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Science Laboratory Environment and Students' Motivation as Predictors on Attitudes Towards Physics Lesson

Nadrah Nadrah[1*]

[1]Primary School Teacher Education Study Program, Universitas Muhammadiyah, Makassar, Indonesia

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Corresponding Author:
Nadrah Nadrah
nadrah@unismuh.ac.id

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Abstract: Physics learning plays a significant role in shaping students' attitudes towards science subjects, especially Physics. In addition, students' motivation level significantly influences their engagement and performance in this subject. This study investigated the combined effect of Science Laboratory Environment and students' motivation as predictors of students' attitudes towards Physics. This study aimed to determine the significant combined effect of science laboratory environment and students' motivation on students' attitudes towards Physics. This study used a non-experimental quantitative method using descriptive, correlational, and predictive approaches. In addition, the respondents of this study were selected through purposive sampling of 100 junior high school students from private schools in Davao City and answered 3 survey questionnaires adopted. Using Mean and Pearson r, the findings showed the following; science laboratory environment is high while students' motivation and students' attitudes towards Physics. Furthermore, combining the two predictor variables science laboratory environment and students' motivation showed a significant effect on students' attitudes towards Physics.

Keywords: Attitudes; Physics; Science laboratory environment; Students' motivation.

Introduction

In the ever-evolving field of education, it is essential to grasp the complex interaction between the science laboratory environment and students' motivation. This research examines the essential role these elements play in anticipating students' attitudes toward Physics lessons. The science laboratory, frequently seen as the hub of experiential learning, and students' inherent motivation establish a mutually beneficial connection, shaping their outlook and involvement with the Physics curriculum. By deciphering these predictive factors, educators and researchers can acquire valuable insights to improve the efficacy of Physics instruction and cultivate a more favorable and engaging learning environment for students (Oral & Erkilic, 2022). Science education faces the challenge of maintaining students' interest, particularly in subjects like Physics.

Additionally, Kwarikunda et al. (2021) underscores the significance of Physics, equipping students for diverse careers in chemical engineering, medicine, pharmacy, food science, and environmental studies. Despite its vital role, Nja et al. note an ongoing decline in students' performance at the foundational level, attributing the high failure rate to issues like teacher motivation, inadequate facilities, student attitudes, and limited professional development opportunities for science educators. This aligns with Kwarikunda et al. (2021) assertion that, despite the acknowledged benefits of science subjects, the laboratory environment lacks the conditions necessary for effective teaching and learning. Consequently, students perceive science as a challenging subject, a sentiment supported by Altermatt et al. (2021), who suggests that poor performance in Physics and related subjects may indicate deficiencies in the school-level laboratory setting.

Over the past years, the Philippines has consistently shown a trend of students having limited scientific literacy. This is underscored by the recent PISA results,

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where Filipino students scored below the average set by the Organization for Economic Co-operation and Development (OECD) in mathematics, reading, and science. The significance of this issue was highlighted by DepEd Secretary Sarah Duterte during the PISA National Forum organized by the Department of Education (DepEd), where discussions on the outcomes of the latest international assessment cycle took place. Secretary Duterte emphasized, "PISA has provided us with valuable insights into the strengths and areas for improvement within our education system." This concerning pattern was evident when the Philippines participated for the first time in the Program for International Student Assessment (PISA) in 2018, revealing that Filipino 15-year-olds ranked near the bottom among 78 countries and territories (Organization for Economic Cooperation (Ikhlas et al., 2021). Attempts by Philippine studies to comprehend the low science achievement have focused on aspects such as the curriculum and instructional methods (Cwik & Singh, 2021).

Moreover, studies have identified predictors of Filipino students' learning and achievement in subjects like Physics, biology, physics, or specific science lessons. These studies can be categorized into two types: those investigating the impact of instructional strategies, and those examining student motivations and other non-cognitive variables at the student level as predictors of learning and achievement (Kurbanoglu & Takunyaci, 2021).

Despite the numerous research evidence concerning the science laboratory environment and students' motivation, there is a notable lack of empirical studies in the Philippines exploring how these factors impact students' attitudes. Future researchers need to conduct in-depth investigations, including interviews with students to understand why they may dislike Physics. Students' negative attitudes toward Physics in school strongly influence their choices of university courses. If a majority of students harbor negative attitudes toward Physics, universities and colleges may face challenges in attracting students to Physics-related courses. This raises concerns about the limited number of individuals who may excel in Physics in the future, presenting a significant challenge that needs to be addressed (Li et al., 2020).

