

# Students Attitudes on School Climate and Learning Engagement in Physics of Senior High School Students

## ABSTRACT

This research aims to determine whether there is a substantial correlation between students' attitudes toward school climate and their learning engagement in Physics. It also aims to explore the impact of school climate on Grade 12 students' experiences in attending classes and how it affects learning engagement in Physics. The school climate has an impact on the interactions that exist between educators and students in the classroom. A positive school climate is created where relationships between teachers, students, and the environment are enhanced within the institution. Consequently, the researchers utilized an explanatory mixed-method sequential design. The data collection involved two adapted survey questionnaires, an in-depth interview, and a focus group discussion using simple random sampling with a 335-sample size for quantitative and 10 participants for qualitative. The students' attitudes on school climate acquired an overall mean of 3.89, otherwise described as high, and a 3.98 mean, also described as high, for learning engagement in Physics. The correlation between students' attitudes toward school climate and learning engagement is given by Pearson's correlation coefficient ( $r$ ) of 0.810, and the associated  $p$ -value ( $P= 0.001$ ), indicating a highly significant correlation. This suggests a comparable rise or fall in school climate as students' attitudes increase or decrease. In the qualitative phase of the study, five main themes emerged from the data which support the quantitative findings and further explain the result of the study.

*Keywords: School climate, Education, Explanatory-sequential design, Davao City.*

## 1. INTRODUCTION

School climate refers to a school's social and academic atmosphere and whether it fosters learning, academic success, and student development. (Maxwell et al., 2018) A set of guidelines was devised to assess the school climate, which is seen as organized. Dimensions of school climate were considered to include elements like tone, feeling, mood, and setting (Freiberg & Tagiuri, 2019). The researchers focused on the impact of a school's unfavorable climate resulting in frequent absences, low engagement, and a higher dropout rate. Furthermore, every necessary operational input in the school system can impact students' comfort levels, affecting their ability to concentrate in class. (Valley, 2019).

Research on school climate should be developed by assessing its effect on a larger scale setting or microcosm. The school climate has an impact on the interactions that exist between educators and students in the classroom (Showers, 2019). The researchers aim to determine any potential association between students' attitudes on school climate and learning engagement in Physics. It also aims to explore the impact of school climate on grade 12 students' experiences in attending classes and how it affects learning engagement in Physics.

School climate encompasses the entire facets of the educational ground such as the teachers, non-teaching staff, the physical building of the school, existing facilities, and peers. The school climate highlights the alarming adverse effects and should be critically monitored to attain the desired outcome by the school. Lombardi et al. (2019) emphasized the effect of school climate on students' mental well-being and found that student's lifetime earnings, the likelihood of engaging in dangerous health behaviors, and mental health are all negatively impacted by the adverse effects of school climate resulting to high school dropout (Archambault et al., 2019). Maintaining a healthy and positive school climate promotes learning and academic success. Dischoso (2024) argued that improving student experiences is essential to creating a supportive school climate, which has been repeatedly connected to increased engagement and academic success. According to the study, a positive school climate is important in increasing student participation in class activities. This is also supported by Bradshaw et.al (2020) who asserted that there was a correlation between reduced disruptive behaviors, less bullying, and increased academic success in a welcoming, pleasant, and supportive school climate. (Showers, 2019).

## 2. METHODOLOGY

The study utilized an explanatory mixed-method sequential design and a descriptive correlational technique is one of the methodologies employed in this study, which aims to determine the relationship for this inquiry derived from a quantitative research method (Bhandari, 2021). With the use of questionnaires, this technique collects data that allows for the extrapolation of findings from a sample to the entire population. This strategy is therefore ideal for the study, which intends to look at the relationship between students' attitudes on school climate and learning engagement in physics. Followed by the qualitative phase which aims to further explain and explore the results of the quantitative phase (Alele&Malau-Aduli, 2023).

### Quantitative Phase of The Study

The study included the participation of Grade 12 STEM students in General Malvar St, Poblacion District, Davao City. Students were selected as the research topic because of their experiences and perspectives, which are crucial to comprehending how school climate affects learning engagement and ultimately leads to excellent educational outcomes and enhanced students' overall well-being. In acquiring the number of respondents, Slovin's formula was used by the researchers which is equivalent to a 335-sample size from the senior high school; STEM community, with a 0.05 margin of error. The researchers used a simple random sampling technique to identify the respondents of the study. According to Fleetwood (2023), the simple random sampling technique is an unbiased technique that gives each person in the population an equal chance of being selected as a sample and it is a basic tool in obtaining information and drawing conclusions about a group.

