

Classroom learning environment and its effect on mathematics engagement of Grade 7 and 8 learners in Alicia Vocational School

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ABSTRACT

This study determined the classroom learning environment and its effect on the Mathematics engagement of Grade 7 and Grade 8 learners in Alicia Vocational School during the School Year 2025–2026. Specifically, it described the respondents' profile in terms of age, grade level, and sex; assessed the level of classroom learning environment in terms of physical environment, teacher support and interaction, and classroom climate; determined the level of learners' engagement in Mathematics in terms of behavioral, emotional, and cognitive engagement; examined the significant relationship between classroom learning environment and learners' engagement in Mathematics; and proposed an intervention program based on the findings. The study employed a descriptive-correlational research design. The respondents consisted of thirty-seven (37) Grade 7 and Grade 8 learners, comprising twenty-two (22) females and fifteen (15) males. Data were gathered using a researcher-made, validated questionnaire. Frequency and percentage were used to describe the respondents' profile, while weighted mean determined the levels of classroom learning environment and Mathematics engagement. Pearson Product-Moment Correlation Coefficient was utilized to determine the significant relationship between the variables at the 0.05 level of significance. The findings revealed that the majority of the respondents were 15 years old and were enrolled in Grade 8. Both female and male learners strongly agreed that their classroom learning environment was favorable in terms of physical environment, teacher support and interaction, and classroom climate, with classroom climate obtaining the highest ratings. Likewise, learners demonstrated a very high level of Mathematics engagement. Female learners showed the highest level of emotional engagement, while male learners exhibited the highest level of cognitive engagement. Correlation analysis yielded a Pearson correlation coefficient of $r = 0.391$ and a p-value of 0.811, indicating no significant relationship between classroom learning environment and learners' engagement in Mathematics when grouped according to sex. Thus, the null hypothesis was accepted. Based on the findings, it is recommended that school administrators and Mathematics teachers sustain positive classroom learning environments through effective classroom management, supportive teacher–student interactions, and engaging instructional strategies. Schools may also implement intervention programs that promote active participation and meaningful learning experiences in Mathematics. Future researchers are encouraged to investigate additional variables, such as learning motivation, self-efficacy, study habits, parental involvement, and academic performance, using larger samples to further explain learners' engagement in Mathematics.

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INTRODUCTION

Mathematics is an essential component of the basic education curriculum as it develops learners' critical thinking, logical reasoning, and problem-solving skills. However, learners' success in Mathematics depends not only on instructional strategies but also on the classroom learning environment in which learning takes place. A positive classroom environment characterized by adequate physical facilities, supportive teacher-student interactions, and a favorable classroom climate encourages learners to participate actively and remain engaged in learning activities.

Learner engagement is a multidimensional construct consisting of behavioral, emotional, and cognitive engagement. Engaged learners actively participate in classroom activities, develop positive attitudes toward learning, and invest mental effort in understanding concepts. Previous studies have suggested that classroom learning environment influences learners' engagement and academic achievement. Despite these findings, limited localized studies have examined this relationship among Grade 7 and Grade 8 learners in Alicia Vocational School.

This study aimed to determine the level of classroom learning environment and Mathematics engagement among Grade 7 and Grade 8 learners and to establish whether a significant relationship exists between the two variables.

Statement of the problem

This study aimed to determine the classroom learning environment and its effect on the Mathematics engagement of Grade 7 and Grade 8 learners in Alicia Vocational School during the School Year 2025–2026.

Specifically, it sought to answer the following questions:

1. What is the profile of the respondents in terms of age, grade level, and sex?
2. What is the level of the classroom learning environment of Grade 7 and Grade 8 learners in terms of physical environment, teacher support and interaction, and classroom climate?
3. What is the level of learners' engagement in Mathematics in terms of behavioral engagement, emotional engagement, and cognitive engagement?
4. Is there a significant relationship between the classroom learning environment and learners' engagement in Mathematics when grouped according to sex?
5. Based on the findings of the study, what intervention program may be proposed to enhance the classroom learning environment and strengthen learners' engagement in Mathematics?

METHODOLOGY

The study employed the descriptive-correlational research design. The respondents consisted of thirty-seven (37) Grade 7 and Grade 8 learners enrolled at Alicia Vocational School during the School Year 2025–2026, comprising twenty-two (22) female and fifteen (15) male learners.

Data were gathered using a validated researcher-made questionnaire divided into three parts: respondents' profile, classroom learning environment, and Mathematics engagement. The classroom learning environment was measured in terms of physical environment, teacher support and interaction, and classroom climate, while Mathematics engagement was assessed through behavioral, emotional, and cognitive engagement.

Frequency and percentage were used to describe the respondents' profile. Weighted mean determined the level of classroom learning environment and Mathematics engagement, while Pearson Product-Moment Correlation Coefficient tested the significant relationship between the variables at the 0.05 level of significance.

This study adhered to the fundamental ethical principles of educational research to ensure the protection of the rights, welfare, and dignity of all participants throughout the research process.

Prior to the conduct of the study, the researcher secured approval from the appropriate school authorities, including the Schools Division Office, the School Head of Alicia Vocational School, and the Mathematics teachers concerned. Permission was obtained before administering the survey questionnaire to the respondents.

Participation in the study was entirely voluntary. The respondents were informed of the purpose, objectives, procedures, and significance of the study before data collection. They were also informed that they had the right to decline participation or withdraw from the study at any time without penalty or negative consequences.

Since the respondents were junior high school learners, parental or guardian consent, together with learner assent, was secured in accordance with school policies and ethical standards for research involving minors. Only learners who obtained the necessary consent and willingly agreed to participate were included in the study.

The principle of informed consent was strictly observed. The respondents were assured that their participation would not affect their academic standing, grades, or relationship with their teachers and the school. They were encouraged to answer the questionnaire honestly and objectively without fear of judgment or reprisal.

RESULTS AND DISCUSSION

The findings revealed that the majority of respondents were 15 years old and enrolled in Grade 8. Female respondents comprised 22 learners, while male respondents totaled 15.

Both female and male learners strongly agreed that their classroom learning environment was favorable. Classroom climate received the highest ratings among the three dimensions, followed by teacher support and interaction, while physical environment obtained the lowest, although still interpreted as Strongly Agree.

Similarly, learners demonstrated a very high level of Mathematics engagement. Female learners recorded the highest mean in emotional engagement, whereas male learners obtained the highest mean in cognitive engagement. Overall, all dimensions of engagement were interpreted as Strongly Agree.

Correlation analysis yielded a Pearson correlation coefficient of $r = 0.391$ with a p-value of 0.811, which exceeded the 0.05 level of significance. Consequently, the null hypothesis was accepted, indicating no significant relationship between classroom learning environment and learners' engagement in Mathematics when grouped according to sex.

CONCLUSION

The findings indicate that learners perceived their Mathematics classrooms as supportive, organized, and conducive to learning. Favorable ratings in classroom climate, teacher support, and physical environment suggest that teachers have established learning conditions that promote comfort, cooperation, and learner participation. These findings are consistent with previous studies emphasizing the importance of positive classroom environments in promoting learner motivation and participation.

Learners also exhibited high levels of behavioral, emotional, and cognitive engagement, indicating that they actively participate in Mathematics classes, enjoy learning the subject, and exert effort in understanding mathematical concepts. Female learners' stronger emotional engagement and male learners' higher cognitive engagement suggest slight differences in how learners interact with Mathematics instruction, although both groups demonstrated very positive engagement overall.

Despite the favorable classroom learning environment and high learner engagement, the relationship between the two variables was not statistically significant. This suggests that classroom learning environment alone may not sufficiently explain learners' engagement in Mathematics. Other variables, such as intrinsic motivation, self-efficacy, study habits, parental support, prior achievement, peer influence, and instructional approaches, may also contribute significantly to learner engagement. These findings underscore the complexity of learner engagement and highlight the need for future studies to examine additional factors that may influence Mathematics learning among junior high school learners.

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