SOCIAL MEDIA AND AI CHATBOT USE

Mental Health, Academic Performance and Social Behavior in Navi Mumbai

Navadeesh Mallayya Gangadhari[1], Lokesh Patil[1], Mahek Gupta[1] Dr. Roopali Patil[2]

[1] Master of Computer Applications (MCA), Specialization in Artificial Intelligence and Machine Learning, School of Humanities and Sciences, D. Y. Patil Deemed to be University, CBD Belapur, Navi Mumbai, Maharashtra, India.

. [2]Associate Professor, School of Humanities and Sciences, D. Y. Patil Deemed to be University, CBD Belapur, Navi Mumbai, Maharashtra, India.

Abstract

This study examines social media and artificial intelligence (AI) chatbot usage in relation to mental health, academic performance and social behaviour among higher education students in Navi Mumbai. A quantitative, cross-sectional questionnaire survey received 100 responses from undergraduate and postgraduate students selected through convenience sampling. The analysis used frequencies, percentages and Spearman's rank correlation for three pre-defined associations. The largest group spent 3–4 hours daily on social media (38%), and Instagram was the most frequently selected platform (40%). Regular or occasional AI chatbot use was reported by 78% of respondents. Overall, 52% agreed or strongly agreed that AI chatbots help their learning, while 61% agreed or strongly agreed that more social media time reduces face-to-face interaction. Spearman analysis found no statistically significant association between daily social media time and reported stress/anxiety ($\rho = 0.123$, $p = 0.221$), and no significant association with perceived reduction in face-to-face interaction ($\rho = 0.076$, $p = 0.453$). AI chatbot use frequency was positively associated with perceived learning support ($\rho = 0.474$, $p < 0.001$; $n = 95$). The results represent self-reported perceptions within a convenience sample and do not establish causal effects.

Keywords—Social media usage; AI chatbots; mental health; academic performance; social behaviour.

How to cite this article: Navadeesh Mallayya Gangadhari1 Lokesh Patil1 Mahek Gupta1 Dr. Roopali Patil2. SOCIAL MEDIA AND AI CHATBOT USE. Int J Drug Deliv Technol. 2026;16(87s):1800-1806. DOI: 10.25258/ijddt.16.87s.193.

1. Introduction

Digital technologies influence how students communicate, learn and interact. Social media platforms such as Instagram, WhatsApp and YouTube offer communication, entertainment and information sharing. AI chatbots such as ChatGPT, Google Gemini and Microsoft Copilot can assist with explanations, examples, notes and problem-solving. Their growing use raises questions about possible relationships with wellbeing, study routines and social interaction.

Ahmed et al. [1] found that problematic social media use was more consistently associated with mental-health and sleep concerns than general use, and they noted substantial differences among studies. Schei et al. [2] reviewed empirical studies of higher-education students' use of AI chatbots, identifying academic applications alongside concerns about accuracy, critical thinking and over-reliance. This study examines students' self-reported experiences in Navi Mumbai; its cross-sectional design can describe associations but cannot establish causation.

2. Problem Statement

Students use social media and AI chatbots for academic and personal purposes. Although these tools can support communication and learning, their use may coexist with distraction, stress, changing study routines or shifts in communication preferences. This research addresses the need for locally collected information on how participating higher education students use both technologies and how they perceive their relationships with wellbeing, academic productivity and social behaviour.

3. Literature Review

3.1 Social media and wellbeing

Ahmed et al. [1] (2024) synthesized 182 studies in their systematic review and included 98 studies (102,683 participants) in meta-analyses. They reported weak associations between general social media use and depression/anxiety and stronger associations between problematic use and poorer wellbeing or sleep problems. Heterogeneity in measures and study designs limits direct comparisons and causal interpretation.

3.2 AI chatbots in higher education

Schei et al. [2] (2024) reviewed 24 empirical articles published from 2022 to 2023 on higher-education students' perceptions and use of AI chatbots. The review described use for writing, coding, academic support and feedback, while identifying concerns over accuracy, critical thinking and learning processes. As a scoping review, it maps an emerging area rather than estimating one pooled effect.

3.3 Social networking and academic achievement

Salari et al. [3] (2025) conducted a meta-analysis of social networking addiction and university students' academic achievement and reported a negative pooled association. Its focus on addiction or problematic use is important: it should not be generalized to every form of social media activity.