In gathering the data, the researchers evaluated students' attitudes on school climate and learning engagement in physics of senior high school students using a structured survey questionnaire. According to Deacon and Kajimo-Shakantu (2023), a structured survey questionnaire is made up of several standardized questions. It adheres to a framework that specifies the sequence in which information is gathered from respondents through questions. The survey questionnaire was divided into two sections. Section A examined students' attitudes on school climate and Section B focused on assessing the learning engagement in physics. Google Forms was used to administer the questionnaire online, making it easily accessible and facilitating efficient data collection. It took 20 to 30 minutes to finish the 60-item question indicated on the questionnaire. The questionnaire design made it possible to conduct a thorough and methodical investigation of the correlation

between students' attitudes toward school climate and learning engagement in Physics. The data analysis involved mean and Pearson r coefficient of correlation to determine any potential association between the two variables present in the study.

The researchers found a standardized survey questionnaire online by Stuckey (2019). This adaptive survey questionnaire was used to acquire data for the predictor variable. To assess the students' attitudes toward the school climate, eight subscales were used in the survey to gather data: Effective Teaching, Challenging and Relevant Curriculum, High Expectation for All Students, Positive and Nurturing Environment, Effective Plant Operation, Safety and Discipline, Meaningful Use of Data, and Parental Engagement. Grade 12 students were given 45 items to answer, with options to select from 4 = Strongly Agree, 3 = Agree, 2 = Disagree, and 1 = Strongly Disagree on a Likert scale of four points. Table 1 was used to interpret the mean of students' attitudes on school climate.

**Table 1. Mean Interpretation for Students Attitudes on School Climate**

Range of Means	Description	Interpretation
4.20 – 5.00	Very High	This means the students' attitudes on school climate are always evident.
3.40 – 4.19	High	This means the students' attitudes on school climate are oftentimes evident.
2.60 – 3.39	Moderate	This means the students' attitudes on school climate are sometimes evident.
1.80 – 2.59	Low	This means the students' attitudes on school climate are seldom evident.
1.00 – 1.79	Very Low	This means the students' attitudes on school climate are never evident.

To assess the learning engagement of Grade 12 STEM students in Physics I. The study used an adapted survey questionnaire from Delfino (2019) study about learning engagement, considering such factors as behavioral engagement, cognitive engagement, and emotional engagement. The respondents had the following options listed on the questionnaire, which were arranged on a 4-point Likert scale: 4 = Strongly Agree, 3 = Agree, 2 = Disagree, and 1 = Strongly Disagree. Table 2 was used to interpret the mean learning engagement in Physics.

**Table 2. Mean Interpretation for Learning Engagement in Physics**

<b>Range of Means</b>	<b>Description</b>	<b>Interpretation</b>
4.20 – 5.00	Very High	This means that learning engagement in physics is always manifested.
3.40 – 4.19	High	This means that learning engagement in physics is oftentimes manifested.
2.60 – 3.39	Moderate	This means that learning engagement in physics is sometimes manifested.
1.80 – 2.59	Low	This means that learning engagement in physics is seldom manifested.
1.00 – 1.79	Very Low	This means that learning engagement in physics is never manifested.

### **Qualitative Phase of the Study**

The qualitative phase of the study involved an engaging cohort of 10 participants randomly accumulated from the 335 respondents of the first quantitative phase. Interview guide questions, or IGQ, assisted the researchers in acquiring adequate data for the study through an in-depth interview and focus group discussion that lasted for roughly 60-90 minutes. The qualitative transcriptions acquired from the in-depth interviews and focus group discussion were analyzed by the researchers using **Braun and Clark's thematic analysis**. This method helped the researchers to capture patterns and themes across the qualitative dataset.

### **3. RESULTS AND DISCUSSION**

#### **Summary of the Level of Students' Attitudes on School Climate of Grade 12 STEM Students**

Presented **in Table 3 are data** on the Level of Students' Attitudes on School Climate of Grade 12 STEM Students in terms of effective teaching, challenging and relevant curriculum, high expectations for all students, positive and nurturing environment, effective plant operation, meaningful use of data, parental engagement, and safety and discipline.

