NIE
NATIONAL INSTITUTE OF EDUCATION SINGAPORE

An Institute of

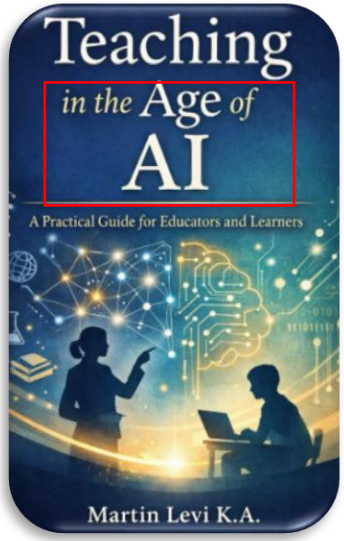
NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE



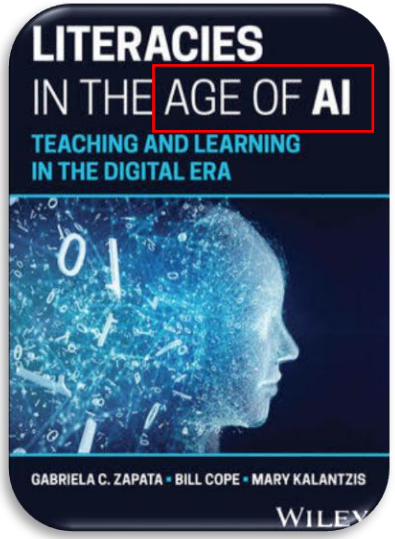
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Farhan Ali (farhan.ali@nie.edu.sg)
Assistant Professor

INSPIRING LEARNING
TRANSFORMING TEACHING
ADVANCING RESEARCH



www.amazon.sg



www.wiley.com

NUS news

What makes great teaching in the age of AI

SMU
SINGAPORE MANAGEMENT UNIVERSITY

Home / Highlights

Human-Centred Learning in the Age of AI:

…. The Age Of AI

Teachers In The Age Of AI

***Not an idea from AI**

An Institute of

NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE



???

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Why Age of Teachers?

Problems and Challenges

Students are becoming more bored globally

Students are becoming less curious globally

Unsupervised AI use can be harmful

Supervised AI use can be inequitable

Teachers play even more critical human roles

Why Age of Teachers?

