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

ABSTRACT

School climate refers to a multifaceted idea that encompasses aspects like safety, student involvement, and surroundings. The school climate has an impact on the interactions that exist between educators and students in the classroom (Showers, 2019). A positive school climate is created where relationships between teachers, students, and the environment are enhanced within the institution. This research aims to determine whether there is a substantial correlation between students' attitudes on school climate and their learning engagement in Physics I and explore the impact of school climate on grade 12 students' experiences in attending classes and how it affects the learning engagement in Physics. Consequently, the researchers utilized an explanatory mixed-method sequential design and were conducted in Davao City, between July 2023 to April 2024. 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 I. This means the institution provides a positive environment that results in high learning engagement in their Physics I class. 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. In the qualitative phase of the study, nine main themes and eighteen sub-themes emerged from the qualitative dataset. These themes support the quantitative finding 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). This paper 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. Relevant research shows how the school climate impacts students' academic lives. This research aims to assess how school climate can impact the engagement in learning physics which is seen to be a challenging course in STEM strand in a classroom setting as a microcosm. This study aims to assess if effective learning is evident through the level of engagement by the students.

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 existence of these facets within the school system highlights the alarming adverse

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effects and should critically be monitored to attain the desired outcome by the school. ~~The study by~~ Lombardi et al. (2019) ~~emphasizes~~ emphasizedthe 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). ~~Meanwhile~~, maintaining a healthy and positive school climate promotes learning and academic success. ~~The research by~~ Dischoso (2024) ~~argues~~ arguedthat improving student experiences is still 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 ~~the study of~~ Bradshaw et.al (2020) ~~that~~ whoasserts assertedthat there ~~is~~ wasa correlation between reduced disruptive behaviors, less bullying, and increased academic success in a welcoming, pleasant, and supportive school climate. (Showers, 2019).

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2. METHODOLOGY

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The study used 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 ~~design~~ method(Bhandari, 2021). Followed by the qualitative phase which aims to further explain and explore the results of the quantitative phase and any outliers that might not be consistent with the data collected (Alele&Malau-Aduli, 2023).

The study included the participation of 335 respondents from the Grade 12 ~~stem~~ STEMstrand in Davao City wherein the researchers used adaptive survey questionnaires to gather the data for the first phase of the study. A set of standardized questions were attached to a structured questionnaire. An ordered set of questions ~~is~~ wasused to gather information from the respondents. In acquiring the number of respondents, Sslovin's formula was used by the researcher which is equivalent to a 335-sample size from the senior high school; stem community, with a 0.05 margin of error. ~~Moreover~~, the qualitative phase of the study involved the use of a researcher-made IGQ or interview guide question to assist the researcher in acquiring adequate data for the study's qualitative phase through an in-depth interview and a focus group discussion with 10 participants which were randomly accumulated from the 335 respondents of the first quantitative phase. ~~The study's qualitative findings support the quantitative findings and offer a more comprehensive research approach, resulting in a more robust output.~~

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The study used mean, average, and Ppearson's r coefficient of correlation to determine if there is any potential association between the two variables present in the study. The thematic analysis by Braun and Clark is also used to capture patterns and themes across the qualitative dataset.

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The researchers used an adapted survey questionnaire from Tamala (2019) study about school climate to acquire data for the predictor variable. To assess the students' attitudes toward the school climate, eight subscales ~~are~~ wereutilized usedin 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 Environment. Grade 12 students were given 45 items to answer, with options to select from 5 = Strongly Agree, 4 = Agree, 3 = Not Sure, 2= = Disagree, and 1= Strongly Disagree on a Llikert scale of five points.

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~~The table below~~ is where the interpretation of means is indicated for the first variable of the study and was used to interpret the result of the students attitudes on school climate The range of means below was adopted from the study of Manyange et al. (2015).

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Table 1. Mean Interpretation for Student 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 meansthe students' attitudes on school climate are never evident.