The level of student attitudes toward school climate acquired an overall mean of 3.89 described as high. This means the students' attitudes on school climate are oftentimes evident. These findings also imply that the school offers a positive school climate for every student where they feel seen and heard. It also indicates that all users have access to high-quality plant operation inputs and that the physics teachers within the institution display a positive attitude towards their students by facilitating what they need and informing them about what should be improved in response to the teachers' agenda for their class.

Bradshaw et al. (2020) found a correlation between reduced disruptive behaviors, less bullying, and increased academic success in a welcoming, pleasant, and supportive school climate (Showers, 2019). According to the findings, middle and high school students' academic success was closely linked to the school climate.

Dichoso (2024) argued that improving student experiences is still essential to creating a supportive school climate, which has been repeatedly connected to increased engagement and academic success. A positive school climate is important for increasing student participation in class activities.

**Table 3. Summary of the level of Student's Attitudes on School Climate of Grade 12 STEM Students**

Indicators	Mean	Descriptive Level
High Expectations for all students	4.18	High
Effective Teaching	4.05	High
Meaningful Use of Data	4.01	High
Safety and Discipline	3.92	High
Positive and Nurturing Environment	3.92	High
Challenging and Relevant Curriculum	3.79	High
Effective Plant Operation	3.71	High
Parental Engagement	3.45	High
<b>Overall</b>	<b>3.89</b>	<b>High</b>

Specifically, among the eight indicators of students' attitudes toward school climate, high expectations for all students is rated with the highest mean of 4.18 described as high. This indicates that teachers have high expectations for their students: they want their students to do well academically, participate actively in class, produce impressive work, and go over the readings before class. It also shows that teachers want to foster a supportive

learning environment where students can work towards the goals the teacher sets for the class.

Hollenstien et al. (2022) found a positive link between students' achievement in mathematics and their instructors' high expectations. These findings highlight how crucial it is to ensure that teachers have high standards for every student.

To further describe the result, the second-highest indicator is effective teaching with a mean of 4.05, or described as high. This finding indicates that fostering a positive school climate is a direct result of teachers' competence as teachers. This means that educators support students in doing their best work in class, provide one-on-one assistance to those who require it, make sure that students understand the material, and pique students' interests by having engaging discussions.

Namaziandost et al. (2023) emphasized the three critical factors that empower teachers to observe and evaluate themselves. The research results showed that university instructors were more involved in their work responsibilities when they used more reflective teaching. Additionally, it showed that those who taught with greater reflection had better emotional regulation. To conclude, the study demonstrated the great efficacy of teachers.

The third highest indicator is the meaningful use of data with a mean score of 4.01 which is described as high. This entails that the instructor gives students feedback on their work to help them get better, breaks down their grades for them, and discusses the class as a whole as well as the reasons behind the students' test results. This suggests that educators offer helpful feedback on students' academic achievement in an attempt to help students recognize the areas that require improvement.

Lin et al. (2023) emphasized how deep learning could completely change standard teaching and learning methods in the classroom. These findings demonstrate how deep learning approaches transform educational data analysis, with implications for personalized learning, predictive analytics, and student engagement initiatives.

The fourth highest indicators are safety and discipline and a positive and nurturing environment with a mean score of 3.924 or otherwise described as high. This indicates that students have not experienced bullying or fear at school, that they feel safe at school, that classmates pay attention to the teacher, and that school is a safe place to be. Additionally, it suggests that teachers treat their students with respect, that they care about them, and that they consider themselves to be valuable members of the school community. This suggests that upholding the values outlined in the student handbook and guaranteeing the safety of students facilitates the implementation of disciplinary actions across the student body. Furthermore, by giving them a platform, by encouraging their participation, and by supporting their personal development. These are crucial elements in creating a supportive school climate.

Ede et al. (2021) emphasized that safety is crucial for creating a secure learning environment that promotes academic excellence, positive interactions among teachers and students, and ultimately enhances overall well-being. Adibe (2021) emphasizes even more how a safe school atmosphere promotes harmony in the community, which benefits students' academic achievement and well-being. Furthermore, Aigbokhan (2021) emphasizes how school security improves students' mental and emotional health by creating a sense of stability necessary for productive learning and personal growth.