Problems and Challenges

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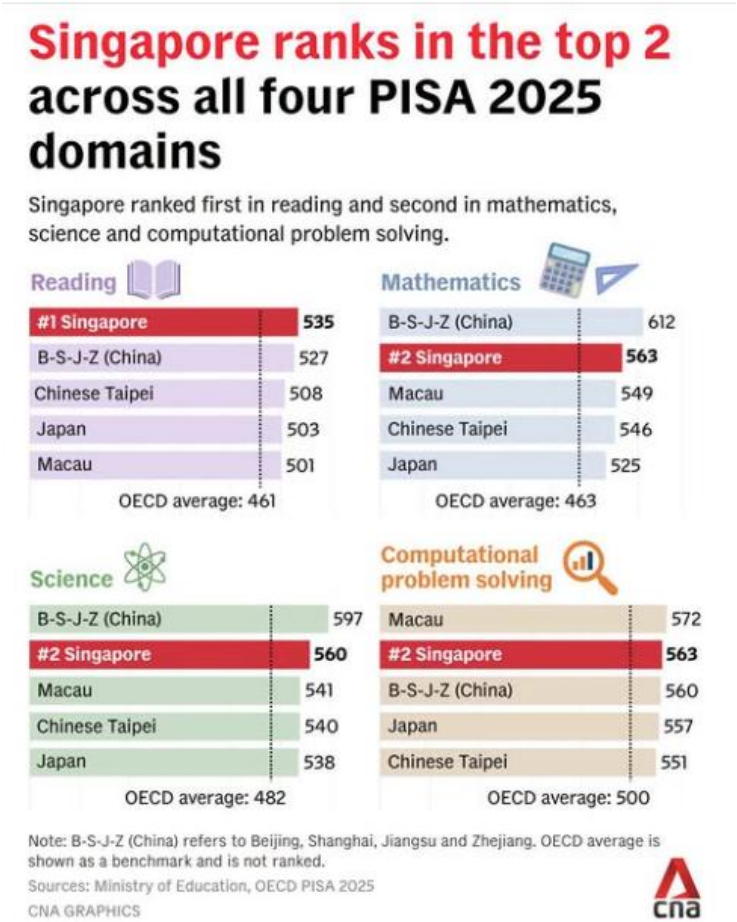
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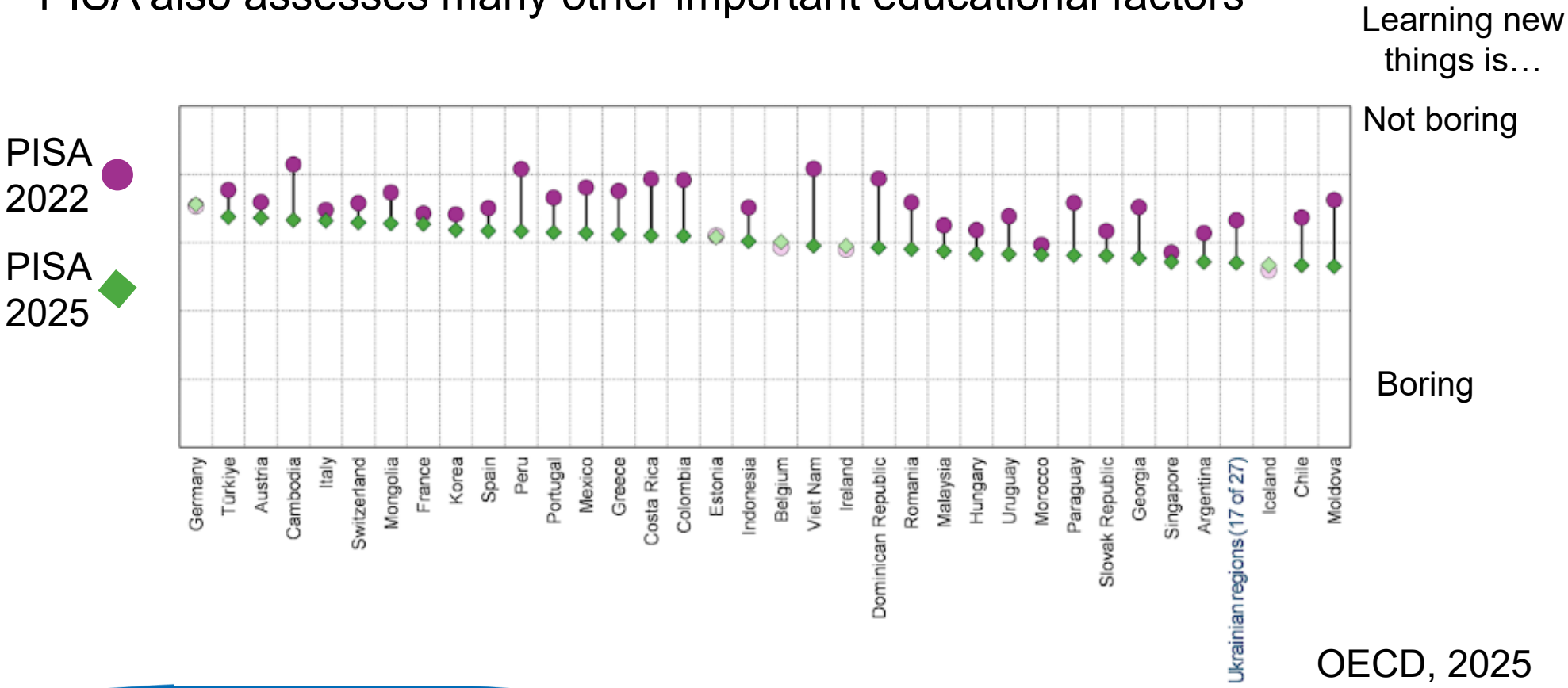
Students are becoming more bored globally

Programme in International Student Assessment (PISA)



Students are becoming more bored globally

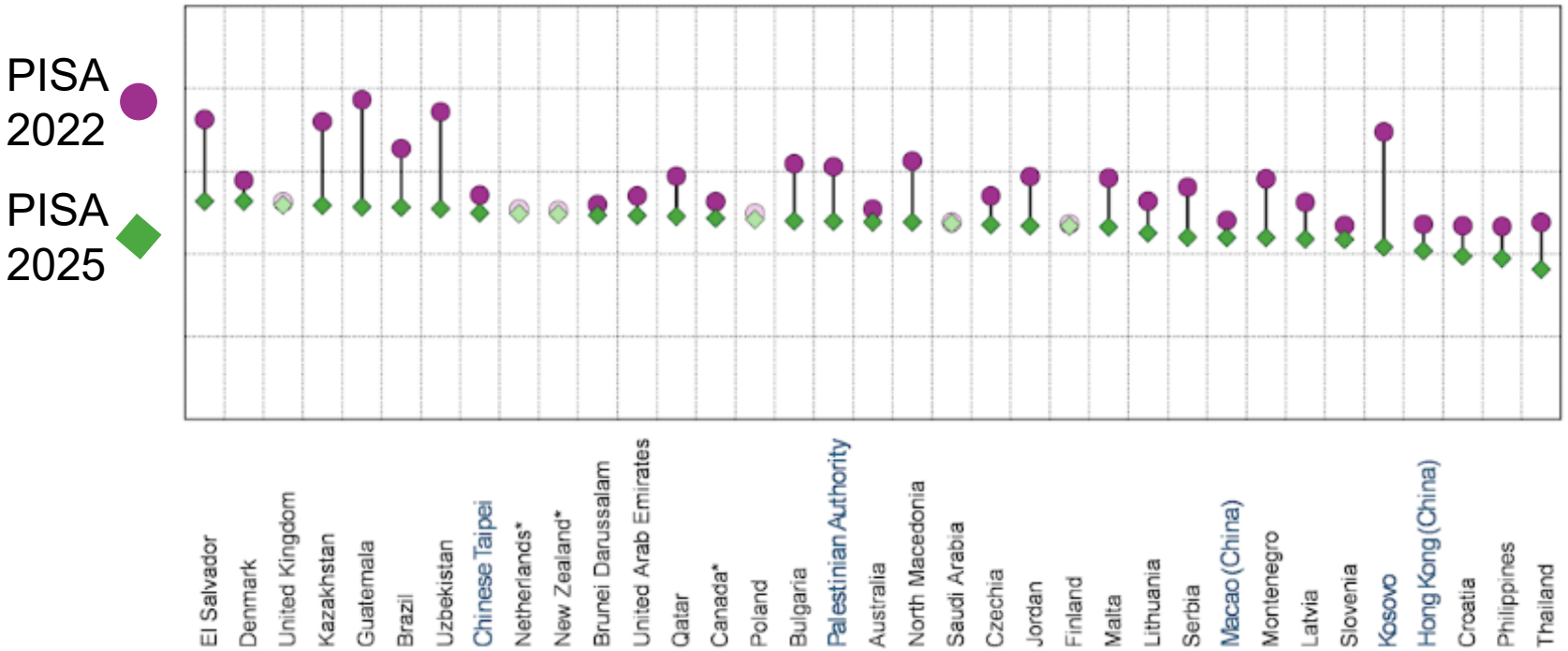
PISA also assesses many other important educational factors