3.4 ChatGPT, learning and wellbeing

Abdallah et al. [4] (2025) reviewed 39 studies on ChatGPT in higher education and discussed academic performance, wellbeing, collaboration and risks. Chen and Cheung [5] synthesized 57 studies and 97 effect estimates on generative AI and learning outcomes; effects differed across learning outcome types, and their analysis did not find a statistically significant effect for

metacognition. Together, these reviews support examining specific perceptions rather than assuming AI use benefits all academic outcomes.

3.5 Ethics and responsible use

Al-Shamaileh et al. [6] (2026) reviewed 109 eligible studies on ethical implications of AI chatbots in higher education. Recurring themes included academic integrity, privacy, algorithmic bias, over-reliance and inaccurate outputs. Their thematic synthesis complements outcome-focused reviews by identifying concerns relevant to responsible use.

3.6 Comparison of recent literature

Study	Method / evidence	Main contribution	Relevance / limitation
Ahmed et al. [1] (2024)	Systematic review; 182 studies; 98-study meta-analysis	Differentiates general and problematic social media use in relation to wellbeing and sleep.	Measures and designs vary; not local to Navi Mumbai.
Schei et al. [2] (2024)	Scoping review of 24 empirical studies	Maps student chatbot uses, attitudes and concerns.	Maps the field; does not estimate a pooled effect.
Salari et al. [3] (2025)	Meta-analysis	Reports negative association between social networking addiction and academic achievement.	Focuses on problematic use, not all social-media activity.
Abdallah et al. [4] (2025)	Systematic review of 39 studies	Discusses learning, wellbeing, collaboration and risks of ChatGPT.	Included studies vary in outcomes and designs.
Chen & Cheung [5] (2025)	Systematic review/meta-analysis: 57 studies, 97 estimates	Reports effects varying by learning outcomes; no significant metacognition effect.	Pooled findings are not a direct estimate for this sample.
Al-Shamaileh et al. [6] (2026)	PRISMA-based review of 109 eligible studies	Identifies ethics, privacy, integrity, bias and over-reliance themes.	Thematic synthesis rather than one performance metric.

3.7 Literature synthesis

The literature uses systematic reviews, scoping reviews and meta-analyses, so sample sizes, measures and metrics are not directly interchangeable. The present study adds a local descriptive dataset that examines social media and general-purpose AI chatbot usage together and relates them to students' reported wellbeing, academic perceptions and social interaction.

4. Research Gap

The reviewed literature examines social media and wellbeing, problematic social networking and achievement, and AI chatbots in higher education from several perspectives. This study addresses a local, combined scope by examining both social media and chatbot use alongside mental-health experiences, perceived learning support and social behaviour among undergraduate and postgraduate students in Navi Mumbai. This is a scoped research gap, not a claim that no other local study exists.

5. Research Questions

1. RQ1: What are participating students' social media usage patterns and most-used platforms?
2. RQ2: How frequently do students use AI chatbots, and for what purposes?
3. RQ3: How do students report social media usage in relation to concentration and stress/anxiety?
4. RQ4: How do students perceive AI chatbots as support for learning academic concepts?
5. RQ5: How do students perceive AI chatbot usage in relation to productivity and independent thinking?
6. RQ6: How do students perceive social media use in relation to face-to-face interaction and online communication?
7. RQ7: What is students' overall perception of social media and AI chatbots in student life?
8. RQ8: How do reported patterns differ descriptively between UG and PG respondents?

6. Research Objectives

1. Describe daily social media time and frequently used platforms.
2. Examine the frequency and main purposes of AI chatbot use.
3. Summarize reported experiences related to concentration, stress/anxiety and study routines.
4. Examine perceived AI learning support and productivity.
5. Explore perceived independent thinking and face-to-face interaction.
6. Describe usage patterns by undergraduate/postgraduate status.

7. Develop recommendations based on observed survey responses.

7. Hypotheses

The hypotheses were tested with Spearman's rank correlation, suitable for assessing monotonic associations between ordered response categories. Coding is reported in Section 11.

H^1: H^{01}: Daily social media usage is not significantly associated with reported frequency of stress/anxiety. H^{11}: A significant association exists. Variables: Q4 and Q10.

H^2: H^{02}: AI chatbot usage frequency is not significantly associated with perceived academic learning support. H^{12}: A significant association exists. Variables: Q7 and Q9.

H^3: H^{03}: Daily social media usage is not significantly associated with agreement that social media reduces face-to-face interaction. H^{13}: A significant association exists. Variables: Q4 and Q13.