Nolan et al. (2021) findings indicate that nurturing approaches can benefit students' academic development, their social, emotional, and behavioral needs, other students in the mainstream class or school, their parents and home life, and the school as a whole.

The fifth highest indicator is the challenging and relevant curriculum with a mean score of 3.798 or otherwise described as high. This indicates that students have completed experiments in the classroom, have a strong desire to learn new things, and feel that they have learned a great deal in physics class. They also feel that physics lectures are useful in their daily lives and help them understand nature and the real world. This suggests that the discussion has aided students in developing a thorough comprehension of the lectures. Teachers have adhered to the curriculum as stipulated, which enables students to engage in activities that are pertinent to what they are learning.

Beribe (2023) emphasized how crucial it is to create and modify curricula in light of globalization (Gholami-Zanjani, 2021). This includes incorporating courses like science, math, science, and social sciences—all crucial for enhancing cross-cultural understanding and competing in the global labor market. Cultivating critical thinking skills, global citizenship, tolerance and inclusiveness, international communication skills, and cultural sensitivity are vital. The results show the importance of including scientific and math literacy in the curriculum since both instructors and students believe it will help them meet the demands of increasingly globalized standards.

The sixth highest indicator is effective plant operation with a mean score of 3.71 or otherwise described as high. This indicates that the school has comfortable classrooms, comfort rooms, and other useful facilities inside the educational system as operational input resources. Well-designed school buildings are evident in promoting high-caliber educational efforts.

Yangambi, M. (2023) highlighted the importance of school infrastructures and their impact on student learning and student performance. This study concluded that the improved school infrastructure optimizes student achievement and teacher delivery. According to Shahmi and Hussain (2023), having access to contemporary physical amenities is crucial and improves students' performance and understanding.

Although still high, the lowest indicator is parental management with a mean score of 3.452. This indicates that fostering a pleasant school climate is greatly aided by parents' involvement in their children's academic lives.

The result is aligned with the study of Kelty & Wakabayashi (2020). Strong links have been found between student achievement and family engagement in the context of research on families' involvement in their children's education. Bradley et al. (2021) state that psychological attachments to education are fostered by peer and parental support and are indirectly linked to academic success through increased student involvement in the classroom. The findings underline the importance of ties with parents, especially during adolescence, and support the positive effects of social connectivity across developmental domains.

### **Summary of the level of Learning Engagement in Physics I of Grade 12 STEM Students**

Presented in Table 4 are data on the Learning Engagement in Physics I of Grade 12 STEM Students in terms of behavioral engagement, cognitive engagement, and emotional engagement.

The level of learning engagement in Physics I acquired an overall mean of 3.98 which is described as high. This means that learning engagement in physics is oftentimes manifested. These findings also imply that students exhibit an efficient interaction with their teachers during the teaching-learning process.

**Table 4. Summary of the Level of Learning Engagement in Physics of Grade 12 STEM Students**

Indicators	Mean	Descriptive Level
Behavioral Engagement	4.12	High
Cognitive Engagement	4.01	High
Emotional Engagement	3.81	High
<b>Overall Mean</b>	<b>3.98</b>	<b>High</b>

According to Delfino (2019), one of the fundamental ideas used to understand how students act during the teaching-learning process is their level of engagement. This study revealed that the student's level of engagement in a class is directly associated with their academic success. Additionally, several studies have demonstrated a link between student engagement and academic success, making it an essential part of a nurturing learning environment. Behaviorally engaged students are those who participate in class and school events, attend class regularly, complete their assignments, and arrive prepared. Students are emotionally engaged when they love learning, express interest in it, and feel a connection to the school. Students who put forth the effort to do well in class are engaged intellectually and this can result in a strong academic self-concept.

Qureshi et al. (2021) emphasized the importance of teachers' deliberate efforts to encourage student participation in lessons (Graham et al., 2021). Collaborative learning, involving student participation and interaction in group settings, not only fosters relationship management but also aids in content development (Lee, 2021). Instructors often employ collaborative learning as a method to facilitate learning and enhance learner performance, with a focus on improving critical thinking abilities among students (Garrison et al., 2021). The study concludes that increased interaction among group members correlates with higher engagement with the curriculum, leading to improved learning outcomes.

To further explain the results, behavioral engagement is the indicator with the highest mean of 4.12 or is described as high. This means that students are not afraid to raise their hands whenever confusion arises, frequently ask questions, engage in oral discussion with the teacher, and are always present during class.

Bråten et al. (2021) examined how behavioral engagement affected text comprehension as reflected in the students' post-reading written reports on the subject matter. Individual variations in motivation and cognition would address the behavioral engagement components that impact students' understanding ability (Guthrie & Klaua,

2021). The findings emphasized the significance of behavioral involvement in the written comprehension evaluation setting. To conclude, the study asserted a high level of behavioral engagement.

The second highest indicator is cognitive engagement with a mean of 4.01. This means that students can integrate different concepts to establish a deeper understanding of the course. This also implies that in between lessons, students review their class notes to ensure they comprehend the content.

The result is aligned with the study of Liu et al. (2020) examines the relationship between learning outcomes and emotional and cognitive involvement. Furthermore, a relationship between emotional and cognitive engagement has been found to be useful in simultaneously predicting learning success. This suggests that learning achievement is influenced by the interactive effects of both emotional and cognitive engagement. Specifically, positive and perplexing emotions had a greater impact on higher-order cognition than negative ones. To sum up, this study has significant methodological implications for automated cognitive and emotional participation assessments. Additionally, a high degree of cognitive engagement was found in the study.

The lowest indicator with a mean of 3.81 is emotional engagement, implying that students are actively connected with peers in accomplishing a task and possess a strong belief of being capable of performing well in class.

Krauss et al. (2022) asserted that students' levels of emotional engagement were increased when they had the chance to choose school-wide activities and guide their learning because of their teachers' nurturing and respectful connections with them. Peer support also decreased school-related pressures and raised students' emotional engagement.

**Table 5. Significance on the Relationship between Students' Attitudes on School Climate and Learning Engagement in Physics I of Grade 12 STEM Students**

Presented in Table 5 are the results on the relationships between students' attitudes toward school climate and learning engagement in Physics I. Also, it presents the significant relationship between students' attitudes on school climate and the learning engagement of grade 12 STEM students using the Pearson Product Moment Correlation Coefficient (r).

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**Learning Engagement in Physics I of Grade 12 STEM Students**

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<b>Students' attitudes on</b>	<b>r</b>	<b>p-value</b>	<b>Decision on Ho</b>	<b>Interpretation</b>
<b>School climate</b>	0.810	0.001	Rejected	Highly Significant

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The result demonstrates the strong positive correlation between students' attitudes on the school climate and their level of learning engagement in Physics I. With a Pearson correlation coefficient (r) of 0.810 and a p-value of (P=0.001), the relationship between

students' attitudes toward school climate and learning engagement is highly significant. This suggests a comparable rise or fall in school climate as students' attitudes increase or decrease. Because of this, the p-value is substantial and less than 0.05. This indicates that it is improbable that the observed association happened by accident. As stated differently, compelling data suggests a connection between students' attitudes toward the school climate and their engagement with Physics I.

According to Berkow's (2019) results, positive school climates can assist in reducing the achievement gap between students and other areas of their academic experience. Also, studies have shown a connection between improved student achievement engagement in the classroom and a pleasant school climate (Berkowitz et al., 2019).

Bradshaw et al. (2020) found a correlation between reduced disruptive behaviors, less bullying, and increased academic success in a welcoming, pleasant, supportive school environment. (Showers, 2019). According to the findings, middle and high school kids' academic achievement was closely correlated with the school climate.

To further support the findings, Dichoso (2024), asserted that improving student experiences remains essential to creating a pleasant school atmosphere, which has been repeatedly associated with increased engagement and academic success. According to the study, there is a pleasant school atmosphere, which is important for increasing student participation in class activities.

## QUALITATIVE PHASE OF THE STUDY

### FINAL THEMATIC MAP

After further refining and defining themes, the researchers acquired five themes and 16 sub-themes. These themes will help the researchers describe the impacts of school climate on grade 12 STEM students attending physics classes and how the school climate affects learning engagement in Physics I.

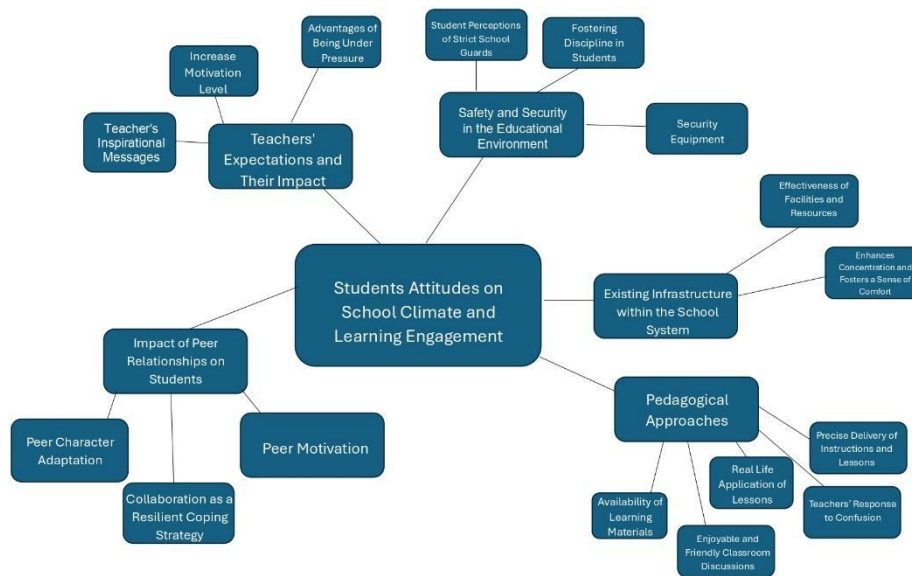


Figure 1. Thematic map

**Safety and Security in the Educational Environment.** To further explain the data, safety and security are evident in the school due to the strict regulation by security guards of students' entry and exit, the presence of security equipment within the school, their assistance during unanticipated emergencies, and their commitment to instilling discipline in students.

*I do not think I have ever felt unsafe inside the school. I believe it is partly due to the security system implemented by the school and how the guards handle the entry and exit of individuals, including the equipment brought by students.*

*For me, on the positive side, for example, the guard is somewhat strict when it comes to ear piercings, hair color, haircuts, and they check things thoroughly, even your bag.*

*Some of us here have experienced situations during school hours, like earthquakes, but the staff, especially the guards, never fall short. They guide us to the exits and safe areas and also use signals like whistles or fire alarms to notify us when evacuation is necessary.*

*For me, aside from the alarms, the security guards make you feel safe because there are CCTV cameras where you can review what happened within the school.*

*Clear and consistent punishment regulations by the teachers based on the handbook, all contribute to my sense of safety and security within the school.*

According to Ndidiama et al. (2023) which highlights the significance of maintaining discipline in secondary schools and school safety. The findings concluded that , employing well trained security men is important to ensure security of lives and school properties, providing security gadgets in the school (e. g. fire extinguisher) for fire matters, maintaining healthy school environment, ensuring that school fixtures and equipment are promptly serviced to ensure teachers efficiency and ensuring that medical services are provided for teachers needing them.

**Existing Facilities within the School System.** Facilities in the school system help facilitate students' achievement of good learning outcomes. The participants stated that the school provides students with functional and efficient facilities for their growth and development. Good facilities help them focus and feel comfortable inside the school, and staff members were proactive and attentive in assisting students in exploring the school's interior spaces.

*For me, I have used not only the classroom but also the library so far. If there is something like conducting a meeting, we can use it there. Moreover, if we have studies like group study or study meetings, we can also use the library besides the classroom.*

*Resources like computers and the library help give me a space to do my academic chores, especially since I do not have a laptop. I can say that it helps facilitate my educational growth.*

*About the classrooms and school facilities. These amenities contribute to my overall improvement as a student in terms of focus and sense of comfort.*

*The school has comfortable classrooms and adequate facilities that promote better academic outcomes by decreasing distractions and increasing my well-being, resulting in increased focus and performance.*

According to Akhiero (2022), states that infrastructure and facilities are additional components that support the process of teaching and learning in schools. Since they are among the factors that determine whether education is successful, facilities and infrastructure serve as indicators of the quality of education. One of these facilities is academic libraries that are considered as essential components of any form of learning environment, (Mehtonen, 2022). Cindy et al. (2022) findings show that there is a major impact on the infrastructure and facility optimization for the factors related to rules, partnerships, student needs, and motivation.