OECD, 2025

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Why Age of Teachers?

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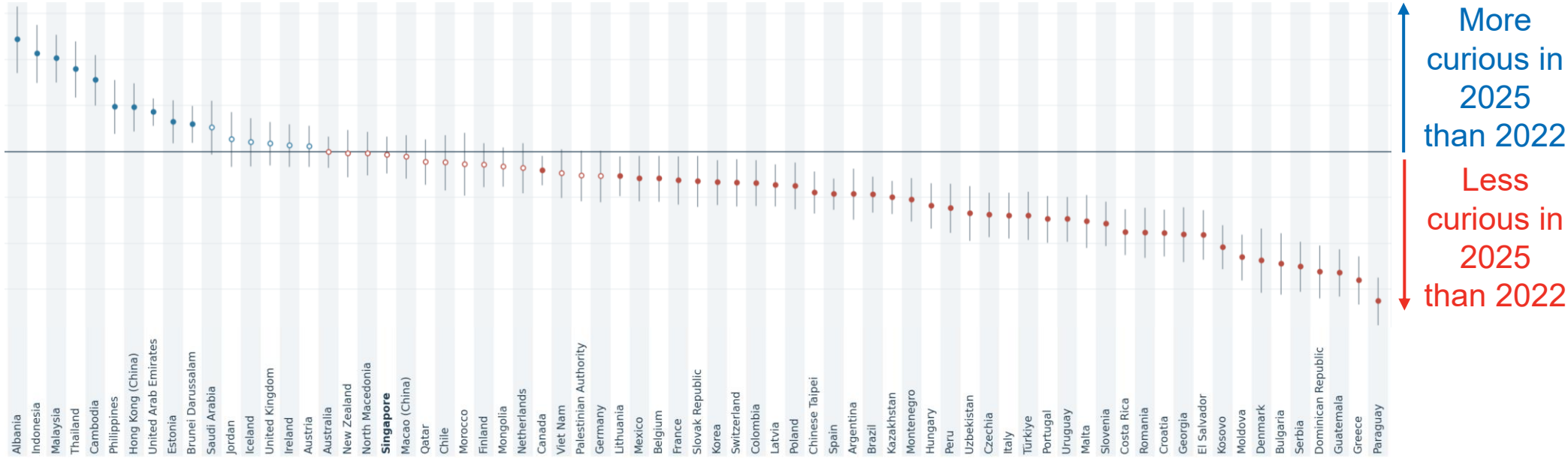
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But why?

School becoming less meaningful and purposeful

Alternatives outside of schools and classrooms

Why?

Relationships with other humans weakening

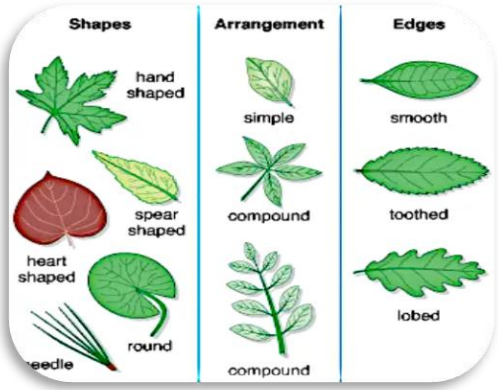
High pressure environment removes the joy of learning

Online distractions and isolation

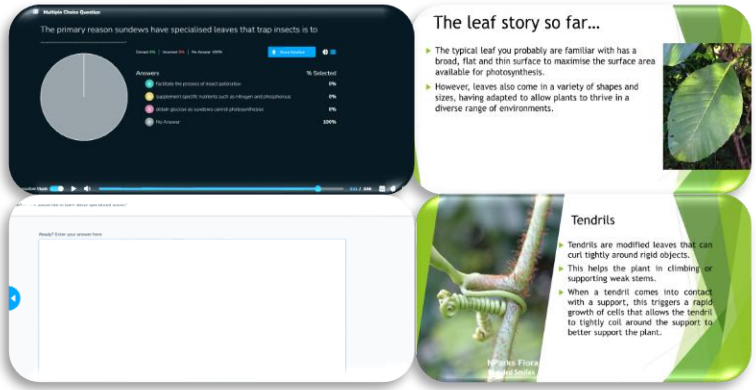
What is the role of teachers?

