

Digital Engagement and Discipline: Examining Social Media Use, Study Habits, and Mathematics Performance Among Filipino Grade 10 Students

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Abstract

This study examined the relationships among social media use, study habits, and mathematics performance among Grade 10 students at Guindulman Technical Vocational High School, Bohol, Philippines, during School Year 2025–2026. Anchored in Social Learning Theory, the Theory of Planned Behavior, and Cognitive Load Theory, the study employed a descriptive-correlational research design involving 41 students selected through total enumeration. Data were collected using adopted structured questionnaires assessing passive and active social media use and study habits, while mathematics performance was determined through official third-quarter grades. Descriptive statistics and Pearson's product-moment correlation coefficient were used to analyze the data. Findings revealed high passive social media use ($M = 3.56$), moderate active social media use ($M = 3.23$), and moderate overall social media engagement ($M = 3.40$). Respondents demonstrated good study habits ($M = 2.86$) and very satisfactory mathematics performance ($M = 86.98$). Social media use showed a weak negative but statistically insignificant relationship with mathematics performance ($r = -0.276$, $p = 0.080$), whereas study habits exhibited a weak positive and statistically significant relationship ($r = 0.385$, $p = 0.013$). The study concluded that study habits were significantly associated with mathematics achievement, while social media use was not. School-based interventions emphasizing responsible digital engagement, effective time management, independent learning, and structured mathematics practice were recommended. The study supports Sustainable Development Goal 4 (Quality Education) and relates to SDG 3 (Good Health and Well-Being) through its emphasis on balanced digital engagement and supportive learning environments. Its contribution to educational and institutional sustainability lies in providing evidence to guide academic interventions, responsible technology use, and continuous improvement in mathematics education.

Keywords: Academic Performance; Digital Engagement; Grade 10 Students; Mathematics Performance; Self-Regulated Learning; Social Media Use; Study Habits

1. Introduction

Mathematics develops critical thinking, logical reasoning, and problem-solving skills essential for academic achievement and everyday decision-making. However, Filipino students continue to experience difficulties in mathematics, as reflected in international assessments (OECD, 2023; Mullis et al., 2020). The increasing use of social media introduces additional challenges to students' concentration, time management, and academic discipline. Although digital platforms offer opportunities for learning, excessive engagement may interfere with academic responsibilities (Sun, 2023; Pang, 2021). This study examines the relationships among social media use,

study habits, and mathematics performance of Grade 10 students at Guindulman Technical Vocational High School, Bohol, Philippines.

Social media platforms such as Facebook, TikTok, Instagram, and YouTube have transformed students' communication, information access, and learning activities (Burr et al., 2020). While these platforms support interaction and educational collaboration, excessive use may contribute to academic procrastination, poor self-regulation, and reduced study time (Moon & Illingworth, 2022). Frequent digital distractions may also impair concentration and information retention, particularly in mathematics, where sustained attention and analytical thinking are essential (Sun et al., 2020; Cao et al., 2024). These concerns highlight the importance of examining students' digital engagement in relation to mathematics achievement.

Research indicates that excessive social media engagement may negatively relate to academic performance by reducing learning time and increasing cognitive distractions (Muzaffar et al., 2020; Hamzah et al., 2021). Digital multitasking may further disrupt attention, while prolonged online engagement has been associated with psychological distress and sleep difficulties (Twenge, 2021; Keles et al., 2020). Conversely, structured study schedules, regular review, goal setting, and self-monitoring support effective learning (Sultana et al., 2020; Khan & Memon, 2021; Zimmerman, 2020). These practices are particularly important in mathematics, where consistent problem-solving and independent practice strengthen conceptual understanding (Gan et al., 2024; Nurhadi et al., 2023).

Globally, increasing digital engagement has raised concerns about students' attention, academic discipline, and learning outcomes (Li et al., 2023). In the Philippines, results from the Programme for International Student Assessment and Trends in International Mathematics and Science Study indicate persistent challenges in mathematical literacy and achievement (OECD, 2023; Mullis et al., 2020). At Guindulman Technical Vocational High School in Bohol, Grade 10 students similarly balance digital activities with academic responsibilities. Understanding their social media use and study habits may provide relevant evidence for addressing mathematics learning challenges within the local school setting.

