

Integrating GenAI into an Introductory Data Literacy Course

XU Yuhong, CHAN Mun Keet Walter, SEAH Zong Long, SOON Wan Mei Amanda · Office of the Provost

Integrating *Lyra*, a purpose-built AI tutoring platform, into GEA1000 Quantitative Reasoning with Data, to develop critical AI literacy and higher-order data reasoning across diverse disciplines.

Teaching Challenges & Objectives

GEA1000 enrolls students across disciplines with varying aptitudes. Two challenges motivated GenAI integration:

- Limited class time to build higher-order data literacy
- Wide range of queries tutors could not efficiently address

Objective: Equip students to apply higher-order data reasoning skills in real-world contexts and their disciplines — and to do so as informed, discerning users of AI

Implementation: *Lyra* Platform & Tutorial Design

Building *Lyra*

System design

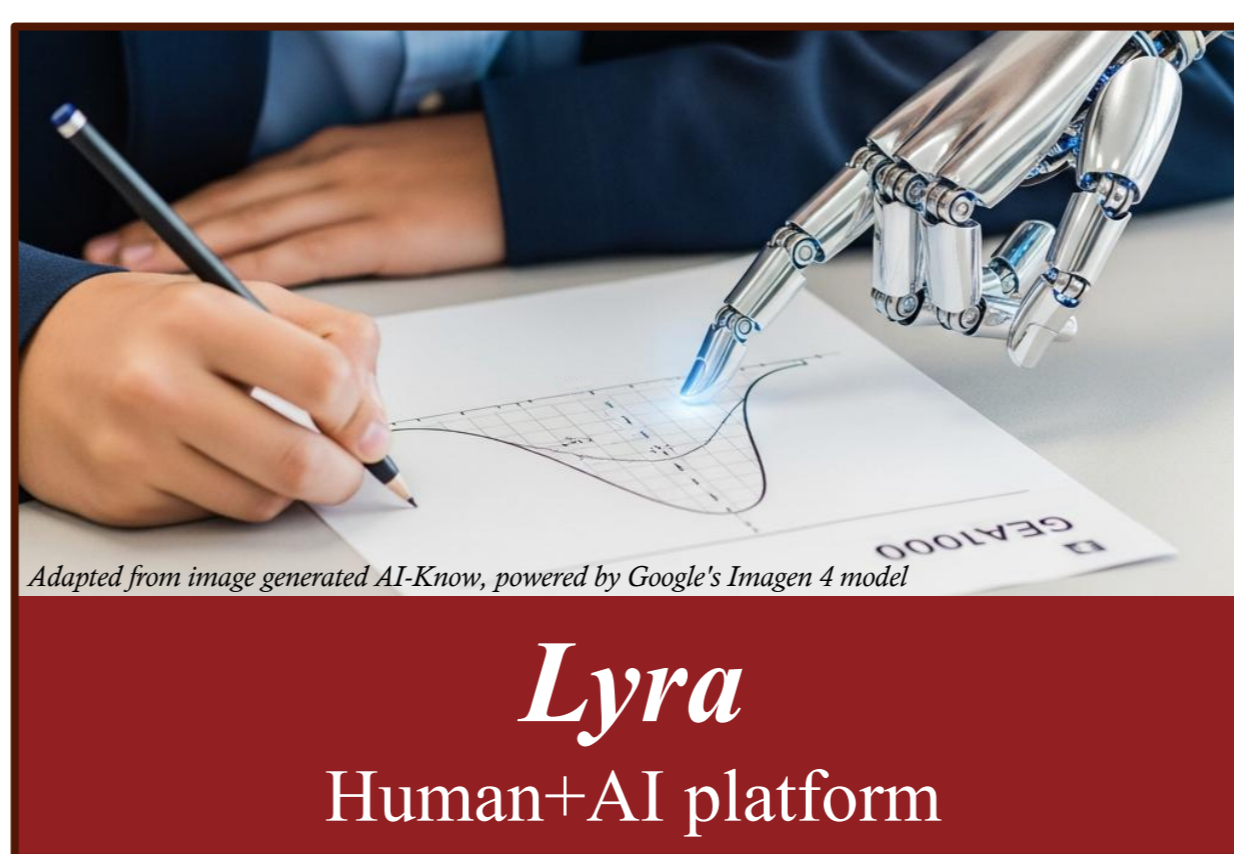
Prompt enrichment, scaffolding, learning tools

Curated materials

provide pedagogical guidelines, course specificity

Human Tutors

provide oversight, intervention



Designed to address:

- Disciplinary specificity
- Course specificity
- Logical reasoning
- Instructional efficacy
- Response trustworthiness



Learn more:

Tutorials: Intentional design to showcase a range of meaningful AI usage, their strengths and limitations.

