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Use of Digital Platforms and Students' Behavior in Learning Mathematics

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Abstract

Mathematics remains a significant academic challenge for many Filipino students, with international assessments indicating an alarmingly 16% proficiency level. This study aimed to determine the digital platforms used and the students' behavior in learning Mathematics in the Balingasag Districts, Division of Misamis Oriental during the School Year 2024–2025. Specifically, it sought to assess the respondents' level on the use of digital platforms and find students' level of learning behaviors and determine the relationship between respondents' digital platforms usage and students' behaviors in learning Mathematics. Using a descriptive correlational research design, this study involved 150 Grade 7 Public High School students selected through stratified sampling. A researcher-made questionnaire was employed and statistical treatments such as mean, standard deviation, and Pearson Correlation Coefficient to describe the variables and its relationship.

Findings revealed that the respondents demonstrated very high usage of digital platforms, with educational apps receiving the highest engagement. In terms of behavior, students exhibited very high levels, with task completion scoring the highest, though empathy and support scored the lowest. A significant relationship existed between the use of educational apps and participation on students' behavior in learning Mathematics. The study concludes that educational apps provide individualized learning pathways, providing the needs of the students particularly in Mathematics, and task completion is essential for the students' behavior and personal development.

Keywords: digital platforms, student behavior, learning Mathematics

1. Introduction

Filipino learners continue to struggle with Mathematics, with many experiencing confusion, frustration, and fear of failure due to weak foundational skills and limited access to supportive learning tools. This issue is highlighted by the 2022 PISA results, which show that only a small percentage of Filipino students meet the minimum proficiency level in Mathematics, reflecting deeper concerns in how the subject is taught and experienced. As education evolves, digital platforms are increasingly viewed as essential tools that can enhance engagement, strengthen conceptual understanding, and provide personalized learning experiences, ultimately helping students build confidence and actively participate in class. With evidence showing that technology can improve motivation, performance, and classroom interaction, this study aims to examine how digital platforms influence students' behavior in learning Mathematics, offering insights that may support the creation of a more student-centered, collaborative, and effective learning environment.

Research Questions

This study intended to determine the level on the use of digital platforms and students' behavior in learning Mathematics in select Districts of Misamis Oriental during School Year 2024-2025.

It specifically answered the following questions:

1. To what level are the respondents' use of digital platforms as to animated videos, virtual classrooms, and educational apps?
2. To what level are the students' behavior in learning Mathematics as to participation, collaboration, rule compliance, task completion, empathy and support?
3. Is there a significant relationship between the respondents' use of digital platforms and their behavior in learning Mathematics?

Significance

This study highlights the value of understanding how digital platforms influence students' behavior in learning Mathematics, offering insights that can guide administrators in making informed decisions on technology integration, help teachers refine instructional strategies based on students' engagement and challenges, and encourage learners to recognize and improve their own study habits through effective use of digital tools. It also provides baseline data for future researchers exploring technology's role in shaping learning outcomes, motivation, and classroom dynamics. Ultimately, the study emphasizes that digital platforms have the potential to support meaningful educational improvements by shaping student behavior in ways that promote success rather than hinder learning.

Scope and Limitations

This study focuses on the use of digital platforms and students' behavior in select districts of Misamis Oriental during the School Year 2024-2025. The respondents of the study are one hundred and fifty (150) Grade 7 public high school students in the aforesaid districts.

Additionally, the one hundred and fifty (150) Grade 7 Public High School students are engaged in the study. The independent variables are limited only to the respondent's use of digital platforms, such as animated videos, virtual classrooms, and educational apps. Furthermore, the dependent variables are limited only to students' behavior in learning Mathematics, as to participation, collaboration, task completion, rule compliance, and empathy and support are also considered.

2. Literature Review

Digital Platforms

Digital platforms have become an essential part of modern Mathematics education, offering personalized, interactive, and engaging learning experiences that help students better understand complex concepts. Studies such as those by Department of Education (2024), Cusi et al. (2022), and Baculio (2023) highlight how tools like Google Classroom, Khan Academy, animated videos, virtual classrooms, and educational apps improve access, motivation, and participation by providing visual models, real-time feedback, and gamified activities. These platforms support varied learning styles, encourage active involvement, and strengthen self-regulated learning skills, although their effectiveness depends on thoughtful design, alignment with learning goals, and strong teacher guidance. Despite challenges in access and digital literacy, digital technologies continue to reshape Mathematics learning, proving most effective when used not as substitutes but as powerful complements to effective teaching.

