

Introduction

Generative AI (GenAI) models have increased in popularity for science communication due to their ability to generate natural language-sounding responses with colloquially familiar phrasing and can present as human conversations, with varying degrees of accuracy and success [1,2]. In higher education, students are increasingly reliant on GenAI to help explain complex topics that can be confusing or outside of their primary areas of expertise. **Science Literacy**, the capacity to interpret and reason through presented scientific information and understand the impact of science and technology on society [3], can be divided into three categories: Civic Science Literacy, Digital Media Literacy, and Cognitive Literacy [4,5]. Differences in Science Literacy can impact decision-making for individuals seeking to participate in activities like voting, receiving vaccinations, or even deciding whether to purchase “organic” produce. Yet, it is unclear whether content from GenAI platforms with familiar sounding words and phrases will improve an individual’s ability to further comprehend more complex information in the future, particularly when it comes to topics related to scientific disciplines. Here, we compare student quiz score responses and their self-reported confidence levels after reading scientific articles with and without the assistance of GenAI content summaries.

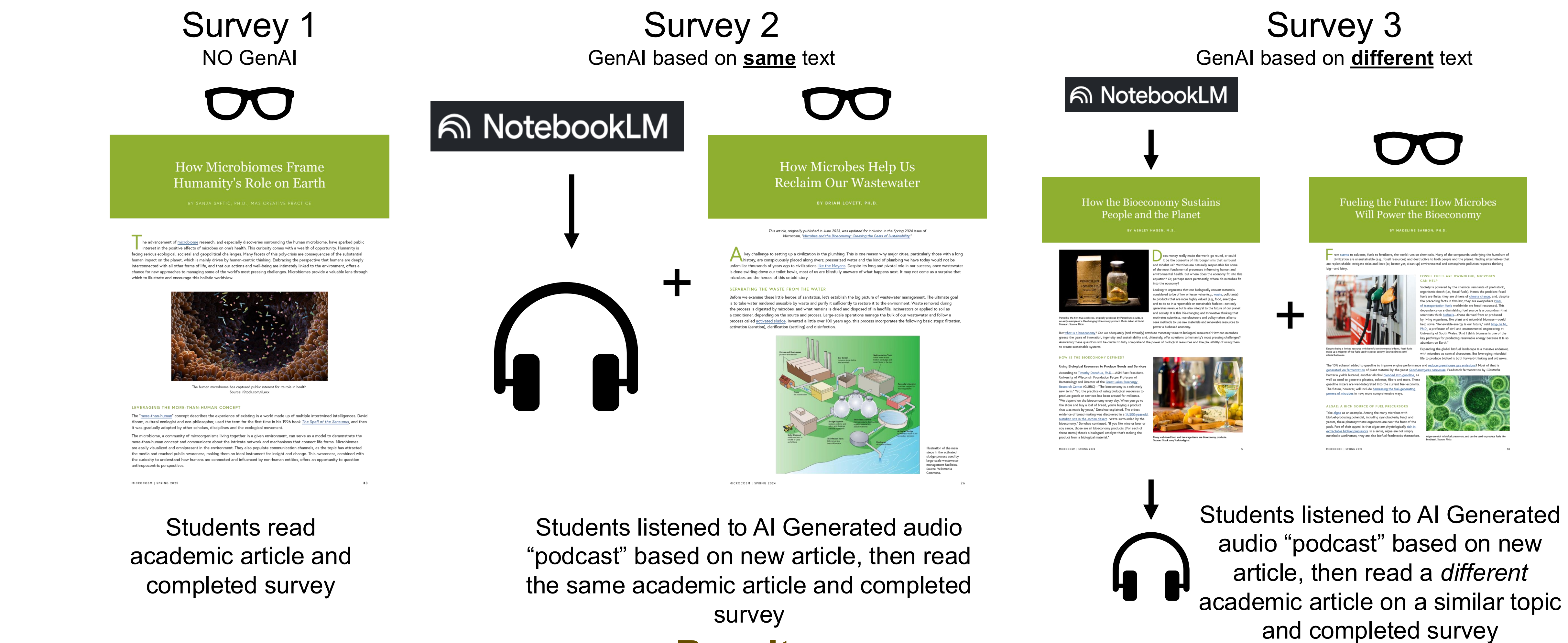
Interactive Section

Curious what it sounds like to listen to an AI-generated podcast? Scan the QR code below to listen!