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To assess the learning engagement of Grade 12 STEM students in Physics I. The researcher 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 5-point Likert scale: 5 = Strongly Agree, 4 = Agree, = Not Sure, 2 = Disagree, and 1= Strongly Disagree. The outcome is evaluated using the scale below.

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~~The table below is where the~~Table 2 shows the interpretation of means is attached for the second variable of the study and was used to interpret the result of the learning engagement in physics I by grade 12 students. The range of means below was adopted from the study of Manyange et al. (2015).

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Table 2. Mean Interpretation for Learning Engagement in Physics

Range of Means	Description	Interpretation
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.

The study used mean, average, and Ppearson's r coefficient of correlation to determine if there is any potential association between the two variables present in the study. The thematic analysis by braun and clarkis also used 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 1 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 plants operation, meaningful use of data, parental engagement, and safety and discipline

~~A study by~~ Bradshaw et al. (2020) found ~~out that there is~~ 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 ~~is~~ wasclosely linked to the school climate.

~~The research by~~ Dichoso (2024) ~~argues~~ arguedthat improving student experiences is still essential to creating a supportive school climate, which has been repeatedly

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connected to increased engagement and academic success. A positive school climate is important for increasing student participation in class activities.

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Table 3. Summary of the level of Students' 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
Overall	**3.89**	**High**

Specifically, among the eight indicators of students' attitudes toward school climate, high expectations for all students is rated with the highest mean of 4.188 described as high. This indicates that teachers have high expectations for their students: they want them 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 set for the class.

This is consistent with the study of Hollenstien et al. (2022) found out 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 each and every student.

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To further describe the result, the second-highest indicator is effective teaching with a mean of 4.05, or described as high. This 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.

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The literature mentioned above is connected to the study of Namaziandostet al. (2023), which emphasizes the three critical factors that empower teachers to observe and evaluate themselves. 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 their students' academic achievement in an attempt to help students recognize the areas that require improvement.

A study by Lin et al. (2023) this paper highlights how deep learning could completely change standard teaching and learning methods in the classroom. Li et al. (2023) state deep learning has made phenomenal progress. In recent years, it has transformed various fields, including education. They collected extensive datasets from educational contexts. 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 pupils 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 environment.

The importance of safety and discipline is supported by the study of Ndidiamaka et al. (2023) which highlights the significance of maintaining discipline in secondary schools and school safety. Based on the findings, the study concluded that proper facilities, equipment, a well-thought-out school system, and intelligent technology are necessary to prevent injuries and other health dangers. The research also uncovered a safe school setting.

This is supported by the study of Nolan (2021), it highlights the role of NGs as an intervention and their impact on whole-school approaches to "nurture." The foundation of nurturing approaches is promoting the well-being of traumatized children and young adults and supporting their development (Education Scotland, 2021).

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.

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Teachers have adhered to the curriculum as stipulated, which enables pupils to engage in activities that are pertinent to what they are learning.

This is supported by the study of Beribe (2023). The study stresses 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 maths literacy in the curriculum since both instructors and students believe it will help them meet the demands of increasingly globalized standards.

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The sixth highest indicator is effective plant operation with a mean score of 3.718 or otherwise described as high. This indicates that the organization has top-notch classrooms, comfort rooms, and other useful amenities inside the educational system as operational input resources. Well-designed school buildings will play a major role in promoting high-caliber educational efforts.

Yangambi, M. (2023) study highlights the importance of school infrastructures, student learning, and student performance. This study concluded that the improved school infrastructure optimizes student achievement and teacher delivery.

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

As presented in Table 2, the level of learning engagement in Physics I acquires an overall mean of3.98 or is described ashigh. This means that students' engagement in their physics class is high, implying 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
Overall Mean	**3.98**	**High**

According to ~~a study by~~ 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.

The above result is aligned with the study of Qureshi et al. (2021), and highlights 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.

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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.

The result is consistent with the study of 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 &Klauda, 2021). The findings emphasize 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 assessments of cognitive and emotional participation. Additionally, a high degree of cognitive involvement 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.