Students Behavior

Student behavior is crucial in shaping effective learning environments, influenced by factors such as motivation, classroom management, and emotional support. Positive behaviors, including participation, collaboration, rule compliance, task completion, and empathy, create a respectful and productive classroom where students feel engaged and valued. Active participation fosters a sense of belonging, collaboration builds teamwork skills, and following rules promotes discipline and order. Consistently completing tasks enhances responsibility and time management, while empathy and support strengthen peer relationships and emotional well-being. According to Mutiawati et al. (2023) and Gayle (2024), promoting these behaviors through structured strategies and supportive practices not only improves academic engagement but also equips students with essential life skills, preparing them for success beyond the classroom.

3. Methodology

Research Design

This study used a descriptive correlational method of research. Descriptive research, as defined by Sirisilla (2023), is a powerful tool used by researchers to gather information about a particular group or phenomenon. This type of research provides a detailed and accurate picture of the characteristics and behaviors of a particular population or subject. By observing and collecting data on a given topic, descriptive research helps researchers gain a deeper understanding of a specific issue and provides valuable insights that can inform future studies. In this study, descriptive research was employed using a questionnaire to obtain relevant information from the respondents.

Participants

The respondents of the study are the one hundred and fifty (150) Grade 7 Public High School students in the Balingasag Districts, Division of Misamis Oriental. They are students who are presently studying in medium and large schools in the Balingasag Districts, namely: Baliwagan National High School, Mambayaan Integrated School, Misamis Oriental National High School, Rosario National High School, and San Isidro National High School.

Data Collection

The questionnaire was created to gather insights on how students use digital platforms and how they behave while learning Mathematics, with two main sections that measure important variables using researcher-made and adapted items. The first section focused on animated videos, virtual classrooms, and educational apps based on the work of Noor et al. (2022), while the second section examined student behaviors such as participation, collaboration, task completion, rule compliance, and empathy using modified variables from Gayle (2024). The instrument contained ten indicators for the independent variables and seven indicators for the dependent variables, using a four-point Likert scale ranging from Strongly Agree to Strongly Disagree.

Data Analysis

After collecting and recording the data gathered in the study, the researcher used descriptive statistics such as percentage, mean, and standard deviation to describe the variables in the study. These measures

provided a clear summary of the respondents' responses to the survey questions. The results helped in identifying patterns, trends, and variations in the data, which were essential for drawing interpretations. Furthermore, Pearson Product-Moment Correlation (r) was utilized to determine the significant relationship between the use of digital platforms and students' behavior in learning Mathematics. This statistical tool assessed the strength and direction of the association between the two variables. The computed correlation coefficient indicated whether the relationship is positive, negative, or negligible, providing evidence to support or refute the assumptions made in the study.

4. Results and Discussions

Problem 1. To what level are the respondents' use of digital platforms as to animated videos, virtual classrooms, and educational apps?

Table 1
Summary of the Respondents' Level on the Use of Digital Platforms

Variable	Mean	SD	Interpretation
Animated Videos	3.60	0.59	Very High
Virtual Classrooms	3.61	0.51	Very High
Educational Apps	3.62	0.50	Very High
Overall	**3.61**	**0.53**	**Very High**

Table 1 shows that the respondents' overall use of digital platforms in learning Mathematics is very high, with an overall mean of 3.61, indicating that most Grade 7 learners in Balingasag District actively rely on technology due to increased access to devices and the growing integration of online tools in education. Educational apps emerged as the most frequently used, offering personalized, interactive, and enjoyable learning experiences that boost motivation, confidence, and understanding, while animated videos, though still very highly used, ranked slightly lower since some students preferred interactive tools over passive viewing; however, they remain helpful for visual explanations of complex concepts. These findings align with studies showing that digital platforms support engagement, deeper learning, and individualized progress, highlighting that student benefit most when given varied digital resources that suit different learning styles and make Mathematics more accessible and motivating.

Problem 2. To what level are the students' behavior as to participation, collaboration, rule compliance, task completion, empathy and support?