The researcher aims to investigate whether specific indicators of the science laboratory environment, including cohesiveness, open-endedness, integration, rule clarity, and material environment, along with attitude indicators such as self-efficacy, active learning strategies, science learning value, performance goal, achievement goal, and learning environment stimulation (Esparza et al., 2020), collectively exert a significant influence on students' attitudes towards Physics. Most existing studies have primarily focused on only two variables within this context. In the researcher's local setting, there is a notable absence of similar comprehensive studies due to a lack of empirical research. Consequently, there is an urgent need to conduct this study to contribute valuable insights to the existing body of knowledge on the subject (Radulović et al., 2022).

Similar to other physical and natural sciences, Physics plays a crucial role in everyday life by offering opportunities for learners to comprehend the surrounding environment. Nevertheless, the process of teaching and learning Physics at various educational levels has encountered numerous challenges. These challenges include students' deficiencies in problem-solving skills, limited spatial visualization abilities, struggles with understanding Physics vocabulary, and ineffective communication between students and teachers, as indicated in prior research (Diwakar et al., 2023). Consequently, researchers from diverse settings have consistently advocated for the establishment of a learning environment capable of effectively addressing these difficulties. This confirms the statement of Kwarikunda et al. (2020), which states that secondary schools continue to consider Physics as difficult to learn and students develop a negative attitude towards this subject which leads to low achievement in the subject and it also reduces the student's interest. The result of this study will be beneficial to the Department of Education Officials, School, Administrators, Physics Teachers, Students, and Future Researcher.

Department of Education Officials. The result of the study may help the officials of the Department of Education as they are part of the developing policies, guidelines, and curriculum assessments for the students.

School Administrators. This research will also help the school administrators to allow their faculty members to professionally grow by attending training and seminars that are related to science teaching. Physics Teachers. This study will help Physics teachers assess and improve their teaching and learning, improve students' motivation, and engage in a positive attitude toward Physics lessons.

Students. This study will help the students to be more active, and motivated and participate in their Physics classes (Röllke & Großmann, 2022). Future Researchers. The result of the study will help future researchers to utilize some other factors that will enhance students' attitudes in Physics lessons by using other variables.

Method

This study used a descriptive and predictive non-experimental-quantitative design. This supports the

theory put forth, according to which non-experimental research summarizes findings and makes observations on the relationships between factors rather than relying on manipulating variables. It was also used for this study because it aims to investigate the important combined effects of motivation and the science laboratory environment on the science attitude in Physics. The design further optimizes the usage of data and statistical tools like mean and Pearson r. Thus, a quantitative approach was taken in this investigation (Kristyowati & Purwanto, 2019).

Moreover, in the same spirit, this is consistent with the claim made by Lee et al. (2020), who noted that correlational research methods do not require the manipulation of an independent variable; rather, they include the measurement of two variables and the evaluation of their relationship. This method is chosen because it clarifies the relationship between two or more variables, such as the setting of the scientific lab and the motivation and attitudes of the students toward the chemical lecture. As a result, the study can be conducted using this approach (Oluwasegun, 2020).

The study was conducted in Davao City, Philippines. The schools chosen in this study are private educational institutions particularly the junior high school of the basic education department around cluster 3. The respondents were 300 junior high school students from private schools in Davao City, Philippines during the school year 2023-2024. To promote fairness in the data collection the data gathered in the study was purposive or judgement sampling. The idea behind the sampling technique is to focus on people with specific characteristics who will better be able to assist with the relevant research (Kácovský et al., 2023), in the process of identifying and selecting individuals who are knowledgeable and skilled with phenomena of interest.

This study adopted 3 questionnaires. The first part of the questionnaire was the Science Laboratory Environment Inventory (SLEI). The second questionnaire was the Students' Motivation Towards Science Learning (SMTSL). The third questionnaire used was the Attitude Towards Science Scale (ATSS) Developed (Woithe et al., 2022).

