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School Environment and Learners' Mathematics Engagement

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ABSTRACT :

This study determined the school environment and learners' mathematics engagement in the Districts of Sibalom and San Remigio, Schools Division of Antique, Philippines, during the school year 2025–2026. The respondents were 117 mathematics teachers from the two districts. Data were collected using validated questionnaires on school environment and learners' mathematics engagement. The study employed a descriptive-correlational research design. The dependent variables considered were school environment and learners' mathematics engagement, with respondents' sex, highest educational attainment, length of teaching experience, school size, and school location as independent variables. Statistical tools employed were frequency, percentage, Mann-Whitney U Test, Kruskal-Wallis H Test, and Linear Regression Analysis set at .05 level of significance. The findings revealed that the school environment was "Very Good," while learners' mathematics engagement was "Very Great," as assessed by the respondents overall and across the different classifications. Significant differences in the assessment of school environment were found according to respondents' highest educational attainment and length of teaching experience, but no significant differences were observed according to respondents' sex, school size, and school location. Similarly, significant differences in the extent of learners' mathematics engagement were found according to respondents' highest educational attainment and school size, while no significant differences were observed according to respondents' sex, length of teaching experience, and school location. Finally, school environment significantly influenced learners' mathematics engagement.

Keywords: school environment, learners' mathematics engagement

INTRODUCTION

The school environment plays a pivotal role in shaping learners' engagement in academic subjects, including mathematics, because it provides the physical, social, and instructional contexts for learning (Mag-aso et al., 2025). A positive environment—characterized by safety, organization, and respectful relational climates—has been shown to correlate with high levels of learner engagement (Mag-aso et al., 2025). Studies show that classroom and school contexts influence how learners participate, interact, and persist when facing challenging mathematical content (Antipuesto & Tan, 2023). Furthermore, international assessments such as the Programme for International Student Assessment (PISA) 2022 highlight ongoing concerns about mathematics engagement and learning outcomes in the Philippines; Filipino students scored substantially below the OECD average in mathematics, and disruptions in learning climate—such as classroom discipline and support—continue to impact engagement and achievement (OECD, 2023).

In the Districts of Sibalom and San Remigio, Schools Division of Antique, teachers have observed persistent disengagement in mathematics, particularly among junior high school learners who report difficulties maintaining concentration during lessons and limited collaborative learning opportunities. For instance, some classes in San Remigio have struggled with overcrowded classrooms and limited access to instructional resources, which learners identify as barriers to active participation in mathematics tasks. Similarly, schools in Sibalom have noted inconsistent peer engagement and minimal structured support for learners who are easily distracted, leading to lower engagement during mathematics lessons. These contextual challenges mirror broader patterns found in recent correlational studies, where a supportive classroom social environment significantly correlates with engagement in mathematics learning (Gutierrez & Doronio, 2024).

Despite the documented importance of school environment on mathematics engagement, there remains a need for localized research to understand how specific environmental factors in Antique schools influence learners' engagement in mathematics.

STATEMENT OF THE PROBLEM

This study aimed to determine the school environment and learners' mathematics engagement in the Districts of Sibalom and San Remigio, Schools Division of Antique, Philippines for school year 2025-2026.

Specifically, this study sought answers to the following questions:

1. What is the school environment as assessed by the respondents when taken as a whole and when classified according to sex, highest educational attainment, length of teaching experience, school size and school location?
2. What is the extent of learners' mathematics engagement as assessed by the respondents when taken as a whole and when classified according to sex,

highest educational attainment, length of teaching experience, school size and school location?

3. Are there significant differences in the school environment as assessed by the respondents when classified according to sex, highest educational attainment, length of teaching experience, school size and school location?

4. Are there significant differences in the extent of learners' mathematics engagement as assessed by the respondents when classified according to sex, highest educational attainment, length of teaching experience, school size and school location?

5. Does school environment significantly influence learners' mathematics engagement?

METHODS

The study utilized a descriptive-correlational research design. The respondents were 117 mathematics teachers from the Districts of Sibalom and San Remigio, Schools Division of Antique. Complete enumeration was employed.