8. Research Methodology

8.1 Design and population

The study uses a quantitative, cross-sectional survey design with descriptive and analytical components. The target population is undergraduate and postgraduate students in Navi Mumbai. The exported dataset contains 100 submitted responses: 35 undergraduate and 65 postgraduate respondents.

8.2 Sampling and instrument

Convenience sampling was used to reach respondents based on accessibility and willingness to participate. Primary data were collected through a 15-question Google Form covering demographics, social media usage, AI chatbot usage, wellbeing/academic perceptions and social behaviour. The CSV contains 100 records and no empty answer cells or exact duplicate rows. Because no respondent identifiers were collected in the analysis export, individual uniqueness cannot be independently verified from this file.

8.3 Coding and analysis plan

Q4 social media time was coded from 1 (less than one hour) to 5 (more than six hours). Q10 stress/anxiety was coded from 1 (never) to 5 (always). Q7 AI chatbot frequency was coded from 1 (never) to 4 (regularly). Q9 learning support and Q13 face-to-face interaction agreement were coded from 1 (strongly disagree) to 5 (strongly agree). Q7 non-users and Q9 "not applicable" entries were excluded from H^2, yielding 95 valid pairs.

8.4 Ethics

Participation should be voluntary and responses should be stored securely and reported in aggregate. The form was intended for participants aged 18 or older. Personal contact details were not required in the research-response dataset.

8.5 Research Process Flowchart

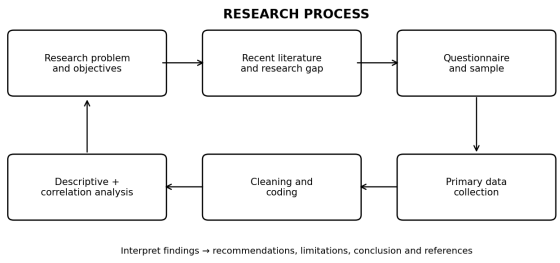


Figure 1. Research workflow from problem definition through data analysis and reporting.9. Data Analysis and Interpretation

All percentages below are based on the 100 submitted responses unless otherwise stated. Counts are included to make the distributions transparent.

Measure	Observed result	Interpretation
Education level	PG 65 (65%); UG 35 (35%)	Most respondents were postgraduate students.
Field of study	Computer Applications/IT 45 (45%); Management 21 (21%); Commerce 14 (14%)	Computer Applications/IT was the largest field group.
Age group	21–23: 51 (51%); 24–26: 25 (25%); 18–20: 17 (17%); above 26: 7 (7%)	More than half were aged 21–23.
Daily social media time	3–4 hours 38 (38%); 5–6 hours 23 (23%); 1–2 hours 22 (22%); >6 hours 13 (13%); <1 hour 4 (4%)	74% reported at least 3 hours daily.
Most-used platform	Instagram 40 (40%); WhatsApp 17 (17%); Facebook 16 (16%); YouTube 13 (13%); Snapchat 10 (10%); Other 4 (4%)	Instagram was the most frequently selected platform.
Concentration interruption	Sometimes 46%; often 12%; always 11%	69% reported interruption sometimes or more often.
AI chatbot use	Regularly 45%; sometimes 33%; rarely 18%; never 4%	78% used chatbots regularly or sometimes; 96% reported some use.

Measure	Observed result	Interpretation
AI chatbot purpose	Academic concepts 26 (26%); assignments/notes 24 (24%); technical problems 21 (21%); personal queries 15 (15%); other 11 (11%); do not use 3 (3%)	71% selected one of these three academic purposes.
Perceived learning support	Agree/strongly agree 52%; neutral 19%; disagree/strongly disagree 27%; N/A 2%	A majority perceived learning support, but 27% disagreed.
Stress/anxiety	Sometimes 47%; rarely 26%; never 13%; often 4%; always 10%	61% reported stress/anxiety sometimes or more often; 14% often/always.
Perceived productivity effect	Improves 43%; no noticeable effect 21%; reduces 35%; non-use 1%	Students reported mixed effects on productivity.
Independent thinking	Agree/strongly agree 49%; neutral 24%; disagree/strongly disagree 25%; N/A 2%	Nearly half perceived an effect of dependence on independent thinking.
Face-to-face interaction	Agree/strongly agree 61%; neutral 22%; disagree/strongly disagree 17%	Most agreed that more social media use reduces face-to-face interaction.
Online communication	Always/often 40%; sometimes 48%; rarely/never 12%	88% preferred online communication at least sometimes.
Overall impact	Positive/very positive 46%; neutral 36%; negative/very negative 18%	Responses were mixed, with positive/very positive views the largest combined group.