Table 2
Summary of Students' Level of Behavior in Learning Mathematics

Variable	Mean	SD	Interpretation
Participation	3.58	0.51	Very High
Collaboration	3.61	0.50	Very High
Rule Compliance	3.54	0.50	Very High

Task Completion	3.62	0.50	Very High
Empathy and Support	3.50	0.53	Very High
Overall	**3.57**	**0.51**	**Very High**

Table 2 shows that students' behavior in learning Mathematics is very positive, with an overall mean of 3.57, indicating that Grade 7 learners in the Balingasag District generally demonstrate strong engagement and motivation, partly due to the support of digital platforms that make learning more accessible and interesting. Task completion received the highest mean, showing that digital tools help students manage their work more effectively by providing clear tasks, interactive activities, and immediate feedback that build confidence, responsibility, and better study habits. Empathy and support had the lowest mean, though still very high, suggesting that while digital platforms enhance academic performance, they offer fewer opportunities for emotional connection, which means students may need additional peer interaction and teacher support to strengthen their sense of belonging. Overall, the findings highlight the importance of balancing digital learning with strategies that nurture emotional well-being to maintain strong motivation and positive behavior in Mathematics.

Problem 3: Is there a significant relationship between the respondents' use of digital platforms and their behavior in learning Mathematics?

Table 3
Result of the Test on the Relationship between the Respondents' Use of Digital Platforms and Students' Behavior in Learning Mathematics

Digital Platforms	**Students' Behavior in Learning Mathematics**					
	Participation	**Collaboration**	**Rule Compliance**	**Task Completion**	**Empathy and Support**	**OVERALL**
	r-value p-value	r-value p-value	r-value p-value	r-value p-value	r-value p-value	r-value p-value
Animated Videos	-0.099 0.228 Ns	0.034 0.681 ns	0.071 0.390 Ns	0.100 0.224 ns	-0.005 0.956 ns	0.039 0.632 Ns
Virtual Classrooms	0.022 0.786 Ns	0.155 0.058 ns	0.041 0.617 Ns	0.095 0.248 ns	-0.037 0.656 ns	0.109 0.186 Ns
Educational Apps	0.165 0.044 **S**	0.093 0.260 ns	0.130 0.113 Ns	-0.022 0.791 ns	-0.021 0.802 ns	0.129 0.116 Ns

Table 3 shows that there is no significant relationship between the overall use of digital platforms and students' behavior in learning Mathematics, leading to the acceptance of the null hypothesis. Animated videos showed no significant effect on any behavioral indicator, likely because they functioned as passive tools that did not require active engagement, while virtual classrooms also showed no meaningful impact, possibly due to limited interaction, distractions, and reduced supervision in online settings. Only

educational apps showed a significant relationship with participation, suggesting that their interactive features encouraged students to engage more actively, although they did not influence other behaviors that required collaboration or emotional support. Overall, the results indicate that passive or minimally interactive digital tools are less effective in shaping learning behaviors, and while educational apps can improve participation, a balanced combination of digital resources and structured support is needed to strengthen broader student behaviors in Mathematics.

5. Conclusion and Recommendations

Conclusion

It can be concluded that the use of educational apps has transformed the way students take part in the learning process. These apps are created to facilitate learning through collaborative and individualized experiences, offering students tools to improve their understanding and skills in Mathematics at their own pace. Thus, the role of teachers in using educational apps in the classroom cannot be overlooked.

Additionally, task completion of homework and assignment on time is essential for students, behavior and personal development. By frequently meeting deadlines not only fulfil essential requirements but also build habits that contribute to long-term efficacy and productivity.

Recommendations

From the findings of the study, the following are recommended:

1. Teachers should make their lessons interesting and engaging by integrating animated videos in their lesson plans. In assessment and evaluation, teachers are encouraged to design follow-up tasks such as reflection questions, problem-solving exercises, or group discussions that connect the video content to real-life mathematical applications.
2. Teachers are encouraged to integrate empathy and support in their lessons for the students to understand and recognize the emotions of their peers and foster a positive atmosphere in learning Mathematics.
3. Students should be aware that the use of educational apps in the classroom can contribute to the participation of their behavior in learning Mathematics.

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