The result is consistent with the study of De Neve et al. (2023). This study focuses on how emotional regulation helps shape student's engagement in classroom activities. The results shed light on potential pathways through which emotion management either impedes or enhances learning in the classroom, which is essential information for building curricula and teacher development programs. A high level of emotional engagement was also found in the study, which increased student participation in the classroom simultaneously.

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 3 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).

Learning Engagement in Physics I of Grade 12 STEM Students

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

The result demonstrates the strong 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 do. 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).

The result above is supported by the study of Bradshaw et al. (2020) found out that correlation exists 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 is closely correlated with the school climate.

To further support the finding, another research by Dichoso (2024), asserts 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 nine themes and 18 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.

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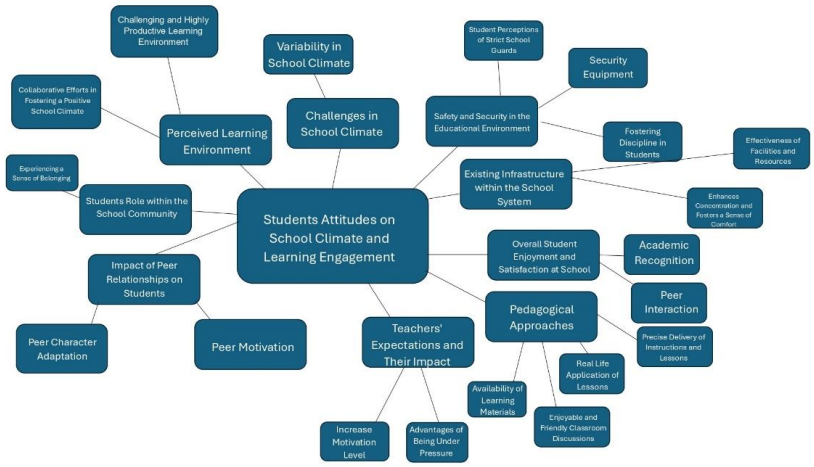

Figure 1. Final thematic map

Perceived Learning Environment. After reviewing the students' responses. It is shown that students thought the school climate was challenging and fruitful, and the school is working hard to give students a positive school climate. The participants said that because of the school climate, they were able to obtain positive learning outcomes.

"Even though it is tiring, it is not too bad because you learn and achieve a lot, even if sometimes you feel like you cannot handle it. The school proves you have more potential than you think, so overall, it is okay" (P2).

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"So far, the effects of the school climate on me, overall, in all aspects, have been positive, though it can be tiring. However, I have learned a lot, and the outcomes have been good. I can say that if there are still improvements the school can make to its facilities, they should do it because it is a significant factor for the overall well-being of its students." (P1)

As stated by Fraser (2019) study, academic researchers have focused on students' classroom learning environments. Students who perceive high cooperation in their classroom experience positive effects (e.g., elevated self-esteem and supportive relationships) and academic advancement (Johnson et al., 2019). Additionally, Partin and Haney (2019) found that students' self-efficacy beliefs are stronger when they feel that the classroom is a favorable learning environment, improving their course success. The results showed that classroom environments designed with the constructivist learning environment in mind improve students' achievement directly and indirectly by raising their motivation levels.

Challenges of School Climate. The uneven nature of the school climate presents additional issues. Students claim that despite all its difficulties, the school has worked hard to give students a supportive environment that promotes learning.

"For me, the impact of the overall school climate is, well, okay when it comes to how teachers deliver their lessons or the general environment of the school. Some teachers teach well, but there are others whose approach seems off. Also, with the staff, there is a selection of those who are good at approachability, while some seem intimidating and hard to approach" (P2).

"Occasionally, though, the issue with our classroom is that the air conditioning is sometimes on and sometimes off, but efforts are made to address it, so it is only a sporadic occurrence." (P1)

~~In the study of~~Hammond et.al (2020) ~~underlines~~ underlinedthe importance to build supportive relationships and an enjoyable school climate. To do this, schools must provide teachers the time and space to get to know their students, recognize and address their needs, and improve the alignment of the home and school. Creating more individualized school structures can help ensure that each student has a stable and consistent relationship.