The percentages describe respondents' perceptions; they should not be interpreted as clinical measures of mental health or objective measures of academic grades.

Selected response distributions

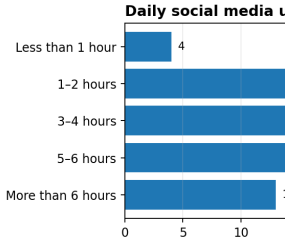


Figure 2. Daily social media usage (Q4)

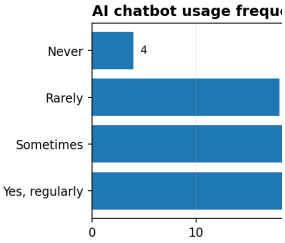


Figure 3. AI chatbot usage frequency (Q7)

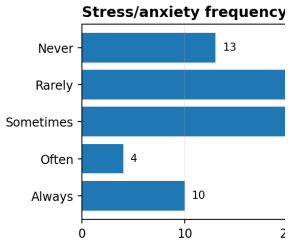


Figure 4. Stress/anxiety responses (Q10)

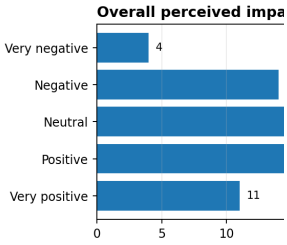


Figure 5. Overall perceived impact (Q15)

Additional response distributions

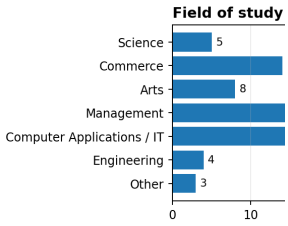


Figure 6. Respondent field of study (Q2)

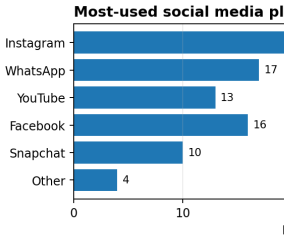


Figure 7. Most-used social media platform (Q5)

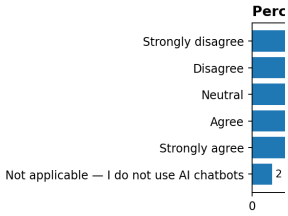


Figure 8. Perceived AI learning support (Q9)

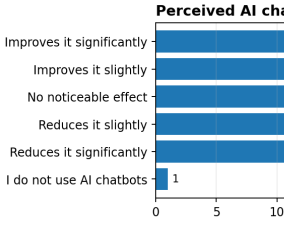


Figure 9. Perceived AI productivity effect (Q11)

Figures 6–9 show response counts from the submitted 100-response export. Percentages and the hypothesis tests in this paper were calculated from the same file.

9.1 Interpretation of Descriptive Results

The descriptive results show that social media is a routine part of respondents' days: 74% reported at least three hours of daily use, and 69% said it interrupted their study concentration sometimes, often or always. At the same time, the correlation between daily time and reported stress/anxiety was not statistically significant ($\rho = 0.123$, $p = 0.221$). These findings are not contradictory: the question on concentration measures a reported

interruption, while the hypothesis test examines whether higher time-use categories track higher stress categories across individuals. Purpose of use, timing and other unmeasured factors may also matter, but this survey does not test them.

AI chatbots were used by 96% of respondents at least rarely on Q7, and 78% reported regular or occasional use. Academic concepts, assignments/notes and technical problems accounted for 71% of the main-purpose answers. The positive association between usage frequency and perceived learning support ($\rho = 0.474$, $p < 0.001$) suggests that more frequent users tended to rate the support more positively. However, the questionnaire measures perceived support rather than a verified improvement in marks or mastery.

Although 61% agreed or strongly agreed that more social media time reduces face-to-face interaction, the association test between daily usage duration and that agreement item was not statistically significant ($\rho = 0.076$, $p = 0.453$). The percentage summarizes general agreement, while Spearman tests whether individuals in higher time-use categories also tend to select higher agreement categories. The two findings answer different questions. Overall responses were mixed: 46% viewed the combined impact as positive/very positive, 36% were neutral and 18% negative/very negative.