What is the role of teachers?

Designing autonomy-supportive environments

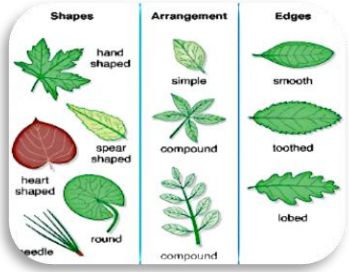






What is the role of teachers?

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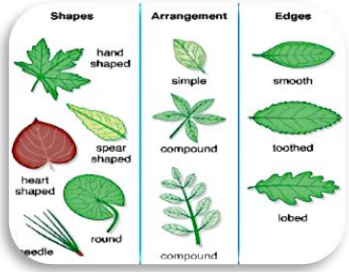


Let students decide, explore, and investigate!

N = 146 students, from 8 Sec 3 classes

What is the role of teachers?

Designing autonomy-supportive environments





Let students decide, explore, and investigate!

Class lesson effects (within 1 hr)

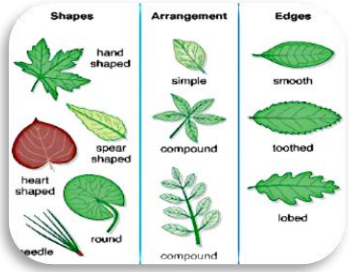
- ↑ Curiosity 🤔
- ↑ Joyfulness 😃
- ↑ Effortfulness 💪
- ↓ Negative emotions 😠

N = 146 students, from 8 Sec 3 classes

versus regulation teaching

What is the role of teachers?

Designing autonomy-supportive environments





Let students decide, explore, and investigate!

Class lesson effects (within 1 hr)

- ↑ Curiosity
- ↑ Joyfulness
- ↑ Effortfulness
- ↓ Negative emotions

Post-lesson effects (2 weeks later)

- ↑ Optional online learning
- ↑ Cognitive effort
- ↑ Curiosity

N = 146 Singaporean students from 8 Sec 3 classes

versus regulation teaching

Zhao & Ali (2026)

What is the role of teachers?

Improve online learning

by enhancing CLASSROOM

experiences

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Unsupervised AI use can be harmful

Students are not fully equipped to use Generative AI on their own

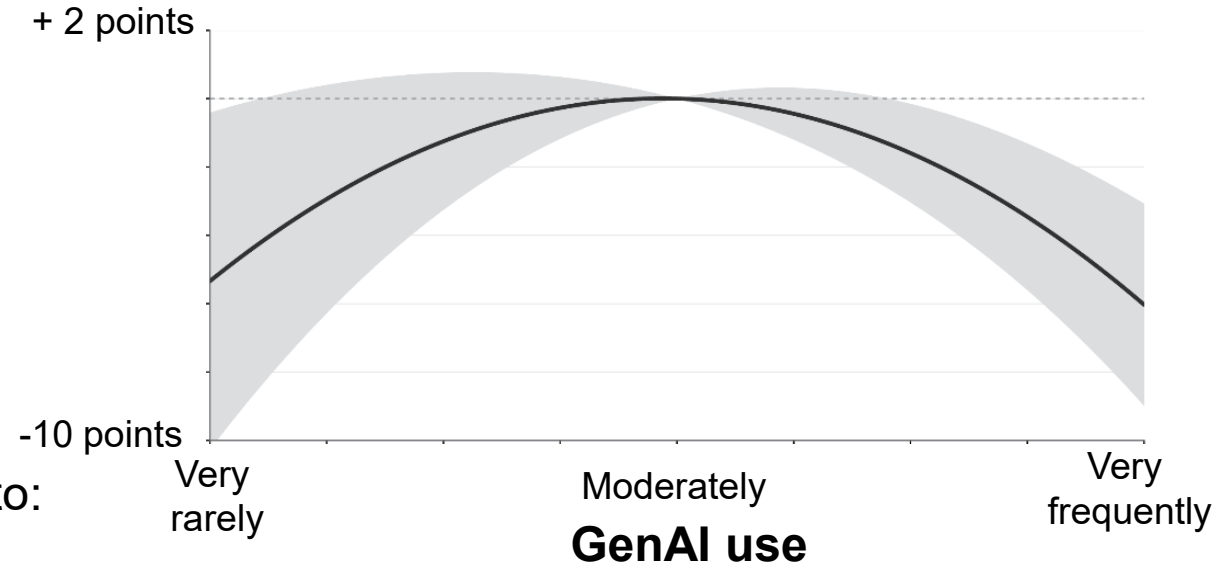
Our analysis of ~0.5 million students from 70+ countries in PISA 2025