**Teachers' Expectations and Their Impact.** The participant is more driven to work hard and show higher levels of engagement due to the teacher's expectations. They contend that the pressure they feel from their teachers' expectations has advantages such as increasing self-assurance and self-worth and that the teachers' encouraging remarks have motivated them to work more.

*I think their expectation pushes us to become a more responsible student because they are expecting we went through the study materials they provided.*

*Based on my experience, their expectations towards me have affected me positively. This helps me fight against tardiness whenever I remember that they expect us to study the learning materials and everything that has to be learned, particularly oral recitation*

*For me, pressure helps me to gain more confidence, and it helps unleash the best out of me.*

*Their high teacher expectations for me often result in improved academic outcomes because it makes me more motivated to reach or surpass those goals, resulting in increased effort, engagement, and, ultimately, higher success levels.*

*Perhaps the thing I remember most, which I find truly motivating, is when a teacher told us to do everything we can; as long as we can pass or graduate, then it is good. That really resonated with me.*

*For me, the teachers expect higher grades in exams; they expect that I can do it and achieve it. However, even though there are students who may not meet their standards, the teacher helps by encouraging them and saying words like you can do it.*

*In my experience, some teachers have high expectations for their grade 12 students. Sometimes I feel down but it also has a positive side that motivates me to study hard as long as we get the standards they are looking for. Engaging with peers and enabling myself to discover new things at school, these things are my source of enjoyment at school*

According to Flanagan et al. (2020), this study suggests that one crucial changeable factor of academic achievement is teacher expectations or teachers' perceptions of their student's academic ability. Teachers' expectations influence students' academic achievement; higher expectations are associated with more excellent academic performance. The conclusion suggests that expectations set by teachers have a favorable impact on students' academic performance.

**Impact of Peer Relationships on Students.** Their relationships with their peers significantly impact each student's academic life. According to the interview, making connections with classmates at school enables a person to adapt to the motivation and zeal of their peers, which in turn inspires them due to the positive attitude it fosters. Peer relationships assist students in overcoming academic obstacles by fostering a collaborative mindset.

*I mentioned that my classmates are responsible, and you know, I have been a student my whole life, surrounded by all sorts of people. I must say, there is a definite difference when responsible peers surround you compared to irresponsible ones. They can drive you to do better in school. It is like you adapt to their habits; when they study hard, you feel inclined to do the same.*

*For me, yes, they are really helpful when it comes to school-related work, especially when you need notes; they are willing to share. And similarly to what Participant #1 said, being surrounded by peers who are highly focused on academics can be really motivating.*

*I guess collaborative effort and promoting healthy peer interactions are the main reasons I am motivated to attend school. Being able to interact with your classmates, even if it is just about academics, is why I gained friends here at school, and that motivated me and many students to achieve positive academic outcomes.*

*For me, peers are helpful, not just academically but also mentally, as they push you to become more responsible academically. In my experience, I have many classmates and friends like that, and I think they have a big impact on me because my grades have also improved.*

*I guess collaborative effort and promoting healthy peer interactions are the main reasons why I am motivated to attend school. Being able to interact with your classmates, even if it is just about academics, motivated me and many students to achieve positive academic outcomes.*

*Our collaboration during physics is my way of coping with confusion and the areas that are hard for me to comprehend.*

Lan's (2023) study asserts that teenagers' academic engagement depends on them connecting with their peers and establishing a suitable social position in the classroom (Ryan et al., 2023). Good peer relationships also influence students' self-perceptions and self-evaluations, which are self-system processes that lay the groundwork for their active participation in the classroom. Additionally, Jin et al. (2023) found a favorable association between grit and peer attachment among college students regarding peer relationships, suggesting that supportive peer ties may encourage active academic engagement.

**Pedagogical Approaches.** The participants thought their physics teacher had an excellent teaching style and presented the material and instruction intelligibly and accurately. The tone of the discussions was lighthearted and joyful and the teachers cleared up misunderstandings and applied real-life lessons to help the students better grasp and apply what they had learned. The teachers provided learning materials that will help facilitate learning among students.

*Our teacher is more encouraging. They simplify things and do not make formulas too complicated. He is approachable and fun to interact with. Whenever we have questions, he answers them.*

*Our teacher was very communicative to us about our confusion, whether it was about formulas or calculation techniques we did not understand*

*One thing I appreciate is how they explain things. They demonstrate the given formula and explain how to solve it, which makes it easier to understand. So, that is a plus point for them.*

*Our interaction with our teacher is fun. Our teacher can make us engage during class. He does not talk to us like a typical teacher; he is more like a friend, so it is enjoyable.*

*My teacher is fun during discussions, which allows me to reduce the pressure because of his teaching strategy.*

*My physics teacher is very formal; he is not too severe and fun. I think enjoyment in learning is a big part of absorbing the knowledge the teacher teaches.*

*As a class, we specifically ask for real-life situations to further understand the lessons, like this one about electricity. We wondered about the specific uses of series and parallel circuit systems, and our teacher taught us about them using things in the room like lights and electric fans.*

*Yes, they do have those. Like, they give us printed and online study materials and textbooks.*

*Fortunately, our teacher provides us with resources like textbooks and a few helpful videos for our lessons.*

Bukit et al. (2023) discovered that engaging in enjoyable learning can help students' ability to recall. Students' attention can develop positive emotions and make them happy while learning through the information they acquire. Fun instructional techniques create a more laid-back and pleasant learning environment by encouraging a less tense and apprehensive setting (Mokhtar et al., 2023). According to Rasuli et al. (2023), students believe that having a good relationship with their teachers has a favorable impact on their motivation and interest in school, which enhances the learning process.

Furthermore, Chetty et al. (2019) emphasized the importance of having highly effective teachers. As measured by student growth percentiles (SGPs) and value-added measures (VAMs), students who had highly effective teachers had higher retirement savings rates, attended college more frequently, earned more money, and lived in wealthier neighborhoods.

## **Conclusion**

High expectations for all students being the dominant indicator suggests that teachers' expectations and pressure on their students encourage them to perform well in class. The higher the teachers' expectations, the more dedicated students become to learning the subject. The school also offers effective facilities that facilitate students' academic growth and that the students feel safe whenever they are at school which contributes to their overall wellness. The study also found that the physics teachers within the institution are effective with their teaching approaches. As a result, a positive school climate is created where relationships between teachers, students, and the environment are enhanced within the institution.

Students' attitudes towards a positive school climate are high and when it comes to their active participation and intellectual connection throughout the teaching-learning process, the grade 12 STEM students exhibit high levels of engagement in their physics class.

The correlation between the two variables was highly significant which means that the school's positive climate resulted in high learning engagement in physics among grade 12 STEM students. Therefore, the students' attitudes on school climate have a genuine relationship to how engaged students are in their physics class. The five main themes and sixteen sub-themes that emerged from the qualitative dataset further support and explain the quantitative findings of the study.

High efficiency of teachers plays a pivotal role in creating a positive school climate. The findings recommend aiding the teachers' professional growth to increase their understanding of a particular field or to hone their reflective teaching abilities (RT) through training and seminars. An increase in their benefits will likely increase their willingness to work, or (WE), and their motivation to encourage learning among students, and display a positive disposition in the classroom, directly impacting how they teach. The findings recommend that teachers hold reasonable expectations for their students to increase their engagement level. Practice healthy communication with students by recognizing and addressing their needs. Encourage students to interact with peers in building connections through clarifying confusion, sharing notes, and consolidating the knowledge they learn, ensuring that the objectives of the class are achieved.

Effective plant operation within the school system helps facilitate student academic growth and development. The findings suggest that facilities in the school system like libraries, computer laboratories, and other laboratories must be improved as they help optimize students' learning engagement. Tidy and pleasant classrooms and restrooms have to be maintained as they can potentially impact students' ability to concentrate and focus during class.

Safety and security within the school system is a top priority to ensure students' overall wellness. The findings recommend maintaining the school's safety and security through the cooperation of school guards, advising them to display a strict demeanor, mitigate hostile behavior, and be attentive to the entry and exit points of the school to ensure the security of the students inside. Improve facilities, security equipment, and intelligent technology must be incorporated to ensure students' safety inside the school.

### **Consent**

As per international standards or university standards, Participants' written consent has been collected and preserved by the author(s).

### **Disclaimer (Artificial intelligence)**

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

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Details of the AI usage are given below:

- 1.
- 2.
- 3.

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