



AI in Education

PERSPECTIVE FROM SOUTHEAST ASIA

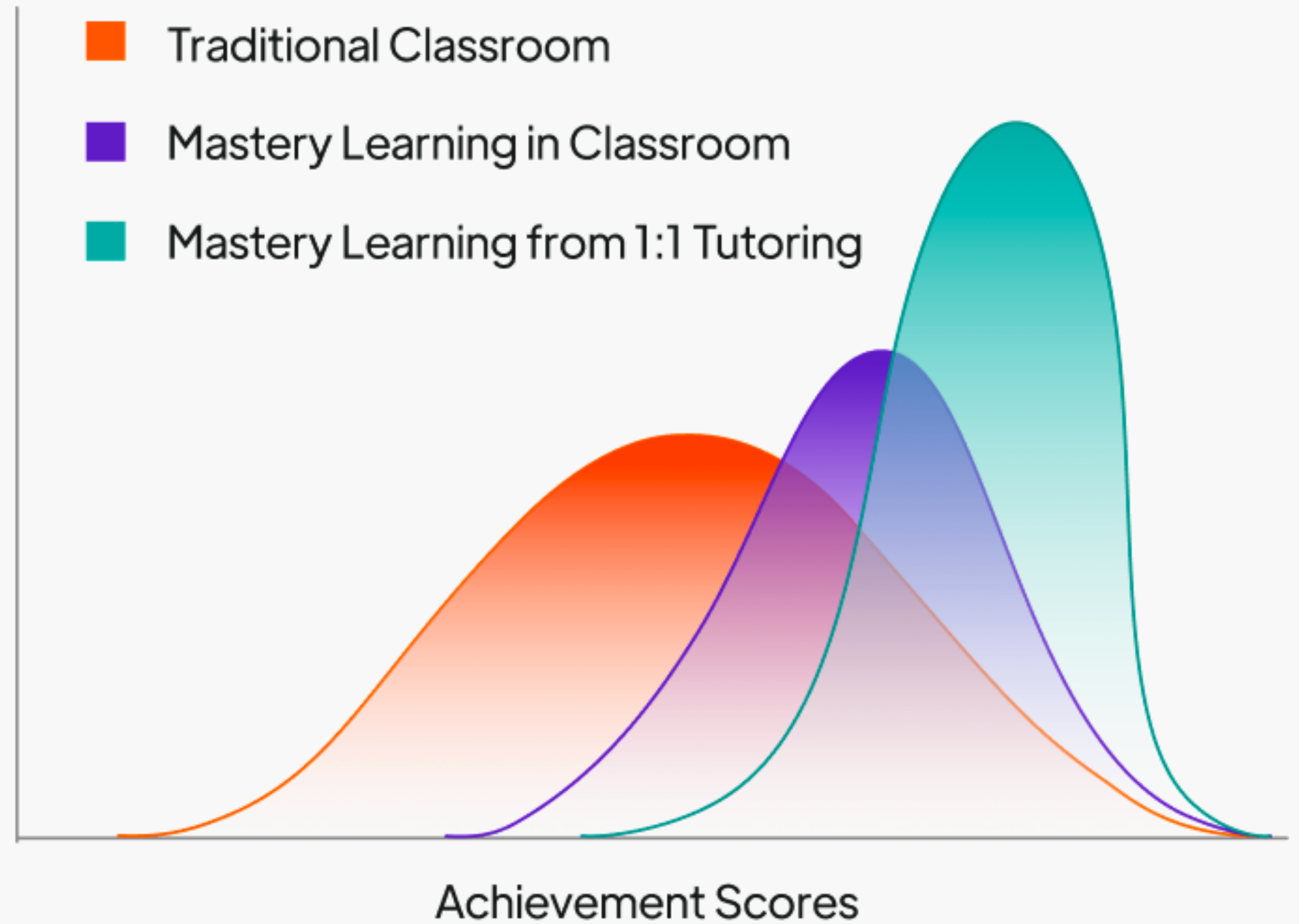
DR. KRITSACHAI SOMSAMAN
SEAMEO STEM-ED DIRECTOR



**The 2 Sigma Problem: The Search for
Method of Group Instruction as Effective as
One-to-One Tutoring**

**Benjamin S. Bloom
University of Chicago and Northeastern University**

Achievement Distribution for Students





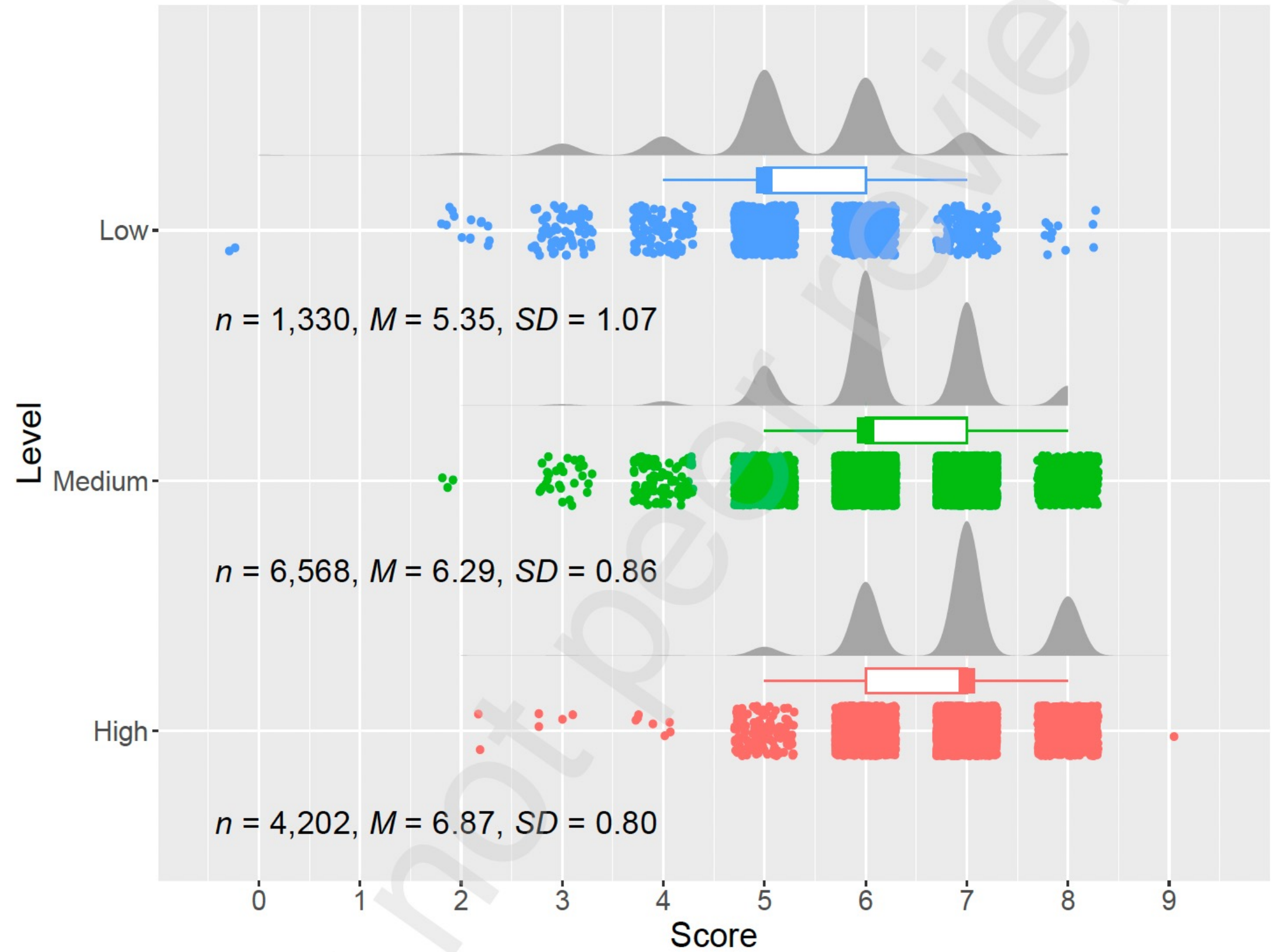
Research into the effectiveness of Generative AI within educational settings is more exploratory in nature than confirmed by extensive empirical evidence at this stage.



Distribution of Scores Given by GPT to Each Level of TOEFL11

Exploring the Potential of Using an AI Language Model for Automated Essay Scoring

Mizumoto & Eguchi (2023)





Monitoring AI Impact

- **Teacher and Student Satisfaction:** Use surveys, interviews, and feedback mechanisms to gauge the satisfaction of teachers and students with AI tools.
- **Learning Outcomes:** Evaluate how AI impacts learning outcomes, such as student grades, comprehension levels, and skill acquisition. Metrics should be aligned with educational goals and standards.
- **Engagement and Motivation:** Monitor changes in student engagement, participation, and motivation as a result of using AI tools.
- **Accessibility and Inclusivity:** Assess how AI technologies improve accessibility for students with disabilities and promote inclusivity in diverse educational settings.



Questionnaires and focus groups study - 450 students

Liu, D.; Bridgeman, A.; Chan, Y.K.C. (2023)

if university wants to prepare people for later in life, why not encourage usage of a tool that would be available to us outside a strict academic setting?

for learning, it's [like] an upgraded version of Google. Let's say if you are new to a topic, you can ask ChatGPT questions and treat it as interactive Wikipedia.

I simply put the whole assignment in to see what it would generate. The answer was quite abysmal [...] This was really valuable information because I developed critical thinking while critiquing its work.

