

# Learners' Interest and Engagement in Mathematical Activities

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## Abstract

This study examined learners' interest and engagement in mathematical activities and their relationship to academic performance in the Schools Division of Antique during the year 2025. Utilizing a descriptive–correlational research design, the study aimed to determine the levels of learners' interest, engagement, and performance in mathematics and to establish whether significant relationships exist among these variables. The respondents consisted of 203 learners selected through total enumeration, ensuring comprehensive representation of the target population. Data were gathered using a validated questionnaire that measured learners' interest in mathematics, engagement in mathematical activities, and academic performance outcomes. Descriptive statistics, including frequency, percentage, weighted mean, and standard deviation, were employed to determine the levels of interest, engagement, and performance, while the Pearson Product-Moment Correlation was used to analyze the relationships among the variables. The results revealed that learners demonstrated a high level of interest in mathematics and a moderate to high level of engagement in mathematical activities. Academic performance in mathematics was likewise found to be moderate to high. Significant positive relationships were observed between learners' interest and engagement, interest and performance, and engagement and performance. These findings indicate that learners who exhibit higher interest and active engagement in mathematical activities tend to achieve better academic outcomes. The study highlights the importance of fostering both intrinsic motivation and meaningful participation to enhance learners' achievement in mathematics.

**Keywords:** learners' interest, engagement, mathematical activities, academic performance, mathematics education

## Introduction

Mathematics is a core subject that plays a crucial role in developing learners' logical reasoning, problem-solving skills, and analytical thinking. Despite its importance, learners often display varying levels of interest and engagement in mathematical activities, which can significantly influence their learning experiences and academic performance (Fredricks, Blumenfeld, & Paris, 2004). Learners' interest in mathematics is particularly vital, as intrinsic motivation encourages sustained effort, active participation, and deeper conceptual understanding (Ainley, 2012). Engagement, meanwhile, refers to learners' behavioral, emotional, and cognitive involvement in learning tasks and has been consistently identified as a strong predictor of academic success (Skinner & Pitzer, 2012).

Research has shown that learners who demonstrate high interest in mathematical activities are more engaged and tend to develop positive attitudes toward the subject (Boaler, 2016). In contrast, low levels of interest and engagement are often associated with poor academic performance, reduced confidence, and

decreased motivation to engage with challenging mathematical tasks (Pintrich & Schunk, 2002). Within the Philippine educational context, empirical studies focusing on learners' interest and engagement in mathematics remain limited, particularly in the Schools Division of Antique, where contextual factors such as instructional practices, classroom environment, and learner support systems may influence these variables.

Understanding learners' interest and engagement in mathematical activities is essential for the development of effective instructional strategies that promote active participation, meaningful learning experiences, and improved academic outcomes. This study seeks to determine the levels of learners' interest and engagement in mathematical activities and examine their relationship with academic performance among 203 learners in the Schools Division of Antique during the year 2025.

Specifically, this study aims to determine the levels of learners' interest in mathematical activities in terms of curiosity, enjoyment, and intrinsic motivation, as well as their level of engagement in mathematics in terms of behavioral participation, emotional involvement, and cognitive investment. Furthermore, the study aims to establish whether significant relationships exist between learners' interest and engagement in mathematical activities and their academic performance in mathematics. By addressing these objectives, the study intends to provide insights into how motivational and participatory factors influence learners' achievement and to inform educators and school administrators in designing instructional strategies and interventions that enhance learner involvement and academic success.

## Methodology

This study employed a descriptive–correlational research design to determine the levels of learners' interest and engagement in mathematical activities and their relationship with academic performance. The descriptive component was used to assess the current levels of learners' interest and engagement, while the correlational component examined the relationships between these variables and learners' mathematics performance.

The respondents consisted of 203 learners from various grade levels in the Schools Division of Antique. Total enumeration was utilized to ensure complete representation of the population. All respondents were actively enrolled in mathematics classes and regularly participated in classroom activities.

Data were collected using a researcher-developed and validated questionnaire composed of two major sections. The first section measured learners' interest in mathematical activities, focusing on curiosity, enjoyment, and intrinsic motivation. The second section assessed learners' engagement in mathematics, covering behavioral participation, emotional involvement, and cognitive investment. Academic performance data were obtained from the learners' most recent mathematics grades. The instrument underwent expert validation and pilot testing, yielding a Cronbach's alpha coefficient of 0.88, which indicates high reliability.

Ethical considerations were strictly observed throughout the study. Informed consent was secured from learners and their guardians, confidentiality of responses was maintained, and anonymity of participants was ensured.

Data analysis involved the use of descriptive statistics such as frequency, percentage, weighted mean, and standard deviation to describe the levels of learners' interest, engagement, and performance. Pearson Product-Moment Correlation was employed to determine the relationships among learners' interest, engagement, and academic performance at a 0.05 level of significance.

## Results

The results revealed that learners in the Schools Division of Antique demonstrated a high level of interest in mathematical activities, with an overall weighted mean of 4.21 (SD = 0.34). Among the dimensions of interest, curiosity obtained the highest mean score (M = 4.28, SD = 0.31), followed by enjoyment (M = 4.19, SD = 0.36) and intrinsic motivation (M = 4.16, SD = 0.35). These findings suggest that learners are naturally curious and generally enjoy engaging with mathematical concepts, which supports their active participation in learning activities.

In terms of engagement, learners recorded an overall weighted mean of 4.14 (SD = 0.38). Behavioral participation emerged as the highest-rated dimension (M = 4.22, SD = 0.33), followed by cognitive investment (M = 4.15, SD = 0.37) and emotional involvement (M = 4.05, SD = 0.41). This indicates that learners are actively involved in mathematical tasks and invest cognitive effort in problem-solving, although emotional engagement appears to be slightly lower, suggesting potential challenges in sustaining motivation.

Learners' academic performance in mathematics was rated at a moderately high level, with a mean of 4.08 (SD = 0.39). This reflects satisfactory achievement levels that are consistent with learners' reported interest and engagement in mathematical activities.

Correlation analysis revealed significant positive relationships between learners' interest and engagement ( $r = 0.61, p < 0.01$ ), engagement and academic performance ( $r = 0.57, p < 0.01$ ), and interest and academic performance ( $r = 0.53, p < 0.01$ ). These results indicate that higher levels of interest and engagement are associated with better academic outcomes in mathematics.

## Discussion

The findings indicate that learners' interest plays a central role in fostering engagement in mathematical activities. The prominence of curiosity as the highest-rated dimension of interest supports the view of Fredricks, Blumenfeld, and Paris (2004), who emphasized that learners who are naturally curious are more likely to participate actively and retain learning. Enjoyment and intrinsic motivation further strengthen learners' willingness to engage in mathematical problem-solving and classroom activities.

The high level of engagement, particularly in behavioral participation, suggests that learners are actively involved in classroom tasks, reinforcing the importance of hands-on activities and sustained cognitive effort in mathematics learning (Eccles & Wang, 2012). However, the slightly lower level of emotional involvement indicates that some learners may experience challenges in maintaining enthusiasm, particularly when faced with complex or demanding mathematical tasks.

The significant positive relationships among interest, engagement, and academic performance confirm that these variables are interrelated and mutually reinforcing. Learners who demonstrate higher levels of curiosity, motivation, and active participation tend to achieve better academic results. These findings highlight the importance of instructional approaches that promote learner interest and engagement as key pathways to improving mathematics performance.

Overall, the study underscores the value of learner-centered teaching strategies that stimulate curiosity, encourage active participation, and support sustained engagement to enhance academic achievement in mathematics.

## Conclusion

Based on the findings of the study, it can be concluded that learners in the Schools Division of Antique

demonstrate high levels of interest and engagement in mathematical activities. Curiosity emerged as the strongest component of learners' interest, indicating a natural inclination to explore and understand mathematical concepts. Enjoyment and intrinsic motivation further contribute to learners' active participation in mathematics learning.

Learners' engagement was likewise rated high, with behavioral participation identified as the most prominent dimension. This suggests that learners are actively involved in mathematical tasks and problem-solving activities. Although cognitive and emotional engagement were slightly lower, they remain significant, indicating that learners exert mental effort while occasionally encountering motivational challenges.

Furthermore, the study established significant positive relationships between learners' interest, engagement, and academic performance in mathematics. Learners who exhibited higher levels of curiosity, motivation, and engagement consistently demonstrated better academic outcomes. These findings emphasize the essential role of interest and engagement as key contributors to success in mathematics learning.

### Recommendations

In light of the conclusions drawn from the study, the following recommendations are proposed.

Instructional strategies should emphasize learner-centered and interactive approaches that promote curiosity, enjoyment, and active participation, such as problem-based learning, collaborative activities, and real-life applications of mathematical concepts.

Schools should foster engaging classroom environments that encourage exploration, critical thinking, and sustained attention through the use of manipulatives, visual aids, and technology-enhanced instructional tools.

Teachers should provide continuous motivational support, constructive feedback, and positive reinforcement to strengthen learners' intrinsic motivation and emotional engagement, particularly for those who experience difficulty with complex mathematical tasks.

Educational administrators should offer professional development programs that equip teachers with effective strategies for enhancing learners' interest and engagement, emphasizing innovative and evidence-based practices in mathematics instruction.

Future research may explore additional factors such as parental involvement, peer collaboration, and curriculum design to further understand their influence on learners' engagement and academic performance in mathematics.

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