Data were gathered using validated questionnaires adapted from previous studies on school environment and mathematics engagement. The school environment instrument obtained a Cronbach's alpha coefficient of .913, while the mathematics engagement instrument obtained a reliability coefficient of .928, indicating high reliability.

Frequency, percentage, mean, Mann-Whitney U Test, Kruskal-Wallis H Test, and Linear Regression Analysis were used to analyze the data at the .05 level of significance. Statistical analyses were conducted using SPSS.

RESULTS AND DISCUSSION

School Environment as Assessed by the Respondents When Taken as a Whole

The school environment as assessed by the respondents when taken as a whole was determined by computing the mean scores.

The school environment as assessed by the respondents when taken as a whole is "Very Good" with obtained overall mean score of 4.80. A scrutiny of the means in the same table reveals that respondents obtained a highest mean score in the indicators "Inclusivity and diversity are promoted" (M=4.92), "Regular opportunities to work collaboratively with other teachers" (M=4.86) and "There is mutual respect among teachers, staff and learners" (M=4.86) described as "Very Good" while they obtained the lowest mean score in the indicators "There are enough space for learning activities (classrooms, library, laboratories, etc.)" (M=4.64) "Learners behave in ways that support a positive learning environment" (M=4.70), and "Adequate instructional materials and resources are provided" (M=4.74) described also as "Very Good."

This result means that all schools have favorable physical, social, and instructional conditions and contexts in which teaching and learning occur. This is indicated by promoting inclusivity and diversity, regular opportunities to work collaboratively with other teachers and there is mutual respect among teachers, staff and learners.

The study conducted by Molinari and Grazia (2023) affirms the above findings who found the importance of classroom practices and overall school atmosphere in shaping perceptions of the educational environment.

Table 2 presents the data.

Table 2. School Environment as Assessed by the Respondents When Taken as a Whole

Category	Mean	Description
Regular opportunities to work collaboratively with other teachers.	4.86	Very Good
Learners are cooperative and respectful to teachers.	4.81	Very Good
Adequate instructional materials and resources are provided.	4.74	Very Good
Teachers are invited to participate in school-level decision-making.	4.76	Very Good
School leaders support innovation in teaching and learning practices.	4.75	Very Good
The surroundings are conducive to learning.	4.82	Very Good
Learners feel safe and comfortable expressing their opinions.	4.83	Very Good
There is mutual respect among teachers, staff and learners.	4.86	Very Good
There is a strong sense of shared mission and goals among personnel.	4.79	Very Good
Teachers receive adequate support from school head.	4.83	Very Good
Inclusivity and diversity are promoted.	4.92	Very Good
Professional development opportunities that enhance teaching are available.	4.85	Very Good
Learners behave in ways that support a positive learning environment.	4.70	Very Good
There are clear policies and procedures that support a productive environment.	4.83	

There are enough space for learning activities (classrooms, library, laboratories, etc.).	4.64	Very Good
Overall Mean	4.80	Very Good

Scale of Means: 4.21–5.00 Very Good; 3.41 – 4.20 Good; 2.61 – 3.40 Slightly Good; 1.81-2.60 Poor; 1.00 – 1.80 Very Poor

School Environment as Assessed by the Respondents When Classified According to Sex, Highest Educational Attainment, Length of Teaching Experience, School Size and School Location

The school environment as assessed by the respondents when classified according to sex, highest educational attainment, length of teaching experience, school size and school location was determined by computing the mean scores.

When classified according to sex, both male (M= 4.75) and female (M=4.81) respondents assessed the school environment as “Very Good.”

When classified according to highest educational attainment, both respondents who are holder of bachelor’s degree (M= 4.76) and master’s degree (M=4.92) assessed the school environment as “Very Good.”

When classified according to length of teaching experience, both respondents with short (M= 4.76) and long (M=4.87) length of teaching experience assessed the school environment as “Very Good.”

When classified according to school size, respondents who came from small (M= 4.76), medium (M=4.82) and large (M=4.80) schools assessed the school environment as “Very Good.”

When classified according to school location, both respondents who came from the District of San Remigio (M= 4.76) and District of Sibalom (M=4.83) assessed the school environment as “Very Good.”

This result means that regardless of sex, highest educational attainment, length of teaching experience, school size and school location, the respondents believe that all schools have favorable physical, social, and instructional conditions and contexts in which teaching and learning occur.

These results consistent with the finding of Porras et al. (2025) who found that teachers’ perceptions of the learning environment were predominantly highly conducive.

Table 3 presents the data.

Table 3. School Environment as Assessed by the Respondents When Classified According to Sex, Highest Educational Attainment, Length of Teaching Experience, School Size and School Location

Variables	Mean	Description
Sex		
Male	4.75	Very Good
Female	4.81	Very Good
Sub-Mean	4.80	Very Good
Highest Educational Attainment		
Bachelor’s Degree	4.76	Very Good
Master’s Degree	4.92	Very Good
Sub-Mean	4.80	Very Good
Length of Teaching Experience		
Short	4.76	Very Good
Long	4.87	Very Good
Sub-Mean	4.80	Very Good
School Size		
Small	4.76	Very Good
Medium	4.82	Very Good
Large	4.80	Very Good
Sub-Mean	4.80	Very Good
School Location		
San Remigio	4.76	Very Good
Sibalom	4.83	Very Good
Sub-Mean	4.80	Very Good

Scale of Means: 4.21–5.00 Very Good; 3.41 – 4.20 Good; 2.61 – 3.40 Slightly Good; 1.81-2.60 Poor; 1.00 – 1.80 Very Poor

Extent of Learners' Mathematics Engagement as Assessed by the Respondents When Taken as a Whole

The extent of learners' mathematics engagement as assessed by the respondents when taken as a whole was determined by computing the mean scores.

The extent of learners' mathematics engagement as assessed by the respondents when taken as a whole is "Very Great" with obtained overall mean score of 4.59. A scrutiny of the means in the same table reveals that respondents obtained a highest mean score in the indicators "Collaborate with peers during mathematics activities" (M=4.78), "Actively participate in mathematics class discussions" (M=4.73) and "Enjoy and show interest in mathematics lessons" (M=4.65) described as "Very Great Extent" while they obtained the lowest mean score in the indicators "Use problem-solving strategies independently" (M=4.44) "Complete mathematics assignments on time" (M=4.46), and "Stay focused on tasks even when the work is challenging" (M=4.50) described also as "Very Great Extent."

This result means that all learners have active involvement in mathematics learning activities. This is indicated by collaborating with peers during mathematics activities, actively participating in mathematics class discussions and enjoying and showing interest in mathematics lessons. This is consistent with the findings of Guzman (2023) who reported that learners demonstrated active engagement in mathematics, with support from parents, teachers, and peers contributing to their learning participation.

Table 4 presents the data.

Table 4. Extent of Learners' Mathematics Engagement as Assessed by the Respondents When Taken as a Whole

Category	Mean	Description
Actively participate in mathematics class discussions.	4.73	Very Great Extent
Listen attentively during mathematics instruction.	4.62	Very Great Extent
Complete mathematics assignments on time.	4.46	Very Great Extent
Ask questions when they do not understand math concepts.	4.56	Very Great Extent
Use problem-solving strategies independently.	4.44	Very Great Extent
Relate new mathematical ideas to what they already know.	4.58	Very Great Extent
Stay focused on tasks even when the work is challenging.	4.50	Very Great Extent
Show enthusiasm when learning new math topics.	4.55	Very Great Extent
Express positive attitudes toward mathematics learning.	4.60	Very Great Extent
Collaborate with peers during mathematics activities.	4.78	Very Great Extent
Demonstrate persistence when solving difficult math problems.	4.53	Very Great Extent
Apply mathematics to real-life situations.	4.60	Very Great Extent
Reflect on their understanding and adjust their approach.	4.59	Very Great Extent
Show confidence in their mathematics abilities.	4.62	Very Great Extent
Enjoy and show interest in mathematics lessons.	4.65	Very Great Extent
Overall Mean	4.59	Very Great Extent

Scale of Means: 4.21–5.00 Very Great Extent; 3.41 – 4.20 Great Extent; 2.61 – 3.40 Moderate Extent; 1.81-2.60 Low Extent; 1.00 – 1.80 Very Low Extent

Extent of Learners' Mathematics Engagement as Assessed by the Respondents When Classified According to Sex, Highest Educational Attainment, Length of Teaching Experience, School Size and School Location

The extent of learners' mathematics engagement as assessed by the respondents when classified according to sex, highest educational attainment, length of teaching experience, school size and school location was determined by computing the mean scores.

When classified according to sex, both male (M= 4.59) and female (M=4.59) respondents assessed the extent of learners' mathematics engagement as "Very Great."

When classified according to highest educational attainment, both respondents who are holder of bachelor's degree (M= 4.50) and master's degree (M=4.83) assessed the extent of learners' mathematics engagement as "Very Great."

When classified according to length of teaching experience, both respondents with short (M= 4.55) and long (M=4.65) length of teaching experience assessed the extent of learners' mathematics engagement as "Very Great."

When classified according to school size, respondents who came from small (M= 4.24), medium (M=4.67) and large (M=4.67) schools assessed the extent of learners' mathematics engagement as "Very Great."

When classified according to school location, both respondents who came from the District of San Remigio (M= 4.53) and District of Sibalom (M=4.63) assessed the extent of learners' mathematics engagement as "Very Great."

This result means that regardless of sex, highest educational attainment, length of teaching experience, school size and school location, respondents believe that all learners have active involvement in mathematics learning activities.

This is consistent with the findings of Bearneza (2025) that learners demonstrated substantial engagement in mathematics.

Table 5 presents the data.

Table 5. Extent of Learners' Mathematics Engagement as Assessed by the Respondents When Classified According to Sex, Highest Educational Attainment, Length of Teaching Experience, School Size and School Location

Variables	Mean	Description
Sex		
Male	4.59	Very Great Extent
Female	4.59	Very Great Extent
Sub-Mean	4.59	Very Great Extent
Highest Educational Attainment		
Bachelor's Degree	4.50	Very Great Extent
Master's Degree	4.83	Very Great Extent
Sub-Mean	4.59	Very Great Extent
Length of Teaching Experience		
Short	4.55	Very Great Extent
Long	4.65	Very Great Extent
Sub-Mean	4.59	Very Great Extent
School Size		
Small	4.24	Very Great Extent
Medium	4.67	Very Great Extent
Large	4.67	Very Great Extent
Sub-Mean	4.59	Very Great Extent
School Location		
San Remigio	4.53	Very Great Extent
Sibalom	4.63	Very Great Extent
Sub-Mean	4.59	Very Great Extent

Scale of Means: 4.21–5.00 Very Great Extent; 3.41 – 4.20 Great Extent; 2.61 – 3.40 Moderate Extent; 1.81-2.60 Low Extent; 1.00 – 1.80 Very Low Extent

Differences in the School Environment as Assessed by the Respondents When Classified According to Sex, Highest Educational Attainment, Length of Teaching Experience and School Location

As reflected in Table 6, no significant differences existed in the school environment as assessed by the respondents when classified according to sex, $U = 1157.500$, $p > .05$ and school location, $U = 1514.500$, $p > .05$. Thus, the null hypothesis which states that there are no significant differences in the school environment as assessed by the respondents when classified according to sex and school location was not rejected.

The above findings indicate that respondents have similar assessment of the school environment regardless of their sex and school location.

This result means that male and female respondents perceive the physical, social, and instructional conditions in their schools in generally comparable ways. Likewise, respondents from different school locations share similar views regarding the availability of learning resources, classroom conditions, teacher support, school safety, and the overall learning atmosphere. The similarity in assessment indicates that sex and school location do not create notable variations in how respondents perceive the school environment. This finding further indicates that the school environment is generally experienced and perceived consistently by respondents across these classifications.

This supports the findings of Ahmad, Zai, and Wani (2023) who found no significant differences in overall school environment perceptions based on gender or location.

On the other hand, significant differences existed in the school environment as assessed by the respondents when classified according to highest educational attainment, $U = 834.000$, $p < .05$ and length of teaching experience, $U = 1084.000$, $p < .05$. Thus, the null hypothesis which states that there are no significant differences in the school environment as assessed by the respondents when classified according to highest educational attainment and length of teaching experience was rejected.

The above findings indicate that respondents differ in their assessment of the school environment when their highest educational attainment and length of teaching experience are considered. In the case of this study, respondents who are holder of master's degree ($M = 4.92$) with long ($M = 4.87$) length of teaching experience demonstrate better assessment of school environment than respondents who are holder of bachelor's degree ($M = 4.76$) with short ($M = 4.76$) length of teaching experience.

This result means that educational attainment and length of teaching experience are associated with differences in how respondents assess the physical, social, and instructional conditions in their schools. Respondents with higher educational attainment and longer teaching experience may have broader professional perspectives and more extensive exposure to various school environments, enabling them to provide more favorable assessments. In contrast, respondents with a bachelor's degree and shorter teaching experience may have comparatively less exposure to different school situations and practices. Overall, the finding highlights variations in the assessment of the school environment across combinations of educational attainment and teaching experience.

This corroborates the findings of Mahasneh, Al-Alwan, and Al-Adamat (2022) who found statistically significant differences in perceptions of school environment according to educational qualification and years of teaching experience.

Table 6. Significant Differences in the School Environment as Assessed by the Respondents When Classified According to Sex, Highest Educational Attainment, Length of Teaching Experience and School Location

Variables	Mean Rank	U-test value	p-value	Remarks
Sex				
Male	55.84	1157.500	.558	Not Significant
Female	59.99			
Highest Educational Attainment				
Bachelor's Degree	53.59	834.000	.002	Significant
Master's Degree	74.70			
Length of Teaching Experience				
Short	53.08	1084.000	.007	Significant
Long	70.40			
School Location				
San Remigio	55.58	1514.500	.304	Not Significant
Sibalom	61.84			
p>.05, Not Significant				
p<.05, Significant				

Differences in the School Environment as Assessed by the Respondents When Classified According to School Size

Table 7 shows that no significant differences existed in the school environment as assessed by the respondents when classified according to school size, $H=5.099$, $p > .05$. Thus, the null hypothesis which states that there are no significant differences in the school environment as assessed by the respondents when classified according to school size was not rejected.

This result means that respondents have similar assessment of the school environment regardless of school size.

This result means that respondents from small, medium, and large schools assess the physical, social, and instructional conditions in their respective schools in generally comparable ways. The similarity in assessment indicates that school size does not create notable differences in respondents' perceptions of classroom conditions, teacher support, availability of learning resources, school safety, and the overall learning atmosphere. Overall, the finding shows that respondents maintain generally consistent perceptions of the school environment across different school sizes.

This is consistent with the findings of Madarang (2023) that schools of different sizes shared generally positive conditions in areas such as safety, learning, interpersonal relationships, leadership, collaboration, and teacher self-determination.

Table 7. Significant Differences in the School Environment as Assessed by the Respondents When Classified According to School Size

Variables	Mean Rank	H-value	p-value	Remarks
School Size				
Small	45.17	5.099	.078	Not Significant
Medium	62.47			
Large	62.25			
p >.05, Not Significant				

Differences in the Extent of Learners' Mathematics Engagement as Assessed by the Respondents When Classified According to Sex, Highest Educational Attainment, Length of Teaching Experience and School Location

As reflected in Table 8, no significant differences existed in the extent of learners' mathematics engagement as assessed by the respondents when classified according to sex, $U = 1239.500$, $p > .05$, length of teaching experience, $U=1260.500$, $p > .05$ and school location, $U=1430.000$, $p > .05$. Thus, the null hypothesis which states that there are no significant differences in the extent of learners' mathematics engagement as assessed by the respondents when classified according to sex, length of teaching experience and school location was not rejected.

The above findings indicate that respondents have similar assessment of the extent of learners' mathematics engagement regardless of their sex, length of teaching experience and school location.

This result means that respondents, whether male or female, with short or long teaching experience, and from San Remigio or Sibalom, assess learners' participation, interest, attention, and involvement in mathematics in generally comparable ways. The similarity in assessment indicates that these respondent classifications do not create notable differences in their perceptions of learners' mathematics engagement. Overall, the finding shows that learners' mathematics engagement is consistently perceived across different groups of respondents and school settings.

This supports the findings of Sabug (2023) who found no significant difference in mathematics engagement according to sex.

On the other hand, significant differences existed in the extent of learners' mathematics engagement as assessed by the respondents when classified according to highest educational attainment, $U=798.500$, $p < .05$. Thus, the null hypothesis which states that there are no significant differences in the extent of learners' mathematics engagement as assessed by the respondents when classified according to highest educational attainment was rejected.

The above findings indicate that respondents differ in their assessment of the extent of learners' mathematics engagement when their highest educational attainment is considered. In the case of this study, respondents who are holder of master's degree ($M=4.83$) demonstrate better assessment of the extent of learners' mathematics engagement than respondents who are holder of bachelor's degree ($M=4.50$).

This means that respondents with higher educational attainment assess learners as more actively participating, attentive, interested, and involved in mathematics learning activities. The difference in assessment may be associated with the broader academic preparation and professional

experiences of respondents with master's degrees, which provide them with wider perspectives in observing and evaluating learners' mathematics engagement. Overall, the finding indicates that respondents' educational attainment is associated with differences in their assessment of learners' mathematics engagement.

This supports the findings of Centeno (2025) that differences in teachers' academic preparation was associated with differences in their understanding and assessment of strategies used to promote learners' engagement in mathematics.

Table 8. Significant Differences in the Extent of Learners' Mathematics Engagement as Assessed by the Respondents When Classified According to Sex, Highest Educational Attainment, Length of Teaching Experience and School Location

Variables	Mean Rank	U-test value	p-value	Remarks
Sex				
Male	59.23	1239.500	.966	Not Significant
Female	58.93			
Highest Educational Attainment				
Bachelor's Degree	53.18	798.500	.001	Significant
Master's Degree	75.88			
Length of Teaching Experience				
Short	55.37	1260.500	.097	Not Significant
Long	65.99			
School Location				
San Remigio	53.98	1430.000	.133	Not Significant
Sibalom	63.16			
p>.05, Not Significant				
p<.05, Significant				

Differences in the Extent of Learners' Mathematics Engagement as Assessed by the Respondents When Classified According to School Size

Table 9 shows that significant differences existed in the extent of learners' mathematics engagement as assessed by the respondents when classified according to school size, $H=13.758$, $p < .05$. Thus, the null hypothesis which states that there are no significant differences in the extent of learners' mathematics engagement as assessed by the respondents when classified according to school size was rejected.

This result means that respondents differ in their assessment of the extent of learners' mathematics engagement when school size is considered. In the case of this study, respondents who came from medium ($M=4.67$) and large ($M=4.67$) schools demonstrate better assessment of the extent of learners' mathematics engagement than respondents who came from small ($M=4.24$) schools.

This result means that respondents from medium and large schools assess learners as more actively participating, attentive, interested, and involved in mathematics learning activities. The difference in assessment may be associated with variations in learning resources, instructional opportunities, classroom interactions, and the range of academic activities available to learners. Overall, the finding indicates that respondents from medium and large schools have more favorable perceptions of learners' mathematics engagement compared with respondents from small schools.

This is consistent with the findings of Symonds (2025) that the size-related characteristics of the learning environment can correspond with differences in learners' engagement.

Table 9. Significant Differences in the Extent of Learners' Mathematics Engagement as Assessed by the Respondents When Classified According to School Size

Variables	Mean Rank	H-value	p-value	Remarks
School Size				
Small	36.24	13.758	.001	Significant
Medium	65.00			
Large	63.88			
p <.05, Significant				

Influence of School Environment on Learners' Mathematics Engagement

The Linear Regression Analysis ($\alpha=.05$) was utilized to determine the influence of school environment on learners' mathematics engagement.

As shown in Table 10, school environment has significant influence on learners' mathematics engagement with obtained R^2 value of .529. This explains that 52.90% of the variances in learners' mathematics engagement is attributed by school environment ($F = 129.260$, $p < .05$) while 47.10% attributed by factors other than school environment.

This result indicates that school environment has significant influence on learners' mathematics engagement.

This finding means that the physical, social, and instructional conditions within the school influence the extent to which learners participate, show interest, pay attention, and become actively involved in mathematics learning activities. A supportive classroom climate, positive teacher-learner relationships, adequate learning resources, safe school conditions, and conducive learning spaces influence learners to participate more actively and maintain greater interest in mathematics. Conversely, less supportive school conditions may reduce learners' opportunities for active participation and involvement. Overall, the finding emphasizes that a positive and supportive school environment plays an important role in enhancing learners' mathematics engagement.

This corroborates the findings of Jansen et al. (2023) that mathematics engagement is socially situated and can be shaped by teachers' instructional practices and classroom climate.

Table 10. Summary of the Linear Regression Analysis on the Influence of School Environment on Learners' Mathematics Engagement

Variable	Multiple R	R ² Change	F	Sig. F	SEB	Beta	t	Sig.
School Environment	.727	.529	.525	129.260	.000	1.249	.727	11.369 .000

Conclusions

Based on the above-mentioned results, the following conclusions were drawn:

1. All schools in the Districts of Sibalom and San Remigio, Schools Division of Antique have favorable physical, social, and instructional conditions and contexts in which teaching and learning occur.
2. All learners in the Districts of Sibalom and San Remigio, Schools Division of Antique have active involvement in mathematics learning activities.
3. Teachers have similar assessment of the school environment regardless of their sex, school size and school location while they differ in their assessment when highest educational attainment and length of teaching experience are considered.
4. Teachers have similar assessment of the extent of learners' mathematics engagement regardless of their sex, length of teaching experience and school location while they differ in their assessment when highest educational attainment and school size are considered.
5. School environment has significant influence on learners' mathematics engagement.

Recommendations

Based on the findings and conclusions, the researcher recommends the following:

1. The higher officials of the Department of Education (DepEd) may continue to strengthen policies, programs, and support systems that promote safe, inclusive, supportive, and learner-centered schools. They may ensure the continuous provision of adequate instructional materials, classroom facilities, technology, and other learning resources, particularly in schools with limited resources. Regular monitoring and evaluation of school conditions may also be conducted to identify areas that require improvement and to ensure compliance with established standards for school safety, cleanliness, classroom management, and learner welfare.
2. School heads may create and maintain a supportive, motivating, and learner-centered school environment that encourages active participation in mathematics. They may provide teachers with opportunities for continuous professional development focused on engaging mathematics strategies, problem-solving activities, collaborative learning, and the effective use of appropriate instructional technologies. School heads may also ensure the availability of adequate mathematics learning materials and resources that allow learners to participate in meaningful and hands-on activities.
3. Teachers may maintain orderly, safe, inclusive, and supportive classrooms. They may strengthen positive teacher-learner relationships by demonstrating respect, fairness, empathy, and responsiveness to learners' needs. Teachers may also practice effective classroom management, maintain cleanliness and organization, and use learner-centered instructional strategies that encourage cooperation, participation, and mutual respect.
4. Teachers may consistently use interactive, learner-centered, and meaningful instructional strategies that encourage active participation in mathematics lessons. They may provide varied activities such as problem-solving tasks, collaborative exercises, games, real-life applications, and appropriate technology-based activities to maintain learners' interest and attention. Teachers may also create a positive classroom climate where learners feel comfortable expressing their ideas, asking questions, making mistakes, and participating in mathematical discussions.
5. Future researchers may conduct further studies on school environment and learners' mathematics engagement. They may replicate the study in other school divisions, districts, grade levels, or educational settings to determine whether similar findings emerge in different contexts. Researchers may also examine other variables, such as teachers' instructional practices, learners' mathematics anxiety, motivation, socioeconomic background, parental support, and access to digital learning resources, to provide a more comprehensive understanding of mathematics engagement. Since the present study establishes a significant influence of school environment on learners' mathematics engagement, future researchers may conduct experimental or longitudinal studies to examine changes in engagement following specific school-based interventions.

REFERENCES

- Ahmad, M. R., Zai, A. F., & Wani, G. (2023). *School environment perceptions among university teachers: Exploring gender and rural-urban variations*. Educational Administration: Theory and Practice, 29(4).
- Antipuesto, J. L., & Tan, D. A. (2023). Students' academic performance and engagement in mathematics via blended learning. *American Journal of Educational Research*, 11(4), 235-240.
- Beameza, F. J. D. (2025). An investigation of learning engagement and self-interest among students in learning mathematics. *International Journal of Research and Innovation in Applied Science*.

- Centeno, M. G. (2025). Differentiated teaching approach in achieving student engagement in learning mathematics. *Psychology and Education: A Multidisciplinary Journal*, 39(8).
- Gutierrez, A. C., Jr., & Doronio, R. G. (2024). Classroom social environment and student engagement in mathematics: A correlational study. *European Journal of Education Studies*, 11(8).
- Guzman, J. K. D. (2023). *Student learning engagement and performance of Grade 11 students in mathematics* (Master's thesis). Ilocos Sur Polytechnic State College.
- Jansen, A., Curtis, K., Mirzaei, A. M., Cullicott, C. E., Smith, E. P., & Middleton, J. A. (2023). Secondary mathematics teachers' descriptions of student engagement. *Educational Studies in Mathematics*, 113(3), 425-442. <https://doi.org/10.1007/s10649-023-10220-8>
- Mag-aso, S. J. S., Albiso, K. M. R., Condeza, K. B., Edaño, R. V., Evangelista, A. F., Lazaro, E. L. O., ... Pelandas, A. M. O. (2025). The influence of school climate and subjective well-being on students' engagement. *International Journal of Research and Innovation in Social Science*, 9(3).
- Madarang, J. (2023). Culture and climate of public secondary school in Isabela in the new normal. *Studies in Technology and Education*, 2(1), 71-86. <https://doi.org/10.55687/ste.v2i1.33>
- Mahasneh, A., Al-Alwan, A., & Al-Adamat, O. (2022). Teachers' work engagement and its relationship to school environment. *Jordan Journal of Educational Sciences*, 18(1), 53-74.
- Molinari, L., & Grazia, V. (2023). A multi-informant study of school climate: Student, parent, and teacher perceptions. *European Journal of Psychology of Education*, 38, 1403-1423. <https://doi.org/10.1007/s10212-022-00647-3>
- Organisation for Economic Co-operation and Development (OECD). (2023). *PISA 2022 results country note: Philippines*. OECD Publishing. <https://www.oecd.org>
- Porras, R. C., Cartagena, R. A., & Tubola, C. J. S. (2025). Levels of school learning environment of public high schools: Implications to educational leaders. *International Journal of Research and Innovation in Social Science*.
- Sabug, D. J. V. (2023). Students' mathematics confidence and engagement. *International Journal of Novel Research and Development*, 8(7), B565-B580.
- Symonds, J. E. (2025). Class size and children's behavioural engagement in learning: A systematic observation study. *Frontline Learning Research*.