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Perceived School Learning Environment and Academic Performance in Science among Grade 10 Learners: A Descriptive-Correlational Study

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Index Terms:

academic performance, Grade 10 learners, school learning environment, science achievement, descriptive-correlational study

Abstract. This study examined the perceived school learning environment and academic performance in Science among Grade 10 learners in one Department of Education school in the Division of Lanao del Norte during School Year 2025 to 2026. Specifically, it determined the level of learners' perceived school learning environment, described their academic performance in Science, and tested whether a significant relationship existed between the two variables. The study employed a descriptive-correlational research design and used complete enumeration to include all Grade 10 learners enrolled during the study period. Learners' perceived school learning environment was measured using an adapted Learning Environment Scale, while academic performance in Science was determined using the mean of the learners' first, second, and third quarter Science grades. Data were analyzed using the mean, standard deviation, and Pearson product-moment correlation coefficient. Results revealed that learners' perceived school learning environment was low, with a mean of 2.02 and a standard deviation of 0.25, whereas their academic performance in Science was satisfactory, with a mean of 83.91 and a standard deviation of 4.54. Further analysis showed a very weak positive relationship between perceived school learning environment and Science performance, but the correlation was not statistically significant ($r = .10$, $p = .404$). The findings suggest that although learners viewed their school learning environment less favorably than desired, such perceptions did not reliably explain their Science grades in this context. The study concludes that improving Science performance may require not only stronger classroom learning conditions but also more direct instructional support, including remediation, instructional alignment, and differentiated learning interventions.

Introduction

Science learning in junior high school is central to developing scientific literacy, problem solving, and evidence-informed decision making. In the Philippines, results reported in the Programme for International Student Assessment in 2018 raised concerns about learners' performance in Science and reinforced the need for school-based evidence that can guide improvement efforts (Department of Education [DepEd], 2019; OECD, 2019). Beyond curriculum coverage and assessment practices, research suggests that learners' day-to-day experiences in school, particularly their perceptions of the learning environment, are meaningfully associated with engagement and academic outcomes (Wang & Degol, 2016).

The concept of school learning environment is commonly examined through school climate and classroom climate, which include learners' experiences of instructional support, relationships, academic expectations, and order and safety within the school and classroom (Wang & Degol, 2016). A systematic review and meta-analysis reported that positive classroom climate is associated with academic achievement and a range of motivational and psychosocial outcomes, supporting the practical value of examining learners' perceived learning conditions (Wang et al., 2020). In addition, multilevel evidence

testing authoritative school climate theory indicates that schools characterized by strong structure and student support show higher student engagement and better academic outcomes, underscoring the role of organized and supportive learning conditions in shaping achievement (Konold et al., 2018). Philippine-based analysis of PISA 2018 likewise suggests that school climate and material resources are associated with variations in achievement, emphasizing the value of examining school-level conditions rather than relying only on national averages (Trinidad, 2020).

Although international literature consistently links learning environment perceptions with achievement, a clear gap remains in locally situated, school-based quantitative evidence in Philippine junior high school contexts that directly examines Grade 10 learners' perceived school learning environment in relation to Science performance using routinely available academic indicators such as quarterly grades. Many studies draw on large-scale datasets or broad climate indicators, which are valuable for national patterns but may not capture the specific classroom and school conditions experienced by learners in a particular school setting. As a result, school leaders and teachers may have limited evidence to guide context-responsive actions that target the learning conditions most relevant to learners' Science outcomes within their own setting (Trinidad, 2020; Wang & Degol, 2016). Addressing this gap is important for generating actionable findings that can inform classroom support, instructional practices, and learner engagement at the school level.

This study is anchored on two complementary theoretical perspectives. First, self-determination theory posits that learning contexts that support learners' needs for autonomy, competence, and relatedness strengthen motivation and engagement, which can translate into improved academic performance (Ryan & Deci, 2020). Second, authoritative school climate theory emphasizes the joint role of school structure and student support in promoting engagement and achievement, a pathway demonstrated in multilevel models linking climate, engagement, and academic outcomes (Konold et al., 2018). These perspectives provide a basis for examining whether learners who perceive a more supportive and effective school learning environment also tend to demonstrate higher academic performance in Science.

Guided by this rationale, the study examined the level of Grade 10 learners' perceived school learning environment, described their academic performance in Science, and tested whether a significant relationship existed between the two variables. The null hypothesis stated that there is no significant relationship between Grade 10 learners' perceived school learning environment and their academic performance in Science.

This study sought to examine the perceived school learning environment and academic performance in Science among Grade 10 learners in one public secondary school in the Division of Lanao del Norte during School Year 2025–2026. Specifically, it aimed to answer the following questions:

1. What is the level of Grade 10 learners' perceived school learning environment?
2. What is the level of Grade 10 learners' academic performance in Science?
3. Is there a significant relationship between Grade 10 learners' perceived school learning environment and their academic performance in Science?

