review AI-generated content.

Academic Honesty: Encourage tasks that require higher-order thinking to minimize cheating or overreliance.

Practical Tips for Teachers (1/2)

Start Small: Pick one or two AI tools that address a clear need (e.g., marking quizzes, generating quick feedback).

Personalised Learning: Look for tools that adapt to each student's performance—particularly helpful in mixed-ability classrooms.

Language Support: Tools such as translation apps or text-to-speech can benefit multilingual or SEN students.

Collaboration: Some AI tools let students work together in real time, enhancing teamwork and communication.

Self-Assessment: Encourage learners to use AI feedback tools to reflect on their work before you give final input.

Practical Tips for Teachers (2/2)

Teach Prompt-Crafting: Show students how to write clear, specific prompts to get the best answers from generative AI.

Automate Routine Tasks: AI can handle administrative or repetitive tasks, freeing up time for student-focused activities.

Ethical AI Use: Discuss data privacy, bias, and responsible usage openly. Check compliance with regulations (e.g., GDPR).

Stay Updated: AI evolves quickly; subscribe to edtech newsletters, join online communities, and share best practices.

Checklist

Identify Needs: Pinpoint areas where AI can meaningfully enhance learning or reduce teacher workload.

Set Objectives: Have a clear pedagogical purpose (e.g., personalized feedback, boosting engagement).

Right Tools: Research reviews, check data protection policies, and test demos before adoption.

Prepare Stakeholders: Communicate the role of AI to students, parents, and colleagues. Offer or seek training.

Monitor: Collect feedback, observe student engagement, and assess if AI tools meet your teaching goals.

Encourage Reflection: Have students think critically about the outputs they get from AI—promotes metacognition and digital literacy.

Any questions?

Niall McNulty, Product Lead
niall.mcnulty@cambridge.org