Accelerating Inequality in the Era of Generative AI

Economic circumstances, AI access, and academic performance

JoongWon Shin

Department of Computer Science and Engineering, Seoul National University

Introduction

The arrival of ChatGPT in November 2022 brought generative AI into widespread use. OpenAI subsequently introduced Plus ($20/month) and Pro ($200/month), differentiating GPT performance and access by price. If AI access depends on financial resources, this may deepen information gaps and disparities in learning outcomes.

Prior research has found a significant association between income and experience using generative AI (Lee and Lee, 2023, pp. 377-394). Socioeconomic status also affects AI literacy - understanding AI principles and limitations and using AI effectively - which is related to ChatGPT activities and academic outcomes (Zhang, Rice, and Wang, 2024). These studies show differences in AI use and awareness by economic circumstances, but do not account for economic differences in access to paid models and outcomes related to model performance.

This study examines whether economic circumstances are associated with AI use and paid subscriptions, and how subscription-related differences in model performance relate to academic performance. It focuses on economic circumstances, AI access (paid GPT subscriptions), and academic achievement to examine the implications of price-based access.

Methods

A Google Forms survey of SNU undergraduates was conducted from **May 4 to May 15, 2025**, collecting information on economic circumstances, GPT subscriptions, and GPA.

Survey items. College affiliation was recorded because GPA distributions and GPT purposes and usage patterns differ across colleges. Monthly average spending was used as an indicator of economic circumstances. Other items covered GPT use, Plus/Pro subscriptions, reasons for not subscribing, and GPA for the preceding semester (4.3 scale).

Analysis sample. Of **43 respondents**, **18 were from the College of Engineering**. Every other college had five or fewer respondents. To improve comparability and consistency, subsequent analysis focused on the 18 engineering respondents.

Survey items and the distributions of spending and GPA by subscription status were visualized using Excel and RStudio. Variance tests and independent two-sample tests were conducted (SNU Department of Statistics, 2025). Given the small, exploratory sample, the significance level was set at **alpha = 0.15**, rather than the conventional 0.05.

Results | Survey profile

Fig. 1 | Respondents by college (n=43)

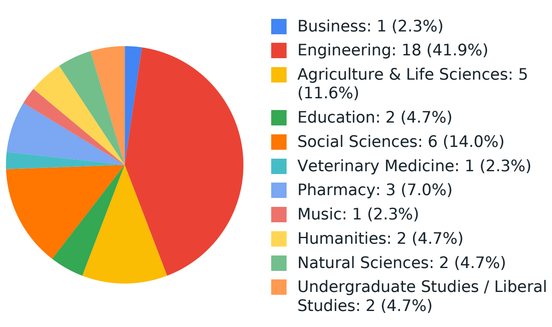
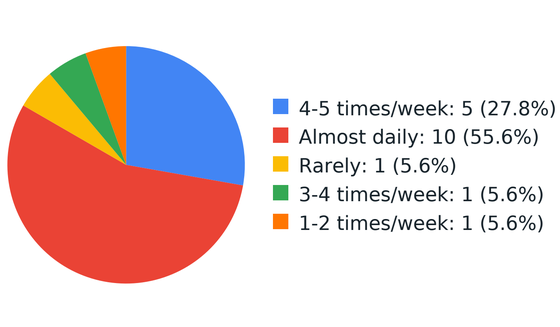


Fig. 2 | GPT usage frequency (n=18)



Except for Fig. 1, all results concern the 18 engineering respondents.

Fig. 3 | GPT Plus subscription (n=18)

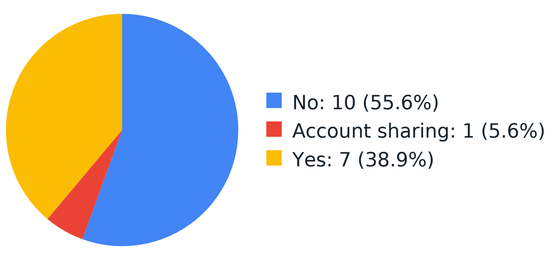
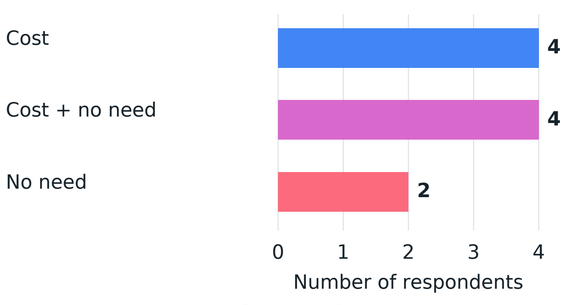


Fig. 4 | Reasons for not subscribing to Plus (n=10)



"Yes" and "Account sharing" form the GPT Plus group; "No" forms GPT Free.

Results | Access and outcomes

Fig. 5 | GPT Pro subscription (n=18)

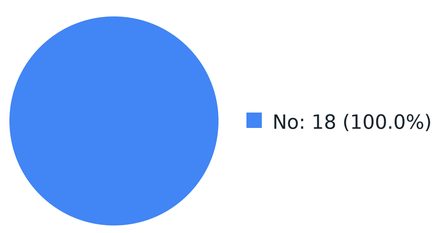
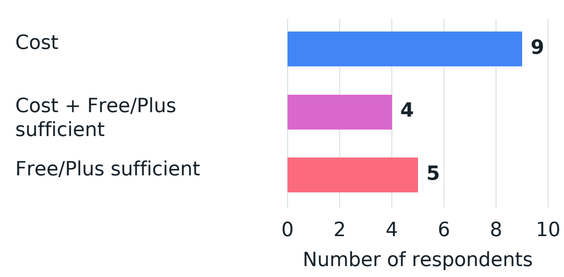


Fig. 6 | Reasons for not subscribing to Pro (n=18)



No respondents subscribed to Pro, so the spending and GPA analyses compare Plus and Free only.