Methodology

Research Design

This study utilized a descriptive-correlational design. Such a design is appropriate when the researcher aims to describe the current status of variables and examine the relationship between them without introducing any treatment or experimental manipulation (Creswell & Creswell, 2018). In this study, the design allowed the researcher to assess the level of Grade 10 learners' perceived school learning environment, determine their academic performance in Science, and analyze whether a significant relationship existed between these two naturally occurring variables in the school setting.

Respondents

The respondents of the study consisted of all Grade 10 learners enrolled in one public secondary school in the Division of Lanao del Norte during School Year 2025–2026. They were included through complete enumeration, a procedure in which data are gathered from the entire population of interest rather than from only a sample (Ahmad et al., 2023; Australian Bureau of Statistics, 2023). This approach allowed the researcher to obtain a more complete and context-specific

description of learners' perceived school learning environment and academic performance in Science within the school setting.

Instruments

The study utilized two instruments for data collection. First, learners' perceived school learning environment was measured using an adapted Learning Environment Scale based on the instrument developed by Ford (1995). To establish the internal consistency of the adapted instrument, Cronbach's alpha was computed by the researcher. In the pilot administration, the instrument yielded a reliability coefficient of $\alpha = .88$, indicating good internal consistency.

Second, learners' academic performance in Science was obtained through a researcher-prepared data collection form used to record the respondents' official quarterly grades in Science from school records. Specifically, the study used the mean of the first, second, and third quarter grades as the measure of academic performance, since the fourth-quarter grades were not yet available at the time of data collection.

Data Gathering Procedure

The researcher first secured the necessary permission from the school head and other concerned authorities prior to the conduct of the study. Thereafter, informed consent from parents or guardians and assent from the learners were obtained to ensure voluntary participation. After compliance with these requirements, the researcher personally administered the adapted 35-item Learning Environment Scale to all eligible Grade 10 learners. Clear instructions regarding the purpose of the study and the proper accomplishment of the questionnaire were given before the respondents answered the instrument. The respondents were also informed that their responses would be kept confidential and used strictly for research purposes.

Upon retrieval of the accomplished questionnaires, the researcher checked each instrument for completeness and organized the responses for data processing. Academic performance data in Science were then obtained from official school records using a researcher-prepared data collection form. The learners' first, second, and third quarter grades were recorded and averaged to serve as the measure of academic performance, as the fourth quarter grades were not yet available during the conduct of the study. The collected data were subsequently encoded and prepared for statistical treatment.

Data Analysis

The collected data were encoded and analyzed using SPSS Statistics. Descriptive statistics, particularly the mean and standard deviation, were used to describe the level of learners' perceived school learning environment and their academic performance in Science. For inferential analysis, the Pearson product-moment correlation coefficient was used to examine the relationship between the two variables.

Ethical Considerations

The study was conducted in accordance with accepted ethical principles for educational research. Prior approval to conduct the study was obtained from the school head and other appropriate authorities. Since the participants were Grade 10 learners, parent or guardian consent and learner assent were secured prior to data collection. The researcher explained the purpose of the study to the respondents and emphasized that participation was voluntary. The respondents were likewise informed of their right to refuse participation or withdraw at any point without any adverse consequence.

Confidentiality, anonymity, and data privacy were carefully upheld throughout the study. The accomplished questionnaires and the Science grades obtained from school records were used strictly for research purposes and were handled only by the researcher. No names or other identifying details were included in the analysis and presentation of results. The findings were reported in aggregate form to protect the identity of the respondents and to ensure responsible use of the collected information.

Results and Discussion

Level of Grade 10 Learners' Perceived School Learning Environment

Table 1 shows that Grade 10 learners' perceived school learning environment is low (M = 2.02, SD = 0.25). This reveals that learners generally experience the school learning context as less supportive and less conducive for learning than desired, particularly in aspects related to classroom interest and engagement, teacher support and respect, and fairness in classroom processes. The small standard deviation further suggests that this perception is relatively consistent across respondents, indicating a shared experience rather than concerns limited to a few learners. This finding implies that the school may need to strengthen learning environment conditions that are directly experienced by students, such as improving supportive teacher learner interactions, establishing fair and predictable classroom routines, and increasing opportunities for meaningful participation, because weak perceptions in these areas can reduce engagement and may hinder sustained academic improvement.

This interpretation is supported by evidence that school climate is meaningfully associated with student achievement and engagement, and that efforts to improve classroom-level conditions can contribute to better academic outcomes (Shindler et al., 2016). Moreover, learners' perceptions of teacher support, fairness, and classroom organization have been found to significantly influence their motivation and sense of belonging, which are critical predictors of sustained academic participation and success (Koth et al., 2008; Wang & Degol, 2016). When students consistently perceive their learning environment as unsupportive, the likelihood of disengagement and decreased academic persistence increases (Aldridge & McChesney, 2018).