The gathered data was examined using the following statistical tools: mean, this was used to describe the level of the science laboratory environment, attitude of Physics lessons, and science identity, Pearson. This was utilized to determine the significant relationship between the science laboratory environment and students' attitudes toward Physics lessons, and the significant relationship between students' motivation and attitudes to Physics lessons. Multiple Linear Regression. This was used to determine the singular and combined significant influence of the science laboratory environment and students' motivation towards Physics lessons on science identity.

Result and Discussion

The gathered data was examined using the following statistical tools

This was used to describe the level of the science laboratory environment, attitude of Physics lessons, and science identity, Pearson r. This was utilized to determine the significant relationship between the science laboratory environment and students' attitudes toward Physics lessons, and the significant relationship between students' motivation and attitudes to Physics lessons. Multiple Linear Regression. This was used to determine the singular and combined significant influence of the science laboratory environment and students' motivation towards Physics lessons on science identity.

On the other hand, the indicator with the lowest mean of 3.93 is "I am willing to participate in this science course because the teacher pays attention to me." This suggests that among the factors shaping the learning environment in science courses, students' willingness to participate is somewhat less influenced by the teacher's attention compared to other listed factors. However, it's worth noting that even the lowest mean still falls within the category of "High" stimulation in the learning environment. Despite being the lowest mean, it still indicates a high level of stimulation overall in the learning environment.

Students' motivation for learning science in Malaysia and identified several key factors for successful science learning, including students' motivation, language skills, and positive attitude toward science education. Furthermore, Gray et al. (2020), emphasized the influence of a teacher's caring instructional styles on students' motivation and learning in science. Building on this, Karatekın (2019) underscored the crucial role of teachers in motivating students to engage in learning activities at school. When teachers display enthusiasm for a particular subject, it can ignite positive emotions and eagerness to learn among students.

As shown in Table 1, the level of science laboratory environment as perceived by the students gets an overall mean of 4.23 or very high which means it was always observed. This confirms the statement of Hadjichambis & Paraskeva-Hadjichambi (2020) that the science laboratory contains a space for conducting experiments to demonstrate the applications of theoretical ideas, as well as a space for learners to put scientific theory. The laboratory environment plays a significant role in Physics education, potentially exerting a considerable influence on students' learning outcomes and positively

contributing to the improvement of teaching and learning in Physics.

Table 1. Summary of the Level of Science Laboratory Environment as Perceived by the Students

Indicators	Mean	Descriptive Level
Student Cohesiveness	4.30	Very High
Open-Endedness	4.05	High
Integration	4.27	Very High
Rule Clarity	4.34	Very High
Material Environment	4.19	High
Overall	4.23	Very High

The Level of Science Laboratory Environment as Perceived by the Students in terms of Open-Endedness

As depicted in Table students' perceptions of the science laboratory environment regarding open-endedness are presented through seven indicators. The table reveals that the statement "In my laboratory class, I am required to design my experiments to solve a given problem" achieved the highest mean score of 4.26, indicating a very high level of open-endedness. This suggests that students are provided with opportunities to devise their own experiments and address problems within the laboratory setting.

Table 2. Level of Science Laboratory Environment in terms of Open-Endedness

Items In my laboratory class…	Mean	Descriptive Level
1. I have the opportunity to pursue my scientific interests.	4.21	Very High
2. I am required to design my experiments to solve a given problem.	4.26	Very High
3. other students collect different data than I do for the same problem.	4.08	High
4. I am allowed to go beyond the regular laboratory exercise and do some experimenting of my own.	3.86	High
5. I do different experiments than the other students.	3.69	High
6. The teacher/instructor decides the best way for me to carry out the laboratory experiments.	4.23	Very High
7. I determine the best course of action in a given laboratory experiments,	4.05	High
Overall	4.05	High

The level of student motivation towards Physics lessons in terms of self-efficacy, active learning strategies, science learning values, performance goal, achievement goal, learning environment stimulation is shown in Table 2. Among the six indicators, respondents perceived the achievement goal with the mean score of 4.33 with a description of very high which means it was always observed. This suggest that students exhibit a very high level of motivation towards achieving specific goals and are driven by clear objectives, and are highly committed to attaining success in their science learning endeavors. A high mean score in this category suggests that students are driven by clear objectives and are highly committed to attaining success in their science education.

The individuals' behaviors are influenced by their beliefs regarding their capability to perform a task successfully. It's not just about possessing the necessary skills and knowledge; individuals also require a certain level of confidence in their ability to succeed. The goals people set affect how they act, react, and stay motivated to learn. The second second highest indicator “Science Learning Values” with the mean of 4.30 and a description of very high. This means that students really value what they learn in science class. They probably understand how important science is for their lives and future, and they enjoy learning about science topics and doing science activities.

According to LaCanne & Lundgren (2018), science education in the 21st century faces the challenge of aligning with the needs and expectations of society regarding science and technology. To meet these demands, science education plays a crucial role in shaping students' cognitive abilities, enhancing academic performance, and acquiring both subject-specific and transferable scientific skills. Moreover, as stated by to Schulze, referencing, students are driven to engage in activities that they find interesting, practical, and relevant to their everyday experiences. Even if students doubt their abilities (lack self-efficacy), they are still willing to try to complete tasks if they see value in the activities.

The third highest indicator is the “active learning strategies” with a mean of 4.24 and a description of very high. This suggests that when students are involved in their learning process, participating actively rather than passively, their motivation towards science learning tends to be significantly higher, since active learning encourages students to take control of their learning, explore concepts actively, and apply what they learn, which in turn boosts their motivation.

The active learning, focus shifts from the teacher to the student, with teaching centered around the student. Students aren't always reliant on the teacher since they enjoy working with their peers. They work together to solve problems, while the teacher offers guidance rather than immediate answers for their activities. As a result, active learning grants students greater independence and drive compared to passive learning, stemming.

The fourth indicator with the highest mean of 4.09 is "Self-Efficacy" with the description of high which means that this is oftentimes manifested. This indicate that students generally have a high level of confidence in their capacity to perform well in science-related tasks and activities. This suggests that they feel capable and competent in their ability to learn and excel in science.

Individuals' beliefs about their own abilities influence what they do in various ways. These beliefs affect their decision-making process, how much effort they put in, their perseverance in the face of challenges, and their thoughts and emotions. Those who have high confidence in their abilities (high self-efficacy) typically perform better than those who doubt themselves. Additionally, a person's self-efficacy can influence the goals they choose to pursue in their learning journey.

The fifth indicator with the highest mean of 4.06 with a description of high is "learning environment stimulation" it suggests that students perceive their science learning environment as sufficiently stimulating and conducive to their motivation. This implies that elements within the learning environment, such as teaching methods, resources, and classroom atmosphere, contribute positively to students' motivation to learn science students to stay engaged, curious, and motivated in their science studies.

Cited by Schulze et al, the school atmosphere, known as the learning environment, influences the mastery goals students establish. For instance, students' motivation levels seem linked to how much their teachers show interest in and value them, as well as how they maintain discipline. Furthermore, a more democratic school culture tends to inspire students to set internal goals and appreciate the learning process. In addition, the learning environment or 'school culture' plays a role in the mastery goals that students set. The authors further cited, that the degree to which students are motivated appears to be related to teachers' interest in and respect for their students, along with how the teachers enforce discipline. The more democratic the school culture, the more students are motivated by internal goals and the process of learning (Adler et al., 2020).

The indicator with the lowest mean of 3.75 is "Performance Goal" with a description of high. This lower mean score implies that while performance goals are still relevant, they may not be the primary driver of student motivation in science learning.

On the other hand, as stated by Gray et al. (2020) students with performance orientation have performance goal, they aim to receive praise for their work, while those with a mastery mindset strive to improve their skills. Research strongly indicates that prioritizing mastery can improve children's academic performance over time.

Level of Student Motivation towards Physics Lesson in terms of Self- Efficacy

Table shows the level of student motivation towards Physics lesson in terms of self -efficacy, with seven indicators a mean and a description. It can be seen from the table that the highest mean belongs to the statement "I persevere through challenging science activities and address them with determination" with a mean of 4.19 and a description of high. This further suggests that students feel confident in their ability to persist and overcome challenges in science activities, and a high level of motivation to succeed in science learning.

Significance on the Relationship between Science Laboratory Environment and Student Attitude

Table 3 exhibits the r values with descriptions indicating the significance of the relationship between science laboratory environment and students attitudes.

Table 3 highlights a significant correlation between the Science Laboratory Environment and Student Attitudes, confirming their relationship in the findings. The overall p-value of 0.000 indicates significance at the 0.05 level, leading to the rejection of the null hypothesis. This suggests a noteworthy high correlation between the two variables.

Table 3. Significance on the Relationship between Science Laboratory Environment and Student Attitude Towards Physics

Parameter	Student Attitude Towards Physics			
	r	p-value	Decision on H_o	Interpretation
Science Laboratory Environment	0.778	0.000	Reject	There is a significant high correlation.

Examining the correlation coefficient of r = 0.778 reveals that each alteration in the independent variable corresponds to a proportionate moderate change in the dependent variable. Therefore, the overall findings indicate a high correlation, as indicated by the value of r = 0.778. This implies that improvements in the Science Laboratory Environment are associated with reasonable improvement in Student Attitudes.

The development of positive attitudes toward science lessons is crucial for two main reasons. First, these attitudes are linked to academic success, and second, they predict future behavior. Therefore, having

a positive attitude plays a key role in determining students' performance in Physics. Moreover, a student's attitude toward Physics is significant in their decision to pursue a career related to Physics.

In addition, the significance of the laboratory environment in enhancing learning effectiveness stems from students' perception that a preferred laboratory setting positively impacts their attitudes and cognitive learning outcomes study, which found a correlation between a positive attitude toward science and the classroom environment. Olubu further noted that positive attitudes were observed in science classrooms characterized by high levels of student involvement, teacher support, student collaboration, orderliness, clarity of rules, and the use of innovative teaching methods by teachers. Laboratories are crucial for fostering interest, curiosity, and a positive attitude toward Physics, as well as enhancing creativity and problem-solving skills in science. They also play a key role in improving students' comprehension of science concepts and the scientific process (Garzón-Díaz, 2021).

Students felt akin to scientists when engaged in designing and conducting their own experiments. Specifically, they highlighted the empowerment derived from collaborating with peers to troubleshoot experiments independently of the instructor's guidance. They expressed feeling like scientists during these moments.

Significance on the Relationship between Student Motivation and Student Attitude toward Physics Lessons

Table 4 exhibits the r value with descriptions indicating the Significance on the Relationship between Student Motivation and Student Attitude towards Physics Lessons.

Table 4. Significance on the relationship between student motivation towards science learning and student attitude towards Physics

Parameter	Student Attitude Towards Physics			
	r	p-value	Decision on H_o	Interpretation
Student Motivation Towards Science Learning	.900	.000	Reject	There is a significantly high correlation

Table reflects the significant relationship between the Students Motivation towards Physics Lesson and Students Attitudes and exhibited the existence of their relationship in the results. With the p-value of 0.000, the correlation is significant at a 0.05 level of significance. Thus, rejecting the null hypothesis. It shows that there is a a positively strong correlation between the two variables.

The correlation coefficient of r = 0.900 explains that for every change in the independent variable, there is an equivalent high changes in the dependent variable. Thus, the overall results have shown a strong correlation as reflected in the value of r = 0.900. It explains that for every changes in the Students Motivation toward the Physics Lesson, there is also a reasonable improvement in the Students Attitude.

Researchers aim to understand what motivates students to learn science, they typically investigate their reasons for learning science and the beliefs and feelings that impact this learning. It is believed that comprehending the factors contributing to students' motivation in science learning will assist science education researchers and educators in enhancing science education. The author further explains that understanding students' sentiments about the environment helps environmental educators enhance their environmental knowledge. Additionally, attitudes towards science and personal interests play a significant role for science students, influencing various aspects of their personality and life choices (Nugroho et al., 2022).

Furthermore, the factors impacting the attitudes of secondary school students towards studying science and mathematics include the attitudes of their parents and friends, as well as the quality of teaching. Similarly, students generally held positive attitudes towards the study of Physics, aligning with the positive trend observed among first-year undergraduate Physics students in New Zealand and Australia.

Turrini et al. (2018) explains that motivation serves as an inner force that drives us forward and impacts our thoughts, feelings, and actions. It involves two main parts: having a clear goal and persistently working towards it. Motivated individuals are determined and continue striving until they achieve their goals. Moreover, teachers can easily spot highly motivated learners by their commitment and enthusiasm. Conversely, students lacking motivation may feel dissatisfied in the classroom. However, if classