International Journal of Social Sciences and English Literature
Vol. 10, No. 1, 6-17, 2026
ISSN(E) 2576-683X
DOI: 10.55220/2576-683x.v10i1.861

Students' Perception on Using Classroom Design, Student Engagement, and Academic Performance among Grade 3 Learners

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Abstract

This study examined the relationship between classroom design, student engagement, and academic performance among Grade 3 pupils in a public elementary school in Samal, Davao del Norte, Philippines. Using a quantitative descriptive-correlational design, data were gathered from 91 students via total population sampling and a structured survey. Students reported favorable perceptions of their classroom environment, with lighting and temperature rated at the highest level. Emotional engagement was the strongest domain, followed by behavioral and cognitive domains. No academic failures were recorded. Significant correlations emerged between classroom design and academic performance, with lighting and temperature being the most influential factors. Regression analysis identified temperature as the sole significant predictor of students' perception of using classroom design, while no indicators of students' engagement were significant predictors of academic performance. Findings support the HEAD Model, highlighting the role of naturalness, stimulation, and individualization. While classroom design enhances learning conditions, student engagement strategies should be behaviorally accessible, emotionally supportive, and cognitively stimulating, as they appear to work together. Future research should explore longitudinal effects and diverse educational settings to broaden applicability.

Keywords: Academic performance, Classroom design, Grade 3 learners, SDG 4 (Quality Education), Student engagement, Students' perception.

1. Introduction

The declining academic performance of Filipino students has emerged as a critical educational issue, as highlighted by the 2022 Program for International Student Assessment (PISA) results, which underscore the challenges many learners face in acquiring essential competencies in reading, mathematics, and science. Data reveals that the country possesses one of the most significant proportions of low achievers in all fundamental subjects—mathematics, reading, and science. The Philippine government and educators must work together to identify and address the reasons behind these results and establish plans to enhance the educational system in the nation.

A substantial majority of students are failing to achieve even fundamental proficiency in these essential domains. The results indicate systemic issues within the nation's educational environment, especially in providing pupils with the necessary abilities required for worldwide competition. Resolving these difficulties is essential for strengthening the academic performance of Filipino students and their capacity to excel in international tests such as PISA.

Academic achievement obtained by students was considered a student's success and the institution's learning system. The academic quality was also inseparable from the background of the student itself. Besides, the system and climate of teaching and learning are created in the educational environment (Hadi et al., 2022). Identifying and acknowledging the elements influencing students' academic success is essential, as their performance is critical for educational institutions and nations globally (Martha 2009).

A study in Nigeria found that students cannot be successful in their behavior or academic learning without an environment created for their purpose (Uroikor et al., 2023). Teachers can make a positive and conducive learning environment by designing a classroom that stimulates interest, generates excitement, and encourages active participation. When students are engaged and motivated, they are more likely to be attentive, participate actively, and develop a deeper understanding of the language (Cutillas et al, 2023).

Understanding the significance of classroom design is particularly relevant in the Philippine context, as education is vital to the nation's advancement. Establishing inclusive and effective learning environments is crucial when addressing a diverse student population (Fuente, 2021). The significance of classroom design is

challenged by regulatory measures such as the Department of Education's Maintenance of Clean Schools guidelines under DepEd Order No. 21, s. 2023. These guidelines, endorsed by Secretary and Vice President Sara Duterte, mandate the removal of wall decorations in classrooms, which include educational aids like alphabet and math problem posters. Critics claim that play elements are critical for the reinforcement of fundamental skills in young children, and therefore, the absence of these aids may interfere with learning from early ages (Shabiralyani et al., 2015).

The research by Quiño et al. (2024) at Sacred Heart Village, Cagayan De Oro, Misamis Oriental, indicates that clutter, characterized by an overabundance of materials and decorations, adversely affects the learning environment, impairing students' concentration and academic performance. This showed that instructional tools and a harmonious aesthetic setting correlated with heightened concentration and comfort, hence improving learning efficiency. Recent evidence suggests that classroom layout substantially affects students' learning capabilities. The students stated that after setting up a classroom, they became more motivated, relaxed, and interested in learning (Aniñon,2024). On the other hand, typically rooms with bare walls, as started by DepEd policy, would automatically be labeled uninspiring and boring, leading some students to assert that it was easier to distract themselves and become less creative.

Furthermore, Seva and Escote (2023) discovered an interesting phenomenon in their research. Most teachers adopted a minimalist, demanding design in their classroom, which eliminated educational design. They believed it would reduce the visual distractions, but to their surprise, it also eliminated good learning points. The real struggle was when the situation revealed that clearing these displays was not only helping to fence out the clutter but also limiting students' access to valuable learning resources. The finding confirms the main idea that classroom design is not a physical space, but rather a matter of making space look visually supportive of learning. The displays on the classroom walls are not just decorations, but also help keep track of improvement, remind students of what is taught, and make the classroom more colorful and engaging. According to Cater and Hughes (2022), it may be as simple as organizing a classroom with what interests the students, and doing it is the only difference. The case study they represented revealed that not only do such strategies help children to be more engaged, but they also make them closer to what they are studying.

The real struggle came when they realized that eliminating these displays did not just cut down on clutter; it also limited students' access to important educational content. This finding reinforces the key idea that classroom design is not just a physical layout, but it's about creating space that visually supports learning. Wall displays are not just decorations; they help track progress, reinforce lessons, and make the classroom feel more dynamic and engaging. According to research from Cater and Hughes (2022), something as simple as designing a classroom around students' interests can make a huge difference. Their case study revealed that these strategies motivate kids and help them feel a deeper connection to their learning.

In addition, since most schools in the country have faced limited resources, it was finally understood the importance of making the most of the classroom layout (Sanger, 2020). This study investigates the effects of classroom designs on learning, and it is informative that it will propose to the Philippine policy makers and teachers the methods of improving instruction quality. However, when we consider the classroom, design should also be given special focus to be investigated.

Research confirms that classroom design directly impacts how students engage and learn. Rands and Gansemer (2017) tested this by creating Active Learning Classrooms (ALCs). These spaces swapped traditional desks for flexible furniture and mobile whiteboards, leading to some important discoveries. Teachers reported stronger connections with students when physical barriers disappeared, while the adaptable space accommodated different teaching styles effortlessly. These findings are particularly valuable because they show how thoughtful, low-cost design can make a real difference, especially for schools with limited resources.

In the Philippine educational context, student participation has been identified as a key factor in academic success. When Filipino students actively participate in class, show up regularly, put in an effort, and really engage with lessons, they tend to perform better academically (Delfino, 2019). The same pattern applies to younger students, too. Researchers found middle schoolers who actively participated in lessons outperformed their peers in academic activities, even though overall engagement levels were relatively low, according to the study by Fuertes et al. (2023), which discovered that the link does not just apply to older students. These findings align with what education experts Kahu and Nelson (2018) have observed: students' success comes from three key things working together: the students' motivation, the school's support system, and the classroom environment. When these elements connect, students don't just learn, but they also thrive academically.

A study concluded that academic achievement was positively correlated with behavioral and emotional engagement (King, 2015). Conversely, those who withdrew from their classroom participation frequently acted out. Conversely, those who withdrew from classroom participation frequently act out, whether seeking recognition or reacting to an environment that fails to meet their needs (Rimm-Kaufmann & Hulleman, 2015). According to the research by Van den Berghe et al. (2015), students disengage when their classroom environment fails to support three basic needs: feeling in charge of their learning (Autonomy), feeling capable of succeeding (Competence), and feeling connected to others (Relatedness). This emphasizes that teachers need to design learning experiences applicable to students' lives, going beyond just the curriculum to keep them actively engaged over time.

This research draws from three core educational approaches: how students construct knowledge (Constructivism), how they process visuals (Visual Learning), and how classroom structure experiences (Classroom-based models). Jean Piaget's groundbreaking idea from the 1920s started with constructivism or constructivist learning theory. Learning is not about passively soaking up facts; it is an active, hands-on process where learners build understanding through experience, much like assembling a mental puzzle (Shah, 2019). This means classrooms work best when students set about meaningful, real-world tasks, collaborate and discuss ideas with peers, reflect on their discoveries, and guide their learning journey.

The constructivist learning theory transforms how we design classrooms and learning spaces, actively shaping students' understanding. Instead of static rows of desks, this environment should spark curiosity through hands-on exploration, foster teamwork with shared problem zones, and make thinking visible as students build knowledge

together. It is a popular approach that turns learners into independent thinkers who explore ideas and test out theories for themselves through hands-on classroom experiences. For teachers, the job shifts from just giving lectures to helping and guiding students as they learn. They can facilitate communication and foster flexibility to accommodate the requirements of all pupils. The educational dynamic in a constructivist classroom is advantageous for both students and educators.

Visual learning theory, on the other hand, stresses that students absorb information most effectively through visual elements such as color, spatial organization, and imagery (DePorter, 2014). Visual learners thrive in environments with structured visual tools like learning walls, which clarify goals and evolve with student contributions. Thoughtfully designed visuals enhance focus and memory, whereas overly busy decorations can distract younger students, as research from Carnegie Mellon University suggests. To support visual learners, classrooms should feature purposeful and relevant visual materials that stimulate thinking and aid comprehension. Visual learning has significantly boosted higher-order thinking skills, especially in elementary and middle school students (Raiyn, 2016).

Lastly, Barkley's (2010) classroom-based model of student engagement, which emphasizes the interplay of motivation and active learning, provides the theoretical foundation for this study. According to Barkley, student engagement is a dynamic process influenced by classroom environments that foster a sense of community, challenge students appropriately, and promote holistic learning. Barkley further clarifies that student learning is not merely the sum of active learning and motivation but their synergistic product. Both elements must be present for effective engagement. While active learning techniques can enhance student participation, they must be accompanied by intrinsic motivation to yield meaningful learning outcomes. Conversely, fostering motivation through culturally responsive teaching may limit student engagement without incorporating active learning strategies. By carefully designing classroom spaces to support diverse activities, instructors can create dynamic learning environments that promote active learning and motivation, ultimately leading to improved educational outcomes.

This study examines how students' perception of their classroom connects to their level of engagement in learning and ultimately shapes their academic performance. These variables are closely connected. Students tend to feel more motivated and comfortable when the classroom feels supportive, well-organized, thoughtfully arranged, and genuinely learning friendly. Students' perceptions of classroom design encompass their thoughts, beliefs, and feelings about their learning environment's physical and instructional aspects, influencing their engagement, comfort, and overall learning experience (Woo et al., 2022). Fredericks et al. (2004) define real engagement as students investing emotionally in learning, actively diving into lessons, and self-motivating to succeed, transforming education from a requirement to ownership. Academic performance is defined as a student's ability to complete academic assignments, assessed using objective criteria such as final course grades and grade point average (e.g., Carroll & Garavalia, 2004; Naser & Hamzah, 2018)

Although there is current research on the impact of classroom design on student academic achievement, some research gaps remain about this subject. The researchers initially identified a demographic disparity in prior investigations. The participants in the study by Quiňo et al. (2024) consisted of 72 Grade 3 learners from four divisions at Sacred Heart Village in Cagayan De Oro City, Misamis Oriental. As such, they strongly advise that future studies utilize more extensive demographic samples. Second, Irawan et al.'s (2020) survey only had 36 respondents. Lastly, a study by Nur (2024) had 52 respondents. A larger sample size will provide more accurate results because it will more closely reflect the population. Memon et al. (2020) said this leads to more precise and reliable judgments. The more data the researchers collect, the more the sample looks like the population being studied. This is important because it makes the results more precise and trustworthy (Andrade, 2020).

Secondly, when we look at the research in this field, we see some interesting differences. For example, some studies by Irawan et al. (2020) measured relationships through correlational analysis, whereas Malik and Rizvi (2018) took an exploratory quantitative approach. Then you have Oruikor et al. (2023) and Rands et al. (2017), who dive deep into case studies. While more recent work by Nur (2024) and Quiño et al. (2024) has used descriptive correlational techniques, not many studies have thoroughly examined the potential of this approach. This study used a descriptive correlational design to map relationships between variables and reveal their underlying interactions

Lastly, our research becomes vital since Samal Island lacks classroom design studies. Therefore, the researchers hope to close this gap by examining how classroom design affects students' academic performance. This emphasizes how important it is to carry out this study to raise awareness among students, teachers, and the larger educational community.

Specifically, the study aims to determine how students' perception of their learning environment and engagement in school activities are statistically related to their academic performance. Findings of this study will contribute towards the body of evidence-based practices in teaching and learning and inform future decisions on classroom design so that Grade 3 students can take advantage of the subject area learning space.

The study examines the Grade 3 students' perceptions of classroom design and their relationship with their engagement and academic performance. Specifically, it seeks to answer the following questions:

1. What is the perception level of students of using classroom designs in terms of:
   - 1.1 Bareness of Classroom Walls
   - 1.2 Presence of Posted Materials on Walls
   - 1.3 Stockpiling of Materials
   - 1.4 Clutter and Unused Items
   - 1.5 Lighting
   - 1.6 Temperature
2. What is the level of student engagement in terms of:
   - 2.1 Behavioral component
   - 2.2 Emotional component
   - 2.3 Cognitive component

3. What are the students' academic performance level in terms of their grades?
4. Is there a significant relationship between using students' perception of using classroom designs and academic performance?
5. Is there a significant relationship between students' engagement and academic performance?
6. To what extent do students' perceptions of using classroom design predict the academic performance of Grade 3 learners?
7. To what extent does student engagement predict the academic performance of Grade 3 learners?

This research aims to examine how the classroom design of the three (3) selected public elementary schools influences the academic performance of Grade 3 students, specifically focusing on the correlation between children's perceptions of their learning environment and their academic achievement. This study seeks to determine the substantial correlation between classroom design impressions and academic achievement to enhance educational results. The research findings will offer valuable advice for educators, school administrators, and legislators on optimizing classroom design to improve student learning and academic success.

On a global scale, this study will contribute valuable insights into how classroom design affects student outcomes, particularly in terms of engagement, motivation, and academic achievement. This study's contribution is especially relevant in an educational view that demands constant change to meet the evolving needs of learners. By examining the relationship between physical environment and cognitive development, we aim to provide data-driven recommendations that can be established in schools globally. The results will provide insightful advice to educational institutions, policymakers, and school designers across the globe, enabling them to verify the best possible learning environments that promote higher academic achievement.

This study holds significant value for various stakeholders in the educational field. School administrators and teachers can use the findings to make informed decisions on classroom design elements such as layout, lighting, and furniture that enhance student engagement and academic performance. Policymakers and educational administrators may use the evidence to guide infrastructure planning and policy development that support effective learning environments. Students stand to benefit directly from these developments through better academic outcomes, while parents gain certainty in the quality of their children's learning spaces. Lastly, the research will be a valuable reference for future scholars exploring related classroom design and educational achievement topics.

2. Research Methodology

2.1. Research Respondents

The study subjects comprised 91 students from Grade 3 of Angel Villarica Central Elementary School, Peñaplata Central Elementary School, and Anonang Elementary School by the First Section in academic year 2024-2025. Angel Villarica Central Elementary School comprised 35 learners. Together, the three chosen schools represented a total of 91 learners. Researchers selected students from the "First Section" classes within these schools in particular. This was done because such classes usually contain a high concentration of academically accomplished students who attend school regularly. By targeting this category of students, researchers wanted to maximize reliability and consistency in the study, thus making the overall results stronger (Teddlie & YU, 2007).

The study was carried out on a small, particular group of the population of all Grade 3 students, the first section of public primary schools in the Island Garden City of Samal. This method, termed total population sampling, was utilized since it is a feasible process to study comprehensively the impact of classroom design on student participation and learning outcomes among this particular group. The respondents had parental consent and were regular attendees for one quarter or more and were informed that they could leave the study at any time in case they were feeling stressed or uncomfortable without any implications. The method aligns with the idea that sometimes the best way to gain meaningful insights is by allowing researchers to concentrate on one aspect of the puzzle to have a clearer view of it.

The research was conducted at three elementary schools in the Island Garden City of Samal, Davao Del Norte: Angel Villarica Central Elementary School in Barangay Miranda, Peñaplata Central Elementary School on Obenza Street, and Anonang Elementary School in Barangay Anonang. These schools were selected due to their large number of Grade 3 students, allowing the researchers to gather a diverse and representative sample. This approach parallels the contention that, in some cases, the most meaningful insights can be achieved by carefully selecting participants with shared attributes so that researchers can focus on a piece of the puzzle one at a time to understand it better.

2.2. Materials and Instrument

The classroom design and the student engagement measures were adapted based on the survey questionnaires of Quiño et al. (2024) and Charkhabi et al. (2019), respectively. The two tools were also well advanced and had been significantly tested to determine their validity and reliability. In the Quiño et al. (2024) classroom design questionnaire, the questionnaire has been tested by three teachers at the department of education to test its clarity and relevance. Their agreement provided a perfect Content Validity Index (CVI) 1.0. The aim of checking internal consistency was to arrive at the alpha of Cronbach's at .706, which was just above the required acceptable level of .70. These strong results would ensure that the instrument could be reliable and suitable for the study.

Classroom designs focused on six indicators: Wall Bareness in Classrooms, Presence of Posted Materials, Material Stockpiling, Clutter and Unused Items, Lighting, and Temperature. The second of the three-part survey was the basis of the Classroom Design Questionnaire. To survey every feature, we used five particular questions, making a total of 30 questions, all of which were according to the guidelines of DepEd. This helped evaluate how classroom environments align with educational standards while considering students' daily experiences.

The researchers used a five-point Likert scale to measure how students perceived the classroom design, offering clear response options: 5 for Very High, 4 for High, 3 for Moderate, 2 for Low, and 1 for Very Low. This scale gave students clear means to communicate their likes or dislikes of certain aspects of their learning environment and their effects on their schoolwork. The researchers then broke down their responses into categorical areas to give researchers some sense of their feedback: Very High (4.21-5.00) was good, they really

liked the design and felt it enhanced their learning; High (4.41-4.20) showed overall satisfaction and a positive effect on studies; Moderate (2.61-3.40) indicated mixed feelings, meaning some improvements might be needed; Low (1;00-1.80) revealed significant discontent, implying that the classroom setup may even hinder learning and engagement. This plain method gave us actual experiences of what the students went through in their classroom every day.

Charkhabi et al (2019) conducted confirmatory factor analysis (CFA), confirming a three-factor structure with superior fit indices to ensure that construct validity was achieved. Each component: emotional, cognitive, and behavioral, showed significant interrelations, supporting the multidimensional nature of engagement. For reliability, internal consistency was measured using Cronbach's Alpha, with the emotional component showing the highest reliability and the behavioral component the lowest, though all were within acceptable ranges. These results validated the scale as a psychometrically sound tool for assessing school engagement in young learners. The adapted questionnaire consisted of 15 items divided into three subscales for student engagement: behavioral, emotional, and cognitive engagement. Respondents rated items on a 5-point Likert scale (1 = never, 2 = on occasion, 3 = some of the time, 4 = most of the time, 5 = all of the time).

As for assessing the students' academic performance, the researchers requested the class adviser to furnish the grades for the first to third grading period. Grades are then classified using a competency-based and standards-referenced system that follows the K to 12 Basic Education Program under DepEd Order No. 8, s. 2015 and DepEd Order No. 73, s. 2012. This approach uses descriptive ratings to reflect a student's mastery level and capacity to apply knowledge in authentic tasks. Grades from 90 to 100 are considered Outstanding, indicating that the student meets core requirements and can transfer learning automatically and flexibly. Grades between 85 and 89 are classified as Very Satisfactory, showing independent application of knowledge and skills. A score between 80 and 84 is satisfactory, meaning the learner can transfer learning without any assistance from peers or teachers. At the same time, grades from 75 to 79 are fairly satisfactory, but they show basic competency and require guidance during tasks. Students with grades below 75 falls under Did Not Meet Expectations, indicating difficulty comprehending and lacking the necessary knowledge and skills.

This grading system was based on carefully weighted scores from students' summative assessments, which included Written Work, Performance Task, and Quarterly Exams. To measure the academic progress of Grade 3 students, the researchers used a comprehensive approach that considered multiple factors and learning outcomes. The researchers gave different weights to each component based on the subject, which helped them fairly and accurately assess the various skills and learning styles in each area. This method also allowed them to understand how the classroom environment influenced students' motivation, engagement, and success. By evaluating students' perspectives on how physical enhancements affected their focus, participation, and overall achievement, they gained valuable insights into the connection between academic growth and the learning environment.

2.3. Design and Procedure

In this study, the researchers explored a descriptive correlational quantitative research design, the key purpose of which was to examine the connection among classroom design, student engagement, and academic grades in Grade 3 students. This research design was employed because it proved useful when investigating existing circumstances and evaluating the relationship between variables within their natural environment. The descriptive use of the design enabled the researchers to observe and capture the students' perceptions of classroom design and involvement. In contrast, the correlational aspect was employed to observe and measure the possible connection among the variables. Saunder et al (2019) explain that a correlational study should be used to establish the strength and direction of the relationship between quantitative variables. By utilizing this design, the research introduced a clear, structured way in which classroom environment and student behavior likely interfere with learning results in practice-based circumstances.

Before conducting the study, the researchers sought the approval of UM Peñaplata College. The researchers addressed a permission letter to the Superintendent of the Schools Division of the Department of Education, Island Garden City of Samal. To make it easy to implement it, they came up with permission letters addressed to the school principal and those of the parents or guardians of the students, ensuring that everyone is involved and informed about the process.

Validity and reliability of the adapted questionnaire were achieved by a structured panel of experts in the form of a rating system to test the contents of the questionnaire. Evaluators were asked to assess each item based on seven key criteria—clarity of directions and item phrasing, logical presentation and organization, suitability in representing the research content, adequacy of item distribution per category, overall attainment of the questionnaire's intended purpose, objectivity in item construction, and appropriateness of the scale and rating system. A five-point Likert scale ranged from 1 (Poor) to 5 (Excellent). Expert feedback guided minor revisions, enhancing linguistic precision and conceptual relevance. This validation process ensured the instrument was comprehensible and aligned with the study's objectives. Before the actual research, the researchers provided the respondents with an orientation to explain the purpose of the investigation. The study was conducted in Angel Villarica Central Elementary School, Peñaplata Central Elementary School, and Anonang Elementary School, specifically in third-grade classrooms of the top-performing sections.

This study explored how classroom design influences students' academic performance and engagement. First, the researchers used the mean to get a clear picture of how students feel about their classroom environments. Then, they examined the connection between those perceptions and their academic performance using a Pearson correlation. The researchers also created a correlation matrix to see how different aspects of student engagement relate to their performance. Finally, regression analysis was employed to see how well classroom design perceptions and student engagement could predict academic success, shedding light on which factors played a bigger role in students' achievement.

2.3.1. Ethical Consideration

Throughout the study, the researchers carefully followed all regulations and guidelines. They consistently upheld ethical standards by ensuring proper assessments, maintaining fair criteria for participant selection, and applying uniform methods for data handling. Established protocols guided every step to prioritize integrity and responsibility in their work.

3. Result and Discussion

3.1. Students' Perception of Using Classroom Design

Table 1 summarizes how learners feel about their classroom design, covering six main features: bare walls, posted materials, stockpiled items, clutter, lighting, and temperature. The table provides each feature's mean scores, standard deviations, and descriptions. It also explains how these elements influence the students' learning experience.

Students rated classroom lighting the highest, with a mean score of 4.22 (SD = 0.638), placing it in the Very High satisfaction range (4.21–5.00). Temperature also has a mean score of 4.22 (SD = 0.687) this shows that learners find these aspects highly effective for their learning. Overall, the classroom design received a strong mean score of 3.83 (SD = 0.522), falling in the High range (3.41–4.20), meaning students generally view their learning environment as well-designed and supportive.

Table 1. Students' perception of using classroom designs, n=91

Indicators	M	SD
Bareness of classroom walls	4.02	0.754
Presence of posted materials on walls	3.82	0.827
Stockpiling of materials	3.22	0.892
Clutter and unused items	3.44	0.790
Lighting	4.22	0.638
Temperature	4.22	0.687
Overall	3.83	0.522

This suggests that students are highly satisfied with classroom temperature conditions, viewing them as comfortable and beneficial to concentration and engagement. Also, students find the lighting highly satisfactory and conducive to learning. This indicates a favorable learning atmosphere where environmental elements such as wall displays, organization, lighting, and temperature support academic engagement and comfort. The findings emphasize that thoughtful environmental design can strengthen motivation and academic performance.

These results are consistent with the HEAD Model (Holistic Evidence and Design) of Barret et al. (2015), as it revolved around classroom design influence on student participation and performance. Students in the present research especially appreciated natural conditions such as light and temperature, as judged by their high rank when responding to comfort and learning success. They also liked challenging organized environments, which they felt were personalized; this is a significant element of the focus of the HEAD Model on individualization.

This alignment suggests that careful classroom planning will improve the focus and emotional commitment to the learning process among younger students. The study by Rivera and Araño (2018) concluded that the students strongly preferred the lighting in their classroom, which contributed significantly to increasing the levels of comfort and the ease in reading lesson materials.

3.2. Student Engagement

Table 2 presents a detailed summary of the analysis of the students' patterns of engagement based on the 91 respondents. The findings indicate meaningful information in three primary dimensions of the learning process, including behavioral, emotional, and cognitive. The findings give us more information regarding how students interact with their learning environment in real situations.

The statistics indicate high engagement of students in all three assessments. Students showed the strongest connection through emotional criteria, with average results falling into the high zone. Emotional engagement (M = 4.18, SD=0.729) was rated highest by students, thus meaning that they highly positively identify with their learning environment. Behavioral (M = 3.73, SD=0.900) and cognitive engagement (M = 3.66, SD=0.832) scores are also high but lower than the rest, implying that there is room to maximize how students engage and absorb the learning content by strategically modifying instructions.

Table 2. Students' engagement, n=91.

Indicators	*M*	*SD*
Behavioral	3.73	0.900
Emotional	4.18	0.729
Cognitive	3.66	0.832
Overall	3.86	0.682

The results show that claiming to be genuinely inspired and emotionally committed to learning is essential to long-term academic success. This fact is confirmed by the high level of their emotional participation (M = 4.18), which is attributed to good intrinsic motivation and psychological well-being. Even though cognitive engagement is high (M = 3.66), these slightly lower marks suggest that there would be an opportunity to improve how the students receive the learning in their system. The more specific methods would support the development of more profound critical thinking and self-directed learning, even though the level of engagement is at its highest (M = 3.73), which would be further encouraged by establishing more supportive relations and classroom cultures. Possible solutions can affect the three areas: establishing stronger ties between students and teachers, developing classroom community, and formulating lesson plans that instill curiosity. These approaches work together to create richer learning experiences where students don't just participate, but truly engage with their education on

multiple levels.

These findings align with the comprehensive student engagement framework proposed by Fredricks, Blumenfeld, and Paris (2004), which characterizes engagement as an interconnected system of behavioral participation, emotional connection, and cognitive investment. As Appleton, Christenson, and Furlong (2008) further demonstrate, students who do well in school are consistently engaged in all three areas. And research by Zhang et al. (2021) even found that emotional engagement is tied to a student's overall well-being, proving that their feelings are just as important as their actions.

Similarly, Robb (2004) highlighted the importance of cognitive engagement, where students use higher-level thinking and learn to think for themselves. A study from Cooper (2014) and Ryan and Patrick (2001) reveals that having a good relationship between a teacher and a student can make a big difference in how much a student participates. All this research confirms that for students to learn truly, we need to focus on all three areas: their actions, feelings, and thought processes.

3.3. Academic Performance of the Students

The data in Table 3 clearly show student academic performance, revealing encouraging results about their learning achievements. Notably, every student met the learning requirements, demonstrating high achievement across the unit. These positive outcomes reflect the meaningful commitment and hard work shown by students and their instructors throughout the learning process.

Table 3. Academic Performance of the Students, n=91.

Indicator	***M***	***SD***
Grade	89.28	3.009

The results show learners earned an impressive average grade of 89.28, within the Very Satisfactory range. This indicates that the majority of students achieved strong academic results. With a standard deviation of just 3.009, the scores clustered closely around the average, revealing remarkable consistency across the group. Such uniformity suggests students progressed at similar rates, likely due to effective teaching methods and clear learning expectations shared by all.

Students were dedicated to their studies and thrived in a supportive and structured environment. With no failing grades and average performance close to "Very Satisfactory", the findings suggest there's potential for even more academic growth. The teaching methods were effective in promoting learning and motivating students to excel. The consistent performance across the group also points to a shared commitment to academic excellence from teachers and students.

Research consistently shows that students do better academically when motivated and learn in a supportive environment (York et al., 2015). Students who earn excellent grades often share three key qualities: they actively engage, persist through challenges, and are dedicated to learning, all of which are best developed in well-structured educational settings (Affala, 2020; Alzahrani & Seth,2021). These findings align with the principles of Self-Determination Theory, which shows that students succeed when they feel in control of their learning, confident in their skills, and connected to others. As González et al. (2025) emphasized, fulfilling these psychological needs boosts intrinsic motivations and positive feelings, which leads to consistent academic and resilience. The average grade of 89.28 shows significant academic achievement and a strong potential for students to reach even greater scholarly excellence. This performance shows what students are currently capable of while also creating a solid foundation for their future intellectual growth.

3.4. Correlation Matrix of the Measures of Students' Perception of Using Classroom Designs and Academic Performance

Table 4 presents the correlation matrix analyzing relationships between classroom design elements and academic performance in Grade 3 students. The matrix quantifies both the direction and strength of relationships between environmental features. This table is a foundational reference for interpreting how students' perceptions of their physical learning environment align with academic outcomes.

Based on the correlation matrix, a statistically significant positive relationship exists between overall student perceptions of classroom design and their academic performance ($r = .212$, $p < .05$). More specifically, Lighting ($r = .313$, $p < .01$) and Temperature ($r = .305$, $p < .01$) show the highest positive correlations, suggesting that students perceive these physical conditions as especially conducive to learning. Likewise, the Bareness of classroom walls ($r = .269$, $p < .05$) positively correlates with academic performance. Notably, the stockpiling of materials presents the lowest correlation value ($r = -.090$), indicating a weak negative perception toward excessive accumulation within the classroom.

Table 4. Correlation Matrix of the Measures of Students' Perception of Using Classroom Designs and Academic Performance.

Students' Perception of Using Classroom Designs	**Academic Performance**
	Grades
Bareness of classroom walls	0.269*
Presence of posted materials on walls	0.155
Stockpiling of materials	-0.090
Clutter and unused items	0.009
Lighting	0.313**
Temperature	0.305**
Overall	0.212*

Note: *p<0.05 **p<0.01

The results highlight that effective lighting and optimal temperature significantly enhance students' comfort, attentiveness, and learning focus. Lighting, amongst other elements that constitute the design of spaces, is a crucial

and essential factor in designing spaces within a building. The results confirm that intentional classroom design meaningfully contributes to student engagement and academic success. However, the data suggest these environmental factors, while certainly influencing the learning environment, demonstrate only limited direct correlation with measurable achievement outcomes. This pattern indicates that classroom design serves primarily as a supportive element rather than a primary driver of academic performance.

The data reveal a modest negative relationship between stockpiled materials and academic performance (r = −.090), though this correlation does not reach statistical significance. This outcome implies that overcrowded classrooms with excess supply are not usually conducive enough to learning, as posited by students. Even though the impact might not be significant, the constant negative trend indicates that crowded classrooms may affect focus or distract subconsciously. To strengthen this fact, Quiño et al. (2023) demonstrated in their study of the Philippine classrooms that comprehensive learning environments are associated with reduced student engagement and physical comfort. The presence of unnecessary items was perceived as visually overwhelming, potentially impeding cognitive processing and focus.

The observed data suggest that lighting and temperature exert a more consistent and noticeable influence. This is further supported by Amalan et al. (2024), who found that balanced thermal and visual comfort contributes to greater attentiveness. Similarly, Lewinski (2015) supports the role of temperature in learning through Reversal Theory, suggesting that thermal conditions promote telic motivation, which refers to goal-directed states that enhance concentration and performance.

3.5. Correlation Matrix of the Measures of Students' Engagement and Academic Performance

Table 5 shows the correlation between student engagement and academic performance, based on their grades. It includes behavioral, emotional, and cognitive engagement, each showing a positive relationship with achievement. The data confirms that these associations are statistically significant and relevant to student success.

Table 5. Correlation Matrix of the Measures of Students' Engagement and Academic Performance.

Students' Engagement	**Academic Performance**
	Grades
Behavioral	0.344**
Emotional	0.287**
Cognitive	0.306**
Overall	0.378**

Note: *p<0.05 **p<0.01

The results of the correlation analysis reveal that student engagement has a meaningful impact on academic performance. The overall correlation score (.378, p<0.01) confirms that as engagement increases, so do student grades. Among the dimensions, behavioral engagement (r=.344, p<.01) shows the strongest relationship, indicating that when students are actively involved and participate consistently, their academic outcomes improve. Emotional (r=.287, p<.01) and cognitive (r=.306, p<.01) engagement also show significant positive relationships, confirming that students' emotional investment and mental effort support their performance.

This means that as students become more behaviorally, emotionally, or cognitively engaged in their learning, their academic grades tend to improve. The analysis reveals that behavioral engagement demonstrates the strongest connection to academic performance among the three dimensions. This finding highlights how students' active engagement, steady effort, and effective involvement in classroom activities strongly affect their accomplishment levels. These findings demonstrate that behavioral, emotional, and cognitive engagement all have meaningful contributions to making academic achievement, confirming engagement's important place in effective learning settings.

These findings are in line with other studies about student engagement. Medical Teacher (2024) is the most influential, mentioning the importance of attentiveness, persistence, and class attendance to facilitate learning success. Similar discoveries made by Cali et al (2024) confirm that all three aspects of engagement, namely behavioral, emotional, and cognitive, are effective predictors of school success.

The results of this study confirm the connection between behavioral engagement and academic performance, corroborating earlier work by Muhamad and associates (2020) applying Astin's Student Involvement Theory. Their study identified that effective engagement in scholarly work increases student performance in some important areas related to regular active effort, maintaining concentration in knowledge learning activities, and nurturing a sense of academic responsibility. The evidence consistently shows that highly engaged students achieve better outcomes, as their involvement fosters stronger motivation and deeper concentration in their studies.

3.6. Regression Analysis Predicting Students' Academic Performance with Students' Perception of Using Classroom Design as a Predictor

Table 6 displays the results of a regression analysis exploring how students' views of classroom design relate to their academic performance. The analysis draws on responses from 91 participants. It evaluates six physical classroom features as potential predictors of learning outcomes: bare walls, displayed materials, stored supplies, clutter levels, lighting conditions, and temperature. The statistical results reveal which environmental elements support or hinder student achievement.

Table 6. Regression Analysis Predicting Student's Academic Performance with Students' Perception of Using Classroom Design as Predictor (n=91).

Variables	*B*	*SE B*	*β*
Bareness of classroom walls	0.58	0.48	0.14
Presence of posted materials on walls	-0.09	0.43	-0.02
Stockpiling of materials	-0.72	0.40	-0.21
Clutter and unused items	-0.31	0.48	-0.08
Lighting	0.96	0.62	0.20
Temperature	1.12	0.53	0.26*
R^2	0.137		
F	3.39**		

Note: *p<0.05 **p<0.01.

The regression analysis reveals that classroom environment, while not the primary driver of student performance, exerts a measurable influence on academic outcomes. Among the six factors examined, temperature emerged as uniquely necessary—the sole element demonstrating a statistically significant relationship with student success. This finding suggests that thermal comfort plays a crucial role in learning, as students tend to perform better in adequately heated or cooled classrooms. Other aspects, like lighting, wall clutter, and how bare the walls were, did show some patterns, but none were strong enough to be conclusive.

Overall, the model held up well statistically, accounting for around 13.7% of the differences in student outcomes. These findings align with earlier research, such as Barrett et al. (2015), which underscored how classroom design can shape learning progress. The theory also checks out: environmental psychology and constructivist learning approaches recognize that physical spaces influence student behavior and mental performance.

For instance, Barrett et al. (2015) demonstrated that the way a classroom is designed, down to the temperature and lighting, significantly impacts how students learn. This idea is supported by environmental psychology, which focuses on how our physical surroundings affect our thoughts and feelings, and constructivist learning theory, which suggests that learning spaces should encourage students to be actively engaged and focused (Graetz, 2006). However, not everyone agrees on the importance of physical space. Some minimalist education theories argue that what really matters is the quality of the teaching and the curriculum itself. The study's finding that the wall displays didn't significantly affect learning outcomes supports this view, suggesting that classroom design should be deliberate and purposeful, not just for decoration (Carroll, 1990).

3.7. Regression Analysis Predicting Students' Academic Performance with Student Engagement as Predictor

Table 7 displays the results of a regression analysis conducted to explore how different components of student engagement relate to academic performance among 91 respondents. The analysis considers three key dimensions—behavioral, emotional, and cognitive engagement—as distinct predictors within the model. Each component is accompanied by statistical estimates that help quantify its potential influence on students' academic outcomes, offering insight into how various forms of involvement may contribute to performance levels.

Table 7. Regression Analysis Predicting Students' Academic Performance with Student Engagement as Predictor (n=91)

Variables	B	SE B	β
Behavioral	0.76	0.40	0.23
Emotional	0.39	0.53	0.09
Cognitive	0.48	0.47	0.13
R^2	0.116		
F	4.94**		

Note: *p<0.05 **p<0.01.

Based on the regression analysis in Table 7, the collective dimensions of student engagement – behavioral, emotional, and cognitive significantly predict academic performance, explaining approximately 11.6% of its variance (R^2=0.116, F=4.94, p<.01). While the overall model is meaningful, examining the individual predictors reveals a critical nuance: none of the three engagement dimensions demonstrate a statistically significant unique relationship with academic performance when the others are held constant. The coefficients suggest a positive trend where behavioral engagement shows the strongest effect (*B*=0.76), followed by cognitive (*B*=0.48), and emotional engagement (*B*=0.39), but these effects are not reliable enough to be distinguished from zero in this sample.

This result implies that these dimensions of student engagement are likely interrelated; sharing a predictive power in such a way the model captures collectively but cannot attribute to any single dimension independently. Thus, the primary finding is that student engagement as a holistic construct matters, but the data does not support prioritizing one dimension over the others for targeted interventions. A study conducted by Cali et al. (2024) found that cognitive engagement and emotional engagement have no significant effect to students' academic performance. In addition, Núñez et al. (2020) mentioned that behavioral engagement and emotional engagement do not predict the academic performance. Lastly, cognitive engagement did not show a specialized relation to any outcome (Reeve et al., 2025).

4. Conclusion and Recommendation

4.1. Conclusion

The result revealed that the students viewed their classroom designs positively. They were more satisfied with lighting and temperature, which they frequently cited as boosting their comfort, concentration, and focus. When all the indicators of students' perception on classroom designs were combined, the overall mean score was described as

very high. This positive perception extended to student engagement, particularly in how emotionally connected and motivated they felt.

The positive environment was matched with strong academic results. The 91 students achieved an average grade described as very satisfactory, with no recorded failures. While this does not prove the classroom designs caused the success, the strong perceptions, high emotional engagement, and very satisfactory grades together point to a supportive and effective learning environment.

The study demonstrates that classroom design features, particularly temperature, exert a measurable influence on academic performance. While lighting and wall bareness showed moderate correlations, only temperature significantly predicted outcomes, accounting for 13.7% of the variance. This finding highlights the importance of thermal comfort in learning environments and supports the HEAD Model's emphasis on naturalness and stimulation. The limited impact of other design elements, such as posted materials, also lends partial support to minimalist education theories, suggesting that simplicity may enhance focus and reduce cognitive distractions. Behavioral, emotional and cognitive engagement, though positively correlated, did not significantly predict outcomes, indicating that engagement must be behaviorally expressed to influence achievement. This emphasizes the importance of fostering comprehensive engagement strategies that are behaviorally accessible, emotionally supportive, and cognitively stimulating, as they appear to work together.

Together, these findings affirm the theoretical proposition that both environmental and psychological factors contribute directly to academic success. The alignment with constructivist principles suggests that thoughtfully designed spaces can scaffold meaningful engagement and learning. While no mediation or moderation effects were tested, the path analysis highlights direct effects from classroom design and engagement to performance, reinforcing the need for integrative approaches that consider physical and motivational dimensions in educational settings.

4.2. Recommendation

Based on the study's findings, targeted recommendations are provided to enhance student engagement and perceptions of the learning environment. Educators and school administrators should prioritize improving classroom organization, particularly addressing the moderate ratings on material stockpiling by decluttering and implementing clearer storage systems. Strengthening behavioral and cognitive engagement is also essential; teachers can foster psychological safety and active participation through interactive activities, student-led discussions, and problem-based learning that encourages curiosity and deeper thinking.

Parents are encouraged to support engagement at home by promoting healthy routines, maintaining open communication with teachers, and showing interest in their children's academic experiences. Educational institutions and policymakers should invest in maintaining optimal lighting and temperature conditions, as these significantly influence students' perceptions and well-being. Regular maintenance of HVAC systems and lighting fixtures is vital during renovations and new constructions.

For students, the study highlights the importance of staying engaged across behavioral, emotional, and cognitive domains. They are urged to participate actively, manage their study habits, and maintain a clean, supportive classroom environment. Future researchers are advised to broaden the scope of inquiry by including diverse educational settings and exploring additional physical and psychological factors that impact student success.

Acknowledgments:
The overall success and completion of this reflective synthesis would have been impossible without the Divine Guidance of our Almighty God. The authors also thank UM Peñaplata College Research and Innovation Center for supporting this endeavor, and the respondents of this study.

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