Methods

Undergraduate students (n = 77) were recruited from a non-majors Biology course series focused on introductory microbiology. **Inclusion criteria** included completing prior terms of the course series with the PI as an instructor. **Exclusion criteria** included students who did not complete each survey or who did not consent to having responses used for data analysis. Mixed methods design recorded free-form written responses and multiple-choice quiz scores meant to assess degree of Science Literacy. Data analyzed with linear mixed-effects models in R.



Results

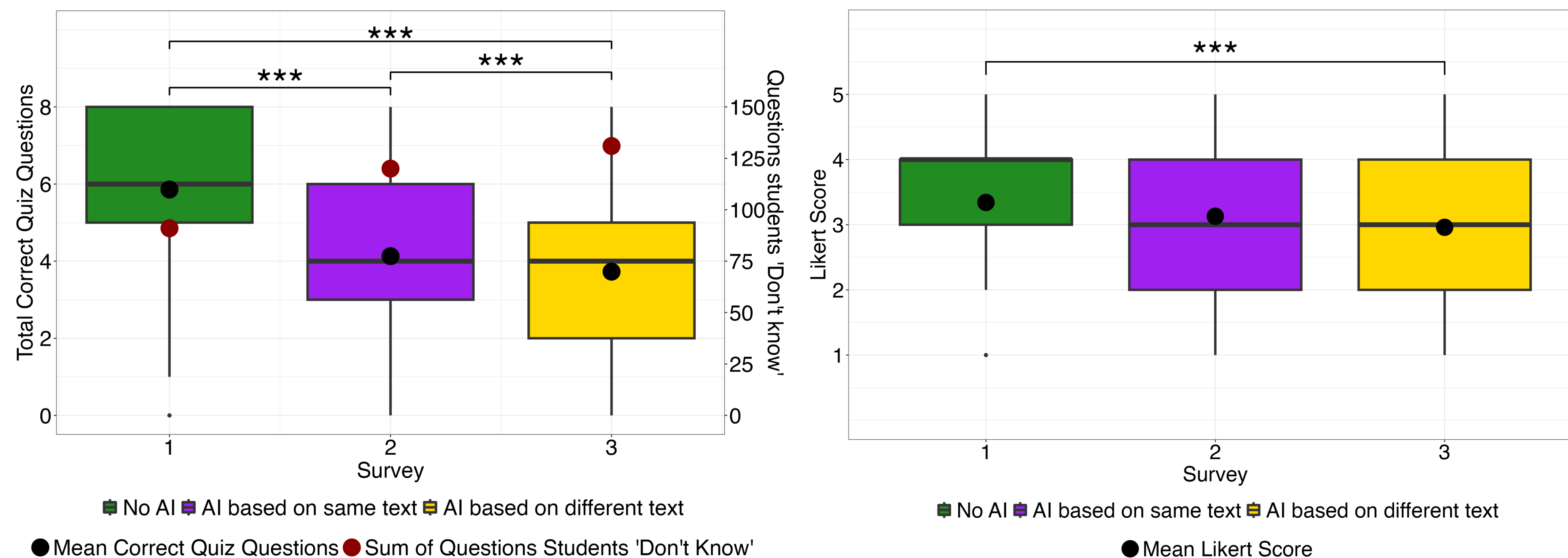


Figure 1 – Multiple Choice Quiz Scores. Student multiple choice quiz scores after reading three different biology related articles. Black dots represent mean quiz scores. Red dots represent the number of total questions students responded, “I don’t know/don’t remember”. Bars with asterisks above boxplots indicate significant ($p < 0.05$) comparisons for quiz scores across surveys.

Figure 2 – Likert Scores. Student Likert scores for Question 3 “I feel I have a strong grasp of the scientific concepts presented in the document” after reading scientific articles and completing surveys. Black dots represent mean Likert survey scores. Bars with asterisks above boxplots indicate significant ($p < 0.05$) comparisons for Likert scores across surveys.

Conclusions

Student quiz scores **decrease by >30%** when GenAI content is provided.

Students report **lower confidence** in their ability to grasp scientific information when presented with GenAI content compared to when no GenAI content is provided.

Caution should be used when using GenAI as a tool for content explanation and summary.

References

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