Craft and Critique arguments and narratives

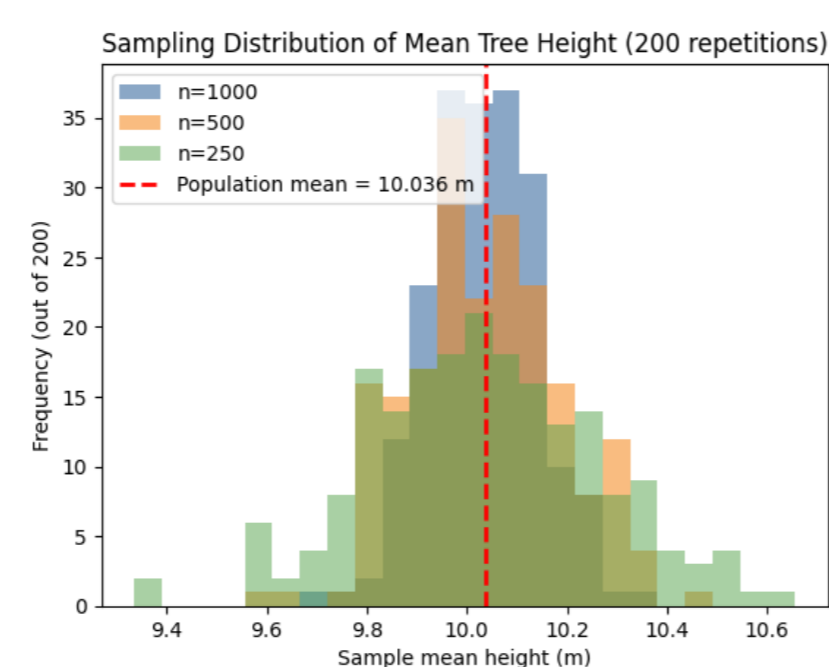
“Based on the study, argue if the ban on vaping in Singapore is justified”

Lyra generated arguments for and against vaping using the data from the same paper, which students critiqued and used to articulate their own positions.

Gaining insights

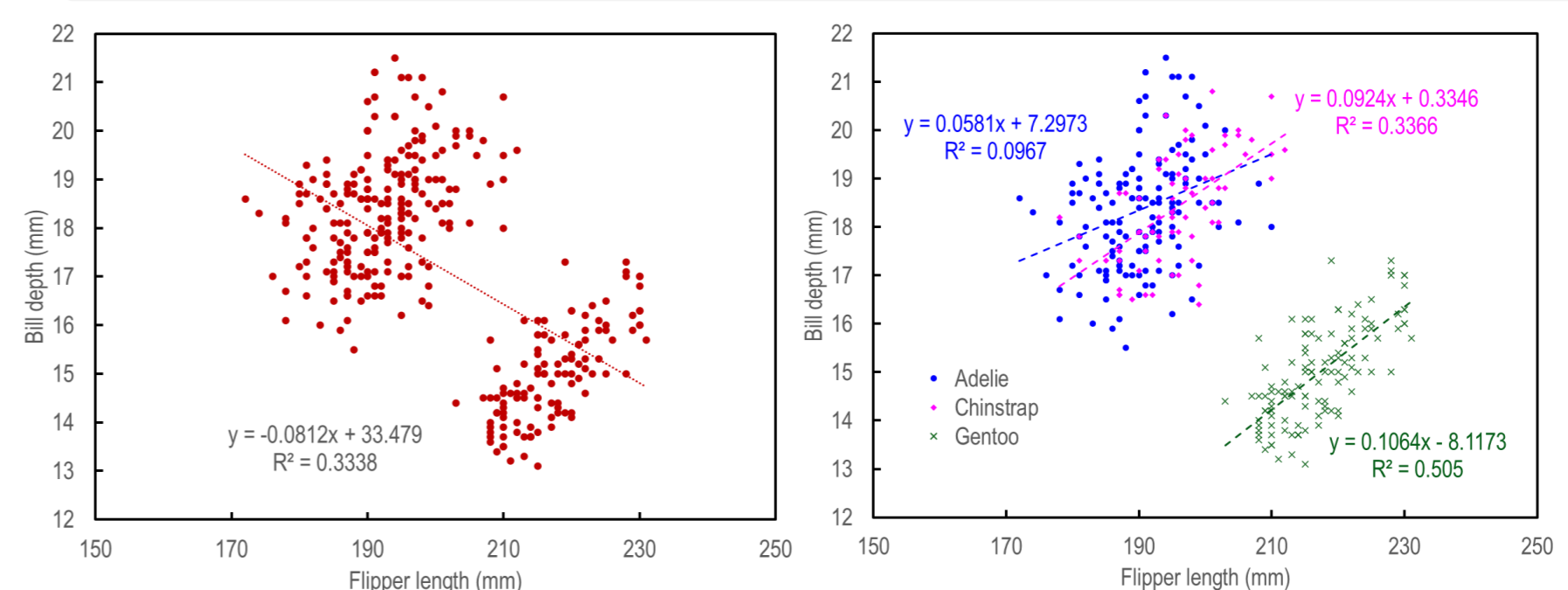
“Generate 200 random samples. Chart the sample means and showcase the effect of sample size.”

Lyra supported intuitive understanding of the Central Limit Theorem by providing a visual interpretation



Perform tedious work

“Identify the variable responsible for the separate clusters of data”



Lyra streamlined workflow from exhaustive trial-and-error identification of variables to targeted hypothesis validation.

Reflections & Key Takeaways

Students found *Lyra*...

Aided their understanding by summarising and contextualising complex data literacy concepts

Tutors found *Lyra*...

- Catalysed discussion and fostered higher-order thinking through critique
- Provided valuable "window" into student misconceptions

Challenges:

- AI-augmented activities require class time for exposition and prompting
- Technical disruptions can derail lesson flow

Suggestions for Educators

1

Choose a Course-Specific AI

Lyra provides improved response reliability and instructional alignment over general LLMs

2

Design classes to showcase AI

Deliberately expose students to AI's strengths and limitations to build critical AI literacy alongside content knowledge

3

Anticipate practical challenges

Pilot tools in advance, build buffer time, and prepare contingency activities for technical disruptions

Intentional GenAI integration can shift classroom dynamics meaningfully,

boosting critical data and AI literacies and offering tutors valuable insight into student learning.