10. Tools and Technologies

Google Forms was used for primary data collection and CSV export. Python with pandas was used to organize and validate the response data, while SciPy was used to calculate Spearman's rank correlation coefficients and p-values. Microsoft Excel or Google Sheets can be used to review response distributions and prepare further charts or tables. The final research artifacts should include the cleaned data, frequency summaries and statistical calculations.

11. Hypothesis Testing

Spearman's rank correlation was computed with two-sided p-values at $\alpha = 0.05$. Ordinal categories were coded in the increasing direction shown in Section 8. H^2 excludes Q7 "Never" and Q9 "Not applicable" responses, leaving $n = 95$. Decisions are based on the provided 100-response CSV.

Hypothesis / variable pair	Valid n	Spearman's ρ	p-value	Decision
H^1: Q4 social media time vs Q10 stress/anxiety	100	0.123	0.221	Fail to reject H^{01}; not significant.
H^2: Q7 AI use frequency vs Q9 learning support	95	0.474	1.22×10^{-6}	Reject H^{02}; significant positive association.
H^3: Q4 social media time vs Q13 face-to-face interaction	100	0.076	0.453	Fail to reject H^{03}; not significant.

H^1 had a very weak positive coefficient ($\rho = 0.123$), but the result was not statistically significant ($p = 0.221$). Therefore, the data do not provide sufficient evidence of a monotonic association between daily social media time and reported stress/anxiety in this sample.

H^2 showed a moderate positive association ($\rho = 0.474$, $p < 0.001$): respondents reporting more frequent chatbot use tended to give more positive ratings of learning support. The association remained significant under a conservative Bonferroni threshold of 0.0167 for three tests. This measures perceived learning support, not verified improvement in grades.

H^3 showed a very weak positive coefficient ($\rho = 0.076$) and was not statistically significant ($p = 0.453$). The study therefore did not find sufficient evidence of a monotonic association between daily social media time and agreement that social media reduces face-to-face interaction.

Data-quality note: "Never use AI chatbots" / "not applicable" response counts differ across Q7, Q8, Q9, Q11 and Q12. H^2 therefore uses the explicit exclusion rule above; other item percentages are reported using the full valid item responses.

12. Major Findings

- 65% of respondents were postgraduate students; Computer Applications/IT was the most represented field (45%).
- 74% reported at least three hours of social media use per day, and Instagram was the most selected platform (40%).
- 69% reported that social media interrupted study concentration sometimes or more often.
- 78% used AI chatbots regularly or sometimes. Academic concepts, assignments/notes and technical problems together accounted for 71% of main-purpose responses.
- 52% agreed or strongly agreed that AI chatbots help their learning; 43% reported productivity improvement, while 35% reported reduction.
- 61% agreed or strongly agreed that spending more time on social media reduces face-to-face interaction.
- Only the H^2 association was statistically significant among the three tests. H^1 and H^3 were not significant at $\alpha = 0.05$.

13. Recommendations

- Encourage deliberate social media use and attention-management strategies during study periods.
- Promote AI literacy: verify chatbot output with course material and reliable sources.
- Encourage independent problem-solving and critical review before relying on AI-generated answers.

- Promote balanced online and face-to-face interaction.
- Use the results as a prompt for student guidance, not as proof that technology causes a particular outcome.

14. Conclusion

The survey describes digital usage patterns and perceptions among 100 participating higher education students in Navi Mumbai. Social media use was common, with 74% reporting at least three hours per day, while 78% used AI chatbots regularly or sometimes. Respondents reported mixed academic perceptions: 52% agreed that AI chatbots support learning, and 43% perceived improved productivity, whereas 35% perceived reduced productivity. A majority (61%) agreed that more social media use reduces face-to-face interaction. Of the three rank-correlation tests, AI chatbot frequency was positively associated with perceived learning support ($\rho = 0.474$, $p < 0.001$); the tested relationships between social media time and stress/anxiety, and between social media time and perceived face-to-face reduction, were not statistically significant. These findings address descriptive objectives and selected associations, but they do not establish causal effects or measure clinical mental health or verified grades.

15. Limitations of Research

- The study uses a convenience sample of 100; it may not represent all higher education students in Navi Mumbai.
- Mental-health responses are not clinical assessments; academic productivity and learning support are perceived rather than verified outcomes.