all students should have the same resources as one another, being of a lower income should not be a reason why other students can do their assessments more efficiently.



Pedagogical Principles

Learning Support *Tutor Should:*

- Enable the student to **successfully complete the problem.**
- Promote **abstract understanding** of the problem, not focus on specific steps
- **Communicate the goal** of the problem-solving situation.
- Provide instruction in the **problem-solving context.**

Cog. Load/Feedback *Tutor Should:*

- Minimize **working memory load**
- Provide **immediate feedback**
- Enable learner to construct explanations by **pumping, prompting, hinting, elaborating, or course correcting**

Adaptive Instruction *Tutor Should:*

- Teach **complete set of rules** needed to master a skill.
- **Adjust the grain size** of instruction and **reduce support** as the student progresses.
- Promote **self-regulated learning** / metacognitive skills



Research Questions

Learning Support

Are students who use Khanmigo **less likely to give up** when working on exercises; do they **make more progress** in the course, and does the progress translate to **learning gains on an external measure**?

Are there differences in learning depending on **how (in what context) students use Khanmigo**? (e.g activities vs exercises, similar examples vs help me solve this)

Cognitive Load/Feedback

Does Khanmigo help address student **misconceptions** and does that reduce time it takes to learn complex skills?

Which **effective tutor behaviors** occur naturally when Khanmigo responds? (pumping, prompting, course correcting)

Adaptive Instruction

Do students **develop more effective ways of interacting over time** (eg. to they seek help more sparingly, offer more substantive responses)?



The most powerful use case of AI

“AI to enhance HI”

How AI Could Save (Not Destroy) Education | Sal Khan