Students used GenAI unsupervised to:
- Draft writing assignments
- Summarize text they need to read

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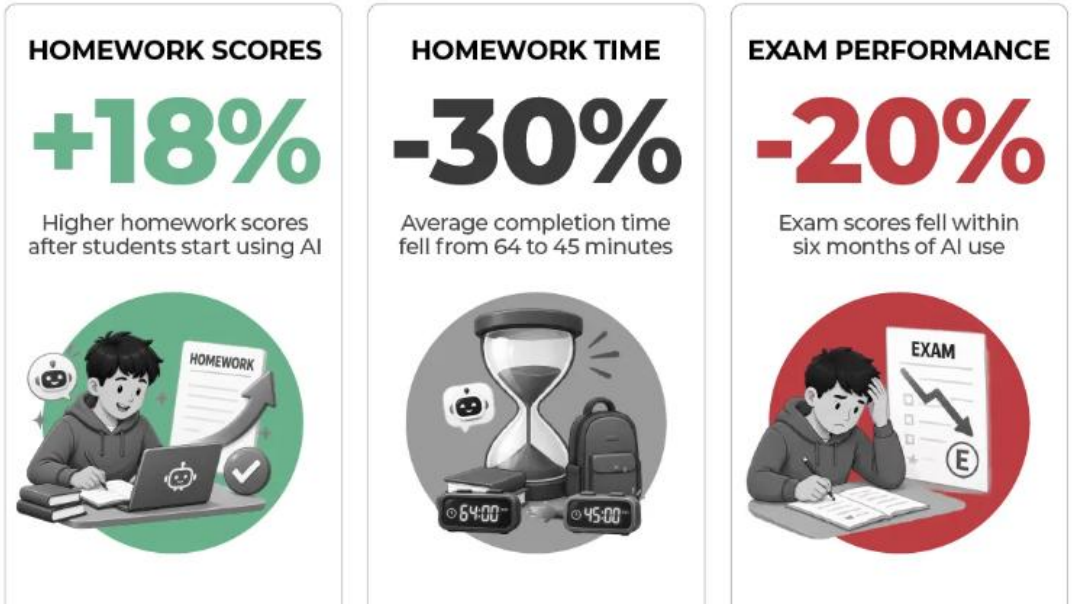
Unsupervised AI use can be harmful

Students are not fully equipped to use Generative AI on their own

With GenAI use at home:

Homework scores increased
Homework time decreased

But exam performance decreased



www.aljazeera.com
Stromberg et al. (2026)

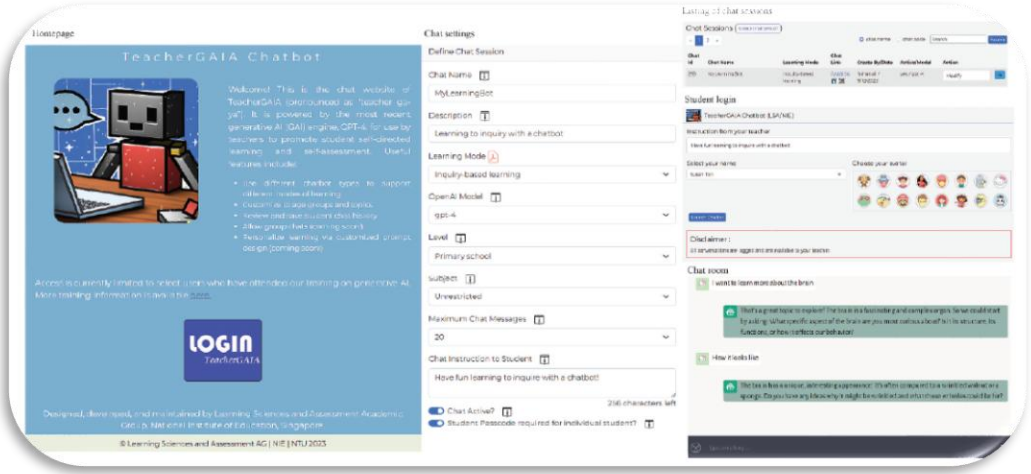
What is the role of teachers?