16. Future Scope of Research

- Expand the sample across more institutions and cities, using probability sampling where feasible.
- Use validated mental-health and wellbeing scales and, with appropriate consent, verified academic indicators.
- Conduct longitudinal research to examine changes in use and outcomes over time.
- Separate different types of social media activity and specific AI chatbot use cases.
- With larger samples, test additional relationships using ordinal regression or other methods appropriate to the data.

17. References

[1] O. Ahmed, E. I. Walsh, A. Dawel, K. Alateeq, D. A. Espinoza Oyarce, and N. Cherbuin, "Social media use, mental health and sleep: A systematic review with meta-analyses," Journal of Affective Disorders, vol. 367, pp. 701–712, 2024, doi: 10.1016/j.jad.2024.08.193.

[2] O. M. Schei, A. Møgelvang, and K. Ludvigsen, "Perceptions and use of AI chatbots among students in higher education: A scoping review of empirical studies," Education Sciences, vol. 14, no. 8, Art. no. 922, 2024, doi: 10.3390/educsci14080922.

[3] N. Salari, H. Zarei, S. Rasoulpoor, H. Ghasemi, A. Hosseinian-Far, and M. Mohammadi, "The impact of social networking addiction on the academic achievement of university students globally: A meta-analysis," Public Health in Practice, vol. 9, Art. no. 100584, 2025, doi: 10.1016/j.puhip.2025.100584.

[4] N. Abdallah, R. Katmah, K. Khalaf, and H. F. Jelinek, "Systematic review of ChatGPT in higher education: Navigating impact on learning, wellbeing, and collaboration," Social Sciences & Humanities Open, vol. 12, Art. no. 101866, 2025, doi: 10.1016/j.ssaho.2025.101866.

[5] S. Chen and A. C. K. Cheung, "Effect of generative artificial intelligence on university students' learning outcomes: A systematic review and meta-analysis," Educational Research Review, vol. 49, Art. no. 100737, 2025, doi: 10.1016/j.edurev.2025.100737.

[6] O. Al-Shamaileh, R. Hammady, M. Abdelrahman, and O. Mubin, "Navigating ethical considerations and implications of AI chatbots in higher education: A systematic review," Computers in Human Behavior Reports, vol. 21, Art. no. 100980, 2026, doi: 10.1016/j.chbr.2026.100980.

Appendix A. Survey Questionnaire

The following items were used in the Google Form. Each item was set as required; respondent answers and response options are retained in the response export.

Item	Question	Response options
Q1	What is your current level of education?	Undergraduate (UG); Postgraduate (PG)
Q2	What is your field of study?	Science; Commerce; Arts; Management; Computer Applications / IT; Engineering; Other
Q3	What is your age group?	18–20; 21–23; 24–26; Above 26
Q4	How much time do you spend on social media daily?	Less than 1 hour; 1–2 hours; 3–4 hours; 5–6 hours; More than 6 hours
Q5	Which social media platform do you use most frequently?	Instagram; WhatsApp; YouTube; Facebook; Snapchat; Other
Q6	How often does social media interrupt your study concentration?	Never; Rarely; Sometimes; Often; Always
Q7	How frequently do you use AI chatbots such as ChatGPT, Google Gemini or Microsoft Copilot?	Yes, regularly; Sometimes; Rarely; Never
Q8	What is your main purpose for using AI chatbots?	Understanding academic concepts; Preparing assignments and notes; Solving technical problems; Personal queries; Other; I do not use AI chatbots

Q9	AI chatbots help me improve my learning and understanding of academic concepts.	Strongly agree; Agree; Neutral; Disagree; Strongly disagree; Not applicable — I do not use AI chatbots
Q10	How often do you feel stress or anxiety related to excessive social media usage?	Never; Rarely; Sometimes; Often; Always
Q11	Overall, how does using AI chatbots affect your academic productivity?	Improves it significantly; Improves it slightly; No noticeable effect; Reduces it slightly; Reduces it significantly; I do not use AI chatbots
Q12	Do you think depending on AI chatbots affects your independent thinking and problem-solving skills?	Strongly agree; Agree; Neutral; Disagree; Strongly disagree; Not applicable — I do not use AI chatbots
Q13	To what extent do you agree or disagree that spending more time on social media reduces face-to-face interaction with friends and family?	Strongly Agree; Agree; Neutral; Disagree; Strongly Disagree
Q14	How often do you prefer online communication over face-to-face communication?	Always; Often; Sometimes; Rarely; Never
Q15	Overall, how do you think social media and AI chatbots affect your student life?	Very positive; Positive; Neutral; Negative; Very negative