Safety and Security in the Educational Environment. To further explain the data, safety and security are evident in the school due to strict guards who assist in regulating each student's entry and exit, presence of security equipment within the school, the school guard's assistance during unanticipated emergencies, and the desire to instill 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." (P1)

"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."(P2)

"For me, aside from the alarms, the security guards make you feel safe because there are CCTV cameras where you can review what happened or what happened there. Also, there seems to be only one exit, but other facilities guide the students." (P4)

Ensuring students' safety, as emphasized by Ede et al. (2021), safety is crucial for creating a secure learning environment that promotes academic excellence, positive interactions among teachers and studentsultimately 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.

Existing Facilities within the School System. Facilities in the school system help facilitate students' achieving 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." (P3)

"Comfortable classrooms and effective facilities? With those kinds of amenities, it feels like a premium student experience. It contributes to overall improvement as a student in terms of focus and feeling comfortable, but it is not the biggest or most important factor. I believe it's more about the people you surround yourself with." (P1)

"The school has comfortable classrooms and adequate facilities that promote better academic outcomes by creating a favorable learning environment, decreasing distractions, and increasing student well-being, resulting in increased focus and performance." (P6)

According to Akhihiero (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 library 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.

Overall Student Enjoyment and Satisfaction at School. The participants stated that peer connection and academic recognition were the main factors influencing their overall enjoyment and satisfaction at school. Their general enjoyment and satisfaction at school increase when their efforts are rewarded with fair grades and fun times spent with classmates.

Overall enjoyment and satisfaction are mostly felt when your efforts are rewarded, especially with fair grades and remarks. So far, in my experience in Grade 12, my classmates are nice and responsible, very responsible indeed. This is one reason I'm delighted with my current experience." (P1)

"Whenever I received a fair grade from the teachers and recognized my skills, these things gave me fulfillment." (P1)

According to Morries et al. (2021), many factors affect schooling. Their study's findings demonstrate how crucial school enjoyment is to academic success. Moreover, happiness and satisfaction are good feelings that enhance wellness and encourage learning (Fredrickson, 2021). School-based interventions can facilitate positive emotions like enjoyment, and this can raise wellness and academic achievement levels (Coffey, 2021).

Students' Role within the School Community. The participants perceive themselves as indispensable individuals who participate in different group activities and engage actively in extracurricular undertakings to maintain a sense of belonging, profoundly contributing to student engagement. Beyond the classroom, this self-identification as a proactive student fosters a sense of belonging and significantly increases student engagement.

My active participation in group projects and school events is essential to determining my perceptions as an integral school community member, generating a sense of belonging and engagement. (P6)

For me, I also feel important because I'm being sought after, for example, in activities where you're asked to do something specific. Also, in school as a club officer, i am actively sought after because you are the one responsible for tasks like taking attendance, so my presence is important. (P3)

The result is connected with the study of Osterman (2023) claimed that a wealth of research demonstrates the beneficial effects that students' sense of belonging at school has on their mental health and a range of behavioural and attitudinal outcomes that enhance learning. It is crucial to increase pupils' sense of family and school loyalty to reduce risk-taking (Ahmadi, 2020). Moreover, students' sense of belonging to the school was described as their "social bond between themselves, the adults in the school, and the norms governing the institution" by Wehlage et al. (2020). According to the findings, students' school experiences are significantly influenced by their families, peers, and teachers.

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" (P4)

"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" (P8)
"For me, pressure helps me to gain more confidence, and it helps unleash the best out of me. "(P10)

"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." (P2)

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, and lower expectations are associated with worse academic performance. The conclusion suggests that expectations set by teachers have a favourable 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 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." (P9)

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. (P4)

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 favourable 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.

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." (P1)

My teacher is fun during discussions, which allows me to reduce the pressure because of his teaching strategy. (P7)

'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. (P9)

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. (P9)

According to Bukit et al. (2023) study, they discovered that engaging in enjoyable learning can help students 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 professors has a favorable impact on their motivation and interest in school, which enhances the learning process.