Designing GenAI environments that foster durable learning

AI-assisted task completion → Independent competence

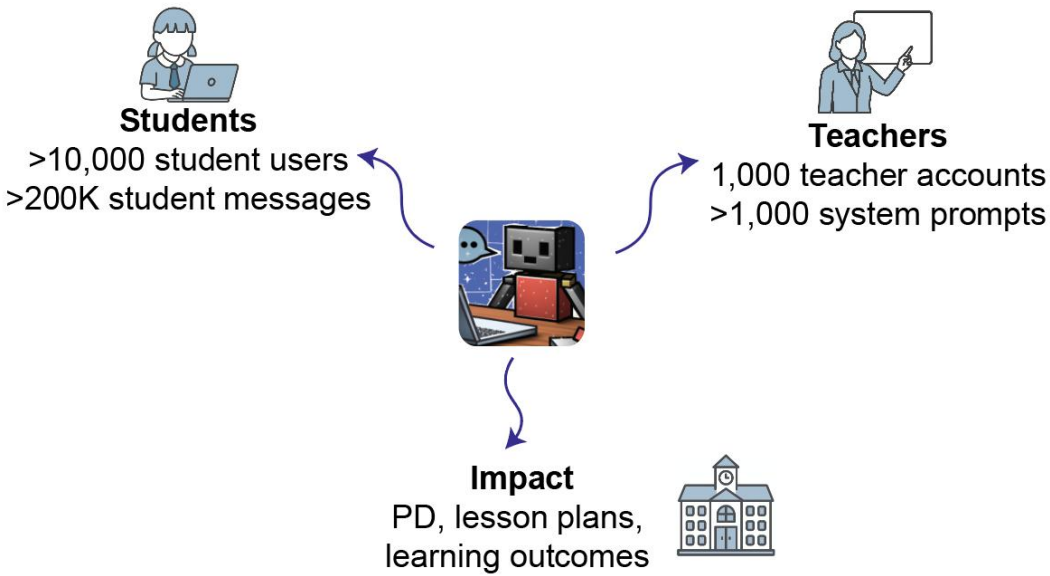
What is the role of teachers?

Designing GenAI environments that foster durable learning



TeacherGAIA GenAI platform

Ali et al. (2023)



What is the role of teachers?

Designing GenAI environments that foster durable learning

Teacher designed chatbots



Student usage

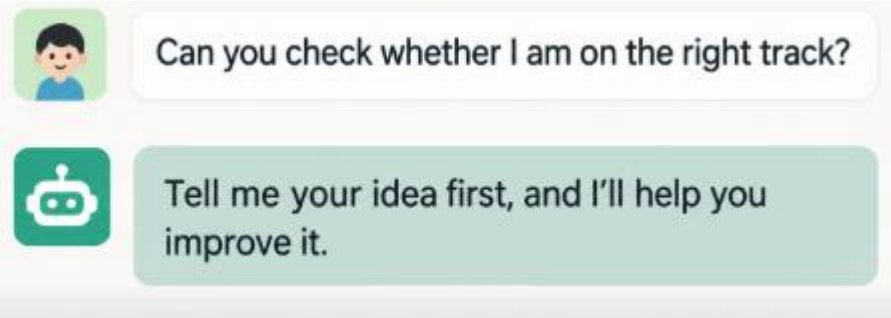
- Clarify confusion
- Self-assess
- Provide feedback
- Little direct answers

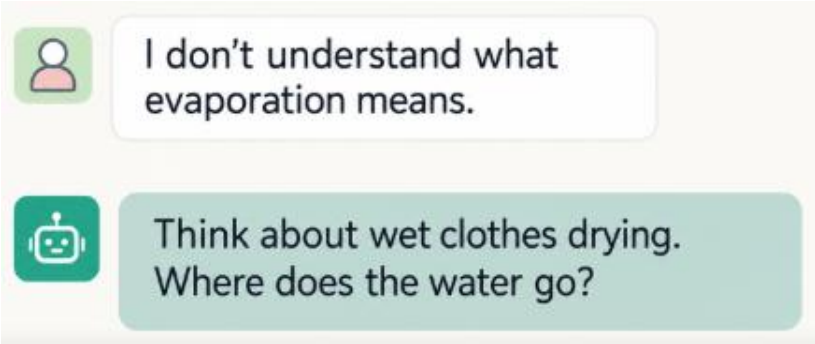
Assessment
closed-book
without use of any GenAI

N = 378 Singaporean students
from 16 Pri 5 to Sec 3 classes

What is the role of teachers?

Designing GenAI environments that foster durable learning

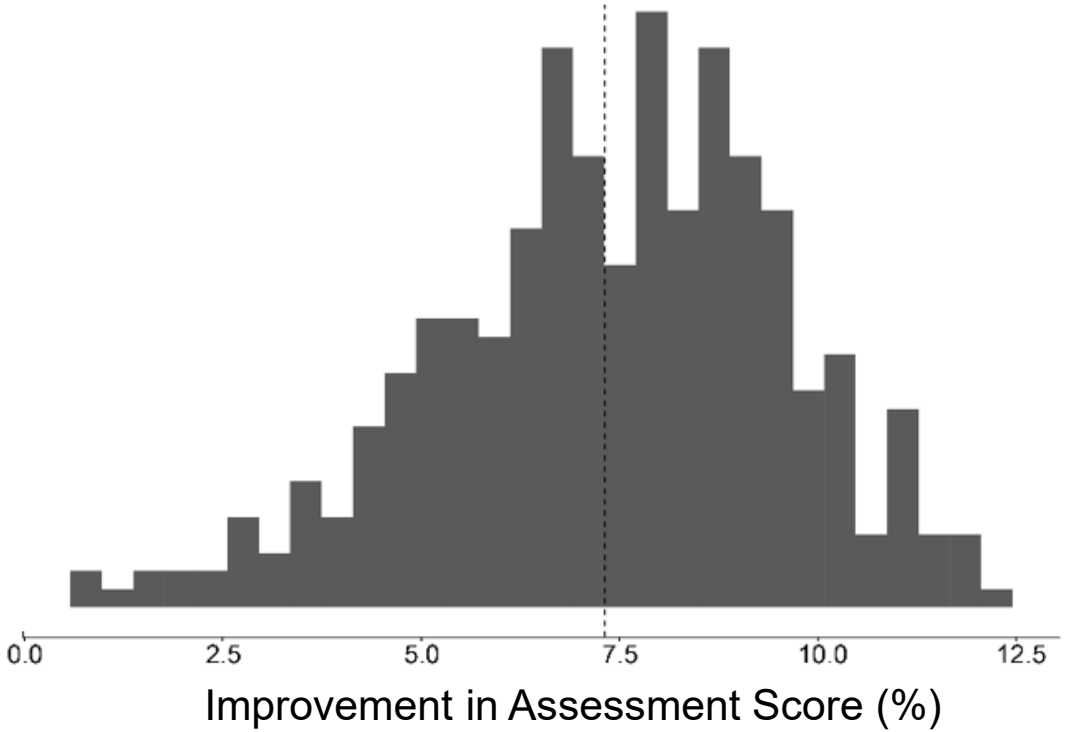




What is the role of teachers?

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Average improvement of 7% points in closed-book assessment



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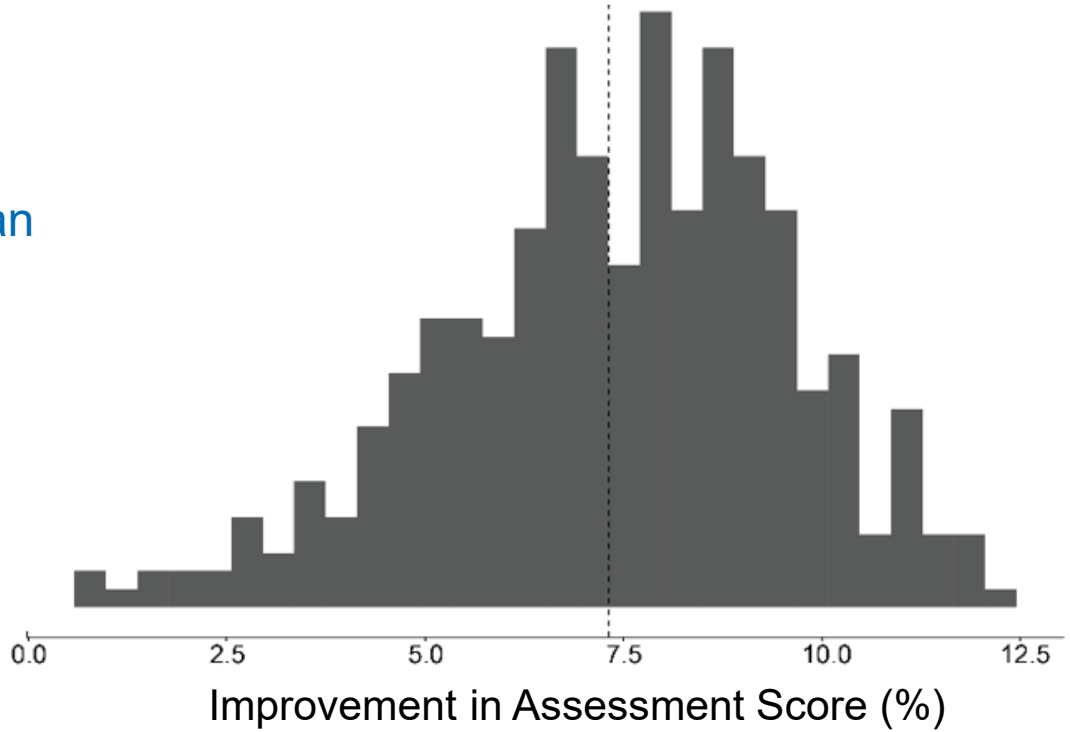
Supervised AI use can be inequitable

Teachers play even more critical human roles

Supervised AI use can be inequitable

Why are some students benefiting more than others?

Improvement can vary from 1% to 12% points



Supervised AI use can be inequitable

Why are some students benefiting more than others?

BEFORE the intervention, students with more:

Critical thinking 🧐

Prior knowledge 📖

Curiosity 🤔

→ ↑ Improved assessment scores even more

Supervised AI use can be inequitable

Why are some students benefiting more than others?