Fig. 7 | Spending: box plot

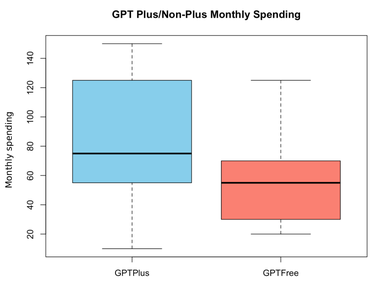


Fig. 8 | Spending: histogram

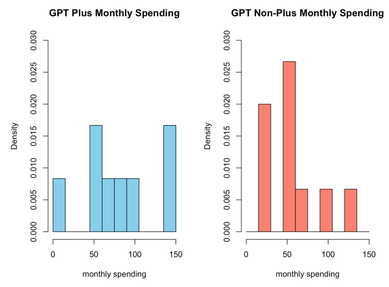
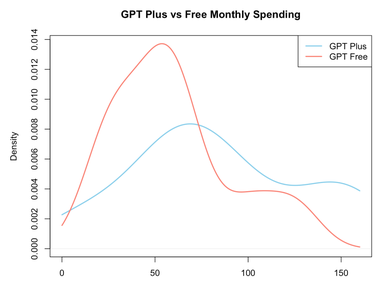


Fig. 9 | Spending: kernel density



Monthly spending is expressed in KRW 10,000. Welch's one-sided t-test for higher mean spending among Plus users: **t = 1.2149, df = 11.779, p = 0.1241**. Variance test: **F = 2.2126, df1 = 7, df2 = 9, p = 0.2652**.

Fig. 10 | GPA: box plot

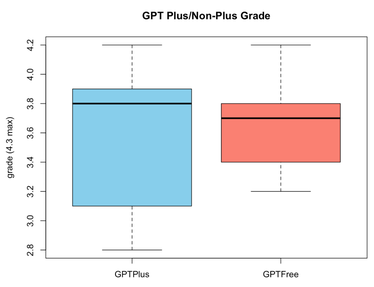


Fig. 11 | GPA: histogram

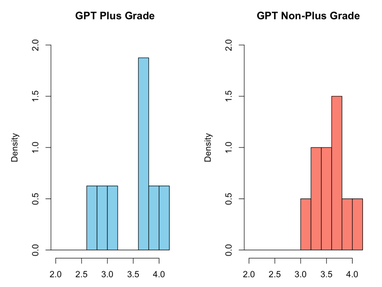
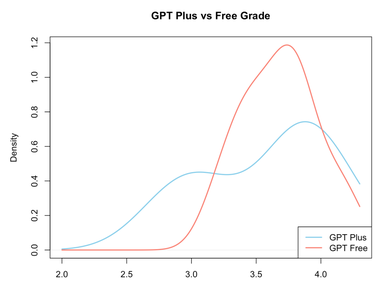


Fig. 12 | GPA: kernel density



GPA is on a 4.3 scale. Welch's two-sided t-test for different mean GPAs: **t = -0.5178, df = 10.845, p = 0.615**. Variance test: **F = 2.8283, df1 = 7, df2 = 9, p = 0.1488**.

Discussion

The following discussion concerns engineering respondents. All respondents used GPT, and about 88.8% reported using it at least three to four times a week, indicating widespread use.

About **44.4%** subscribed to Plus, including account sharing. Among non-subscribers, cost (80%) was cited more often than lack of perceived need (60%). No one subscribed to Pro; cost (72.2%) was again more common than lack of perceived need (50%). Economic circumstances may therefore be a barrier to generative AI access.

For monthly spending, the Plus group's interquartile range (about 60-120) was visibly wider than the Free group's (about 30-70). The mean comparison (p = 0.1241) was not significant at 5%, but was significant at the exploratory 15% level used here, suggesting an association between economic circumstances and paid AI subscriptions.

Mean GPAs were not clearly different in Figs. 10-12; the mean comparison (p = 0.615) was not significant even at 15%. The Plus group showed a bimodal and more dispersed grade distribution. GPT usage patterns, dependence on AI, and other factors may be related to these differences. The variance test (p = 0.1488) was not significant at 5%, but suggested a possible difference at 15%. A paid subscription alone does not directly translate into higher grades; appropriate usage patterns and levels of dependence may be relevant to positive outcomes.

Generative AI pricing may deepen economic disparities in information access and outcomes. AI-based education and related policy should consider measures to address these inequalities.

Limitations. Analysis was restricted to 18 engineering students because sufficient samples were not obtained from other colleges. Larger samples spanning diverse colleges are needed for more generalizable findings.

References

Department of Statistics, College of Natural Sciences, Seoul National University. 2025. *General Statistics*. Seoul: Hanbit Academy. [Korean; title translated.]

Lee, Hae-su, and Lee, Mo-ran. 2023. "Who Uses Generative AI? Focusing on Sociodemographic Variables, Digital Literacy, and Perceptions of Digital Transformation." *Information Systems Review* 25(3): 377-394. [Korean; title translated.]

Zhang, C. (Xinyi), Rice, R. E., and Wang, L. H. 2024. "College students' literacy, ChatGPT activities, educational outcomes, and trust from a digital divide perspective." *New Media & Society*. doi:10.1177/14614448241301741. Accessed March 30, 2025.