Furthermore, it is important to raise the efficacy of teachers, as suggested by the study of Chetty et al. (2019), students with highly effective teachers, as measured by student growth percentiles (SGPs) and value-added measures (VAMs), had higher retirement savings rates, attended college more frequently, earned more money, and lived in wealthier neighborhoods. Researchers and policymakers must have a thorough understanding of the elements that contribute to a teacher's effectiveness since a highly effective teacher can significantly improve the lives of their students.

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.

Conclusion: 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 nine themes and eighteen sub-themes that emerged from the qualitative dataset further supports and explain the quantitative findingsof the study.

The study recommended to aid the teachers' professional growth to increase their understanding of a particular field or to hone their reflective teaching abilities (RT). The study and previous studies have shown how much an effective teacher can impact students' lives; an increase in their benefits will likely increase their willingness to work, or WE, which will allow them to display a happy disposition in the classroom, which will have an impact on how they teach. Additionally, it is suggested that all school facilities should be improved to support students' learning objectives. Improving amenities like tidy and pleasant classrooms and restrooms will directly impact students' ability to concentrate and focus. Students can study and delve into knowledge from books and immerse themselves in laboratory practices and technological skills that would activate the 21st-century skills within them and the potential to reach globalized standards. Lastly, developing a curriculum that focuses on real-life application of lessons should be incorporated to attain the goal of each lesson fully, not just to introduce students to the concept but to instill passion and skills in them that will help them track their career path.

It is recommended that school heads strengthen instructional leadership, giving teachers and students a platform to be heard and address their concerns. Teachers should also be supported with their career development by exposing them to training and seminars.

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Additionally, the maintenance and improvement of school facilities are necessary to facilitate students' achievement of good academic outcomes. They must provide classrooms with quality and functioning school equipment and good ventilation conducive to learning. School heads must also maintain 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 point of the school to ensure the security of the students inside. Furthermore, school heads must advise teachers to put out a happy disposition in front of the class, for this affects the quality of their instructions.

It is recommended that teachers should create a welcoming environment in which students can engage attentively. Teachers must hold reasonable expectations for their students with the aim of increasing their motivation level. It is also recommended to practice healthy communication with students by giving them words of inspiration every after or before the class starts and setting a positive mood during discussion. For physics teachers, it is recommended to form students into groups after the discussion and give them a terse of time to interact with one another in clarifying confusion, sharing notes, and consolidating the knowledge they learn, ensuring that the objectives of the class are achieved. Lastly, teachers should incorporate tangible materials in learning the content and practice real-life applications that will allow students to deepen their understanding of the lessons.

Parents are encouraged to recognize the significant influence of school climate on their children's participation in education, which is something we strongly advise. Academic achievement is greatly influenced by a favorable school climate marked by open communication, a sense of community, and supportive relationships. Researching and evaluating your child's school environment allows parents to help establish a positive learning environment. Their engagement guarantees that the educational experience is customized to boost their child's overall development, in addition to assisting in identifying areas for improvement. Adopting this cooperative strategy will help your child's educational path become more rewarding.

The students are encouraged to actively participate in studying school climate and learning engagement since these factors significantly impact academic achievement and general well-being. Students can establish meaningful relationships with teachers and peers, improve the learning environment, and improve their overall educational experience by recognizing and participating in a positive school climate. Examining the relationship between school climate and learning engagement can yield important insights into practical individual and group development tactics. Students actively participating in this exploration contribute to developing a vibrant and supportive educational community and their academic success. Accepting the study of learning engagement and school climate is an investment in both persons.

Lastly, future researchers who plan to study school climate and learning engagement will use a comprehensive strategy to conduct the research. For a thorough understanding, consider contextual and cultural variances, carry out longitudinal studies, and involve important stakeholders. Use cutting-edge technologies to collect real-time data and investigate creative approaches to effectively capture the dynamic interaction between school climate and learning engagement.

Comment [A38]: How do theserecommendationslink to yourresults? This is not at all clear.

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