BEFORE the intervention, students with more:

Critical thinking 🧐

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AI is a rising tide that lifts some boats higher than others

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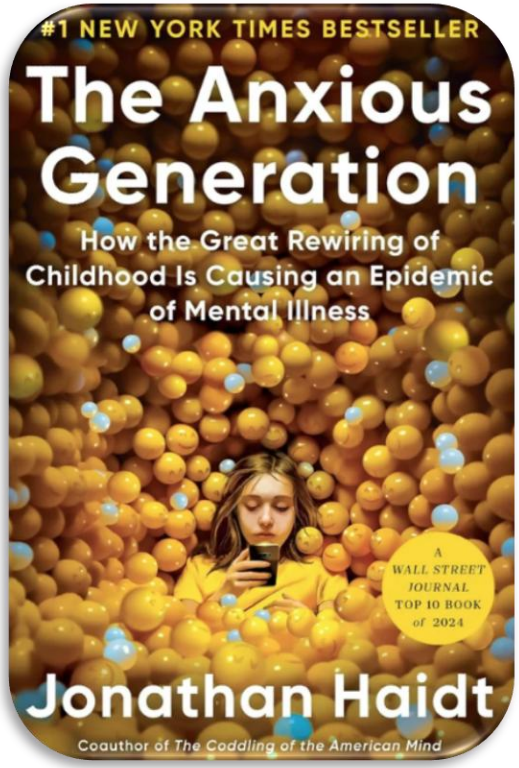
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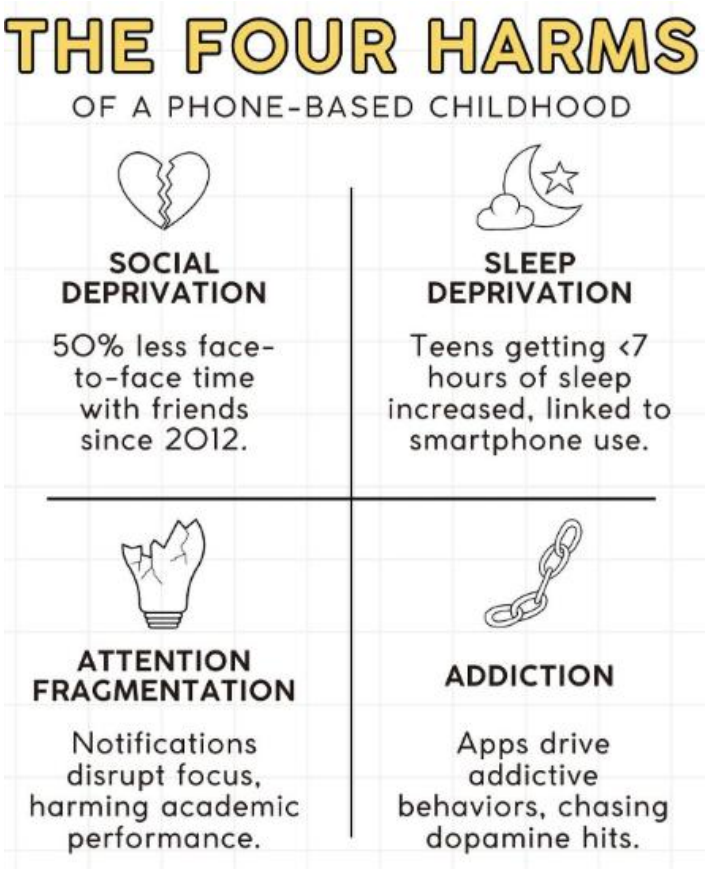
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Promises and perils





SLP Book Club

Promises and perils

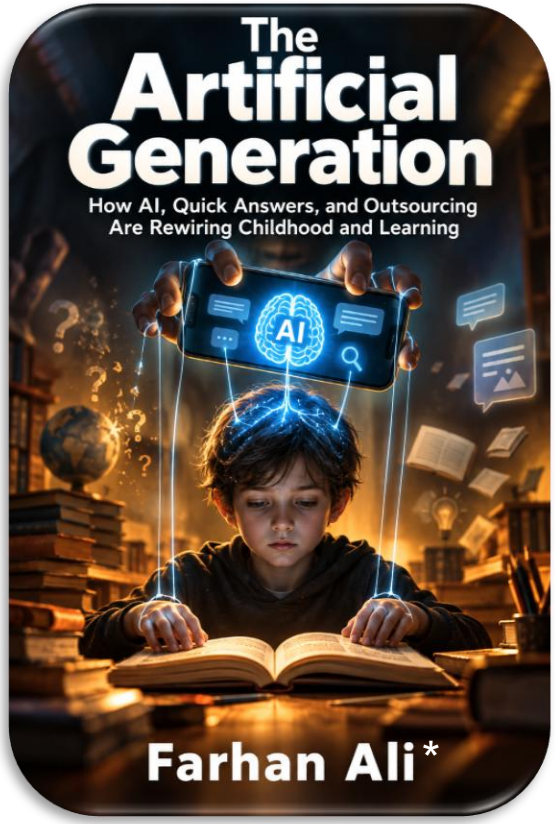


Image generated by ChatGPT

*Yet to write!

THE FOUR HARMS

Of GenAI use in education

Cognitive Laziness
Quick answers reduce cognitive effort

Loss of agency
AI decides and dictates

Never-skilling
Foundational skills are not developed

Digital divide
The rich get richer, the poor get poorer

Teacher Roles

Governance and oversight of AI in Education

Learning designers: Independent competence

Role models and facilitators

Human presence





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National Institute of Education

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