Indicator	Mean	SD	Interpretation
School Learning Environment	2.02	0.25	Low

Scale: 1.00 – 1.75= Very Low; 1.76 – 2.50 = Low; 2.51 – 3.25 = Moderate; 3.26 – 4.0 = High

Table 1. Learners' Self-Perception of School Learning Environment

Academic Performance in Science of Grade 10 Learners

As presented in Table 2, Grade 10 learners' academic performance in Science is satisfactory (M = 83.91, SD = 4.54). This means that learners, on average, are meeting the expected standards for Science, reflecting acceptable attainment of quarterly competencies though not yet reaching the very satisfactory or outstanding levels. The standard deviation indicates a moderate spread of grades, suggesting that while many learners fall within the satisfactory band, there are learners who perform above and below the mean, which points to varying levels of mastery and support needs within the group. The implication is that Science instruction may need both targeted remediation for learners who are nearing the lower performance thresholds and enrichment opportunities for higher performing learners to raise overall achievement and reduce performance gaps.

This finding is consistent with the study of Vulperhorst et al. (2018), which found that high school grades demonstrate predictive validity for later academic success, supporting the use of quarterly Science grades as a reliable indicator of learners' achievement and progress. More recent literature likewise suggests that satisfactory academic performance reflects acceptable mastery of content-level competencies, but may still indicate limitations in higher-order thinking, scientific reasoning, and conceptual application that are critical for success in Science education (OECD, 2019; Hattie, 2017). Furthermore, Darling-Hammond et al. (2020) emphasized that variability in learners' achievement, as reflected in moderate grade dispersion, underscores the importance of differentiated instruction and targeted academic support to address diverse learning needs. These findings reinforce the implication that while Grade 10 learners are generally meeting Science learning standards, instructional adjustments such as remediation for low-performing learners and enrichment for high achievers are necessary to promote higher levels of academic performance and reduce achievement gaps.

Indicators	Mean	SD	Interpretation
Academic Performance in Science	83.91	4.54	Satisfactory

Scale: 90 – 100 = Outstanding; 85 – 89 = Very Satisfactory; 80 – 84 = Satisfactory; 75 – 79 = Fairly Satisfactory; Below 75 = Did not meet expectations

Table 2. Learners' Academic Performance in Science

Relationship between Grade 10 Learners' Perceived School Learning Environment and their Academic Performance in Science

The correlation analysis revealed a very weak positive relationship between Grade 10 learners' perceived school learning environment and their academic performance in Science (r = 0.10), but this relationship is not statistically significant (p = 0.404) at the 0.05 level (Table 6). This means that, within this group of learners, slightly higher perceptions of the school learning environment are not reliably associated with higher Science grades, and the observed correlation is too small to conclude a meaningful link beyond chance variation. The implication is that while enhancing the school learning environment remains beneficial for learner well-being and engagement, improvements in perceptions alone may not produce immediate gains in Science grades unless paired with more direct academic supports such as competency focused remediation, strengthened instructional alignment, and differentiated learning interventions.

This finding is consistent with evidence indicating that the relationship between students' perceptions of the school learning environment and academic achievement is often weak, indirect, and contingent on mediating variables such as motivation, engagement, instructional quality, and self-regulated learning (Maxwell et al., 2017; Wang & Degol, 2016). Recent studies have emphasized that while a positive learning environment contributes to learners' emotional well-being and school engagement, its direct effect on subject-specific academic outcomes, particularly in Science, may not always be immediately observable (Aldridge et al., 2019). Instead, the influence of school learning environment on achievement tends to operate through proximal instructional practices, curriculum alignment, and targeted academic interventions, which may explain the non-significant association found in this study (Darling-Hammond et al., 2020). Thus, the weak positive relationship suggests that improvements in learners' perceptions of their school learning environment should be complemented by explicit instructional supports and competency-focused strategies to yield measurable gains in Science achievement.

Variables	r value	Level of Correction	p-value	Remark
Grade 10 Learners' Perceived school Learning Environment and Academic Performance in Science	0.10	Very Weak Positive	0.404	Not Significant

**Significant at 0.05 level*

Table 3. Correlation Between Grade 10 Learners' Perceived School Learning Environment and Their Academic Performance in Science

Conclusion and Recommendations

Based on the findings, Grade 10 learners perceived their school learning environment at a low level, while their academic performance in Science was satisfactory. The correlation analysis further revealed a very weak and statistically non-significant relationship between the two variables, indicating that the learners' Science grades in this context were not reliably explained by their perceptions of the school learning environment alone. These results suggest that improving Science performance may require not only efforts to strengthen classroom climate and learners' day-to-day school experiences, but also more direct academic and instructional responses, such as competency-focused remediation, improved instructional alignment, differentiated support, and sustained learner monitoring at both school and home levels. Thus, the study emphasizes the importance of a balanced approach that addresses both the quality of the learning environment and the instructional supports needed to enhance Science achievement.

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Competing Interests Statement

The data used in this study are not publicly available due to ethical and confidentiality considerations involving learner information, but may be made available by the author upon reasonable request and with appropriate permission.

Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study; all data used were obtained from previously published sources as cited in the reference list.

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Appendices

No appendices were included in this manuscript.