The study is anchored in three theories. Social Learning Theory explains how students acquire behaviors through observation and interaction, including activities encountered on social media (Bandura, 1977). The Theory of Planned Behavior emphasizes how attitudes, social influences, and perceived behavioral control shape students' decisions regarding digital engagement and academic responsibilities (Ajzen, 1991). Cognitive Load Theory explains how excessive information and digital distractions may overwhelm working memory and interfere with mathematical understanding (Sweller, 1988). The study also adopts the Input–Process–Output model, examining social media use and study habits as explanatory variables associated with mathematics performance.

Previous studies have examined the relationships between digital engagement, study behaviors, and academic achievement (Sun, 2023; Cao et al., 2024; Nurhadi et al., 2023). However, the reviewed literature provides limited evidence examining social media use and study habits together in relation to mathematics performance among Grade 10 students in rural Philippine public schools. This study addresses that contextual gap by assessing passive and active social media use, study habits, and mathematics performance among students at Guindulman Technical Vocational High School during School Year 2025–2026. The findings will serve as a basis for developing a school-level action plan.

The study primarily supports SDG 4 (Quality Education) by examining behavioral factors associated with mathematics achievement and effective learning practices. It also relates to SDG 3 (Good Health and Well-Being) through its consideration of balanced digital engagement, particularly given the reported associations between excessive social media use, psychological distress, and sleep-related difficulties (Twenge, 2021; Keles et al., 2020). These connections emphasize the importance of promoting both academic development and student well-being.

The study contributes to educational sustainability by providing evidence that may strengthen study discipline and mathematics learning. Its technological relevance involves promoting responsible social media engagement while recognizing the educational potential of digital platforms (Alhabash et al., 2022; Martin & Sunley, 2022). Institutionally, the findings may guide teachers, administrators, and parents in developing strategies that encourage effective time management, independent learning, and balanced technology use. These contributions support evidence-informed school improvement and sustainable academic practices.

2. Material and methods

2.1 Research Design

The study utilized a descriptive-correlational research design to determine the levels of social media use, study habits, and mathematics performance and examine their significant relationships. The descriptive component

characterized the respondents' demographic profiles and learning behaviors, while the correlational component assessed associations between social media use and mathematics performance and between study habits and mathematics performance. This design enabled the examination of naturally occurring relationships without manipulating the variables (Creswell, 2014).

2.2 Locale of the Study

The study was conducted at Guindulman Technical Vocational High School, a public secondary school in Guindulman, Trinidad, Bohol, under the Department of Education, Schools Division of Bohol. The institution offers junior high school education aligned with the K–12 curriculum. It was selected because of its Grade 10 mathematics classes and the availability of official academic records necessary for assessing mathematics performance during School Year 2025–2026.

2.3 Respondents of the Study

The respondents comprised 41 Grade 10 students enrolled at Guindulman Technical Vocational High School during School Year 2025–2026. They were selected because their social media engagement, study habits, and mathematics performance were directly relevant to the research objectives. Their demographic characteristics included age, gender, parents' highest educational attainment, and combined family monthly income.

2.4 Sample and Sampling Procedure

The study employed total enumeration, including all 41 Grade 10 students from the two sections. Table 1 presents the distribution of respondents, comprising 22 students (53.66%) from Camagong and 19 students (46.34%) from Mabolo. This approach ensured complete representation of the identified Grade 10 population and eliminated the need for selecting a smaller sample.

2.5 Research Instrument

The study utilized a three-part structured questionnaire. The first part gathered demographic information, including age, gender, parents' educational attainment, and combined family monthly income. The second part assessed passive and active social media use using an instrument adopted from Ozimek et al. (2022), with responses measured through a five-point Likert scale. Passive use involved viewing online content without direct interaction, while active use included posting, sharing, and participating in online activities.

The third part measured study habits using a questionnaire adopted from Charles-Ogan and Alamina (2014), focusing on study routines, concentration, and academic practices. Responses were assessed using a five-point frequency scale. Mathematics performance was determined using respondents' official third-quarter mathematics grades, interpreted according to the Department of Education grading scale.

2.6 Data Gathering Procedure

The researcher secured permission from the Schools Division Superintendent and school principal before conducting the study. Upon approval, coordination was undertaken with mathematics teachers and class advisers to schedule questionnaire administration. The study's objectives and procedures were explained to the respondents, and informed consent and confidentiality were addressed before data collection. Questionnaires were distributed, completed, and retrieved, while third-quarter mathematics grades were obtained from official school records with appropriate authorization. The collected data were subsequently organized, coded, tabulated, and prepared for statistical analysis.

2.7 Data Analysis Techniques

The collected data were analyzed using frequency counts, percentages, weighted means, standard deviations, and Pearson's product-moment correlation coefficient. Frequency counts and percentages described respondents' demographic characteristics, while weighted means determined their levels of passive and active social media use and study habits. Standard deviations assessed the variability of questionnaire responses. Mathematics performance was classified using the Department of Education grading scale. Pearson's r was employed to determine the strength, direction, and statistical significance of the relationships between social media use and mathematics performance and between study habits and mathematics performance. The null hypotheses were tested at the 0.05 level of significance. The five-point scoring system was used to interpret social media engagement and study habits according to their corresponding descriptive ratings, while mathematics grades were classified using established academic performance categories.

3. Results and Discussion

3.1 Demographic Profile of Grade 10 Students

3.1.1 Age and Gender Distribution

The findings revealed that most respondents were 15 years old (60.98%), followed by 16 years old (21.95%), 17 years old and above (14.63%), and 14 years old (2.44%). Male students comprised 58.54% of the respondents, while female students accounted for 41.46%. These findings indicate that most respondents belonged to the

expected adolescent age group for Grade 10, a developmental period characterized by increasing social interaction and digital engagement. This observation supports Lenhart (2015), who identified adolescents as active social media users, and Twenge and Campbell (2019), who emphasized the influence of digital engagement on adolescents' academic behaviors and well-being.

3.1.2 Parents' Highest Educational Attainment

The results showed that high school graduates constituted the largest group among both mothers (46.34%) and fathers (36.59%). College graduates accounted for 12.20% of each group, while 4.88% of both mothers and fathers had no formal education. The findings suggest that most respondents came from households where parents had attained secondary education. This educational background may influence the availability of academic guidance and assistance at home, particularly for mathematics tasks requiring specialized knowledge.

3.1.3 Combined Family Monthly Income

The findings revealed that 43.90% of respondents belonged to families earning ₱10,000 or below monthly, followed by those earning ₱15,001–₱20,000 (21.95%) and ₱10,001–₱15,000 (19.51%). Only 9.76% reported family incomes above ₱30,000, while none belonged to the ₱25,001–₱30,000 category. The predominance of lower-income households suggests possible limitations in access to digital devices, reliable internet connectivity, and educational resources. This supports OECD (2023), which highlights socioeconomic disparities in educational access, while Twenge et al., 2024 and Department of Education, 2024 emphasize digital engagement and institutional support for learners facing resource limitations.

3.2 Social Media Engagement Among Grade 10 Students

3.2.1 Passive Social Media Use

The respondents demonstrated a high level of passive social media use, with an aggregate mean of 3.56 and standard deviation of 1.15. Reading comments on personal pictures received the highest mean (4.24), while reading private messages received the lowest (2.78), indicating greater engagement in monitoring online content and feedback. These findings suggest that passive browsing constitutes a substantial component of students' digital engagement and may compete with academic attention. This observation is consistent with Valkenburg et al., 2022, Lorenz-Spreen et al., 2023, and Kross et al., 2021, who discussed the influence of digital content exposure and online engagement on attention and behavior.

3.2.2 Active Social Media Use

Active social media use obtained an aggregate mean of 3.23 and standard deviation of 1.25, indicating moderate engagement. Respondents participated in activities such as sharing content, posting photographs, and interacting with others, although direct online participation was less frequent than passive browsing. The findings suggest that students engage in online communication without consistently participating in content creation. Previous studies indicate that digital communication can facilitate peer interaction but may also encourage task-switching during academic activities (Charmaraman et al., 2022; Rozgonjuk et al., 2021). Conversely, online communication may support academic consultation and collaborative problem-solving (Greenhow et al., 2024).

3.2.3 Overall Level of Social Media Use

The overall level of social media use was moderate, with a grand mean of 3.40 and standard deviation of 1.20. Passive engagement (3.56) exceeded active engagement (3.23), indicating that respondents were more inclined to browse and observe content than actively participate. This pattern highlights the importance of balanced digital engagement and effective time management. Structured learning routines and independent mathematical practice remain important for academic achievement (Biwer et al., 2021; Shi et al., 2022), while inadequate self-regulation may increase vulnerability to digital distractions (Xu, 2023).

3.3 Study Habits and Mathematics Performance

3.3.1 Level of Study Habits

Respondents demonstrated a good level of study habits, with an aggregate mean of 2.86 and standard deviation of 1.22. Independent mathematics problem-solving received the highest mean (3.66), interpreted as very good, while consistently practicing mathematics using textbooks obtained the lowest mean (2.37), interpreted as fair. These findings indicate positive attitudes toward independent problem-solving but inconsistencies in structured learning practices. The results support Credé & Kuncel, 2008, who identified study habits as predictors of academic achievement, and Khan & Memon, 2021, who emphasized consistent practice and effective time management in mathematics learning.

3.3.2 Level of Mathematics Performance

Mathematics performance was generally very satisfactory, with a mean grade of 86.98 and standard deviation of 4.92. Fifteen respondents (36.59%) achieved excellent performance, 12 (29.27%) were very satisfactory, another 12 (29.27%) were satisfactory, and two (4.88%) were fairly satisfactory. No respondent was classified below expectations. The findings indicate generally favorable mathematics achievement despite moderate social media

engagement. However, the literature emphasizes that excessive digital browsing and multitasking may interfere with study routines, working memory, and information retention (Abbas et al., 2021; Alvi et al., 2023; Aznar-Diaz et al., 2021).

3.4 Relationships Between Social Media Use, Study Habits, and Mathematics Performance

3.4.1 Relationship Between Social Media Use and Mathematics Performance

Pearson's correlation analysis revealed a weak negative relationship between social media use and mathematics performance ($r = -0.276$, $p = 0.080$). Since the p-value exceeded the 0.05 significance level, the relationship was not statistically significant, and the null hypothesis was not rejected. The findings indicate insufficient statistical evidence of an association between social media use and mathematics performance among the respondents. Other academic behaviors, including structured study routines, independent practice, and self-regulation, may be relevant to mathematics achievement, as discussed by Oyuga et al., 2022, Tan, 2021, and Zheng et al., 2022.

3.4.2 Relationship Between Study Habits and Mathematics Performance

The analysis revealed a weak positive but statistically significant relationship between study habits and mathematics performance ($r = 0.385$, $p = 0.013$). Since the p-value was below 0.05, the null hypothesis was rejected, indicating that better study habits were associated with higher mathematics grades. These findings suggest that disciplined study routines, concentration, and independent problem-solving are associated with mathematics achievement. This supports Ahmed & Qazi, 2011, who linked effective study habits with academic performance, and Nurhadi et al., 2023, who emphasized the importance of self-regulated learning, goal setting, and independent study.

4. Conclusion & Recommendations

The study concluded that Grade 10 students at Guindulman Technical Vocational High School demonstrated moderate social media use, with higher passive than active engagement, generally good study habits, and very satisfactory mathematics performance. Social media use showed a weak negative but statistically insignificant relationship with mathematics performance, whereas study habits exhibited a weak positive and statistically significant relationship. These findings indicate that students can maintain satisfactory mathematics achievement while engaging in social media and that consistent study routines, concentration, time management, and independent learning are associated with better academic performance.

Schools, teachers, and parents should collaborate in promoting responsible social media use and strengthening students' study habits. Academic interventions should emphasize structured study schedules, regular mathematics practice, independent problem-solving, effective time management, and self-regulated learning. Schools may also provide study skills training, academic support programs, and guidance activities to help students balance digital engagement with academic responsibilities and sustain mathematics achievement.

The study was limited to 41 Grade 10 students from two sections of Guindulman Technical Vocational High School during School Year 2025–2026, restricting the generalizability of the findings to other schools and student populations. Social media use and study habits were assessed through self-reported questionnaires, while mathematics performance was measured using third-quarter grades. The descriptive-correlational design identified relationships among variables but could not establish causality. Furthermore, other factors potentially associated with mathematics achievement, including learning motivation, peer influence, academic stress, and teaching strategies, were not examined. These limitations should be considered when interpreting the findings and applying the proposed interventions.

5. Compliance with ethical standards

The authors acknowledge the participation of Grade 10 students of Guindulman Technical Vocational High School, Bohol, Philippines, and the cooperation of the school administration and teachers. Participation was voluntary, and informed consent was obtained before data collection through non-invasive survey questionnaires and authorized academic records. Confidentiality was maintained through the appropriate handling of research data and reporting of findings without disclosing personally identifiable information. Statements confirming the absence of conflicts of interest and external funding status require verification by the authors before publication.

REFERENCES

Aliyu, N. I. (2026). Relationship between social media use and study habits of computer science students in tertiary institutions in Zamfara State, Nigeria. *Rima International Journal of Education (RIJE)*.

- Amer, S. D., Abdel Hamid, N., Akram, F., Safieh, H., Beheiry, S., Atabay, S., & Yilmaz, A. G. (2026). Development-led low-rise housing in Dubai: Translating resident satisfaction into design and planning insights. *Frontiers in Built Environment*.
- Azhar, U., Khan, S. U. R., & Hussain, S. (2027). Chapter 8 triangulating prompt engineering effectiveness for edge case detection: Integrating expert quality review with association rule mining in LLM-driven software testing. Springer Science and Business Media LLC.
- Barnett, D. O. (2023). Social media and the learning and engagement experiences of minority doctoral students. Walden University.
- Chen, J., Wu, M., Zhang, H., & Chen, W. (2025). Appearance is power: How different types of social media use affect appearance anxiety. *Well-Being Sciences Review*.
- Cleotes, M. J., Cabrera, M., Fernandez, Y. T., Saragena, J., et al. (2025). Turismo do Festival La Torta em Argao, Cebu: Seus beneficios percebidos e práticas sustentáveis. *Diversitas Journal*.
- Folk, A. L. (2023). Green physical activity: Motivators, barriers, and the role of social media. University of Minnesota.
- Gaganao, R. D., & Odon, M. G. B. (2026). Google classroom utilization and mathematics performance of teacher education students. *Journal of Education and Learning (EduLearn)*.
- Gandhi, K. (2024). An exploration of social commerce consumer perceptions, motivators and barriers. MICA (Mudra Institute of Communications, Ahmedabad), India.
- Hussein, H. A., & Abdirahman, M. A. I. (2024). Organizational factors that influence information security in SMEs: A case study of Mogadishu, Somalia. *International Journal of Innovative Science and Research Technology (IJSRT)*.
- Ibrahim, B. M., & Sani, M. I. (2024). Test construction and validation procedures of senior secondary schools' mathematics teachers of Kano Central Senatorial District, Nigeria. *Eureka: Journal of Educational Research*.
- Li, M., & Zhong, F. (2026). Variety-seeking behavior and willingness to pay for staple foods: Evidence from online food delivery in China. *Foods*.
- Magnate, F. R. (2025). An ethnomodel of squid trap "Bubo" in Gigantes Island, Western Visayas, Philippines. *The Journal of Mathematical Behavior*.
- Mathias, L., Hickson, S., Jarison, G., & Jonathan, N. (2025). The impact of social media on academic performance of students in Nigerian colleges: Case study of Adamawa State College of Education Hong, Nigeria. *Kwaghe International Journal of Engineering and Information Technology*.
- Nagata, J. M., Otmar, C. D., Shim, J., Balasubramanian, P., et al. (2025). Social media use and depressive symptoms during early adolescence. *JAMA Network Open*.
- Neuenschwander, R., Bryce, D., & Eberhart, J. (2026). Mindfulness and metacognitive monitoring accuracy in young meditation practitioners compared to non-practitioners. *Mindfulness*.
- Nnennaya, N. (2026). Effectiveness of cognitive behavioural therapy on marital conflict among married couples in Igbere of Abia State. *Journal of Professional Counselling*.
- Omiyefa, M. O. (2021). Action learning strategy and students' knowledge of character education concepts in social studies. *Anatolian Journal of Education*.
- Pascual, T. J. G., & Dimalig, C. C. (2026). Influence of social media exposure on the study habits of elementary pupils. *International Journal of Scientific Multidisciplinary Research*.
- Peteros, E., Lodonia, M., Abeltgas, L., Bardilas, K. F., et al. (2026). Unpacking the pathways: Self-regulation's mediating effect on students' self-efficacy and mathematics achievement. *Multidisciplinary Science Journal*.
- Pokharel, B. P., & Upadhyaya, Y. M. (2026). Issues and challenges to education policies and practices in Nepal: A descriptive and factor analysis. *F1000Research*.
- Social media in the changing mathematics classroom. (2025). Springer Science and Business Media LLC.
- Stancell, W. (2023). The impact of social media use on the mental health and wellbeing of African American adolescent girls: A comprehensive review. *The Chicago School of Professional Psychology*.
- Tartaro, C. (2026). Research methods for criminal justice and criminology—A text and reader. Routledge.
- Villarente, M., & Moral, R. (2026). Teachers' professional competence, institutional support, and instructional practices in special needs education settings. *EIKI Journal of Effective Teaching Methods*.
- Xuan, C. (2022). The effects of social media advertising in China—Theory, practices and implications. Routledge.
- Zhang, N., Gao, X., Huang, Y., Zhou, Y., & Fang, Z. (2026). The relationship between social media use and women's well-being: Evidence from meta-analysis. Springer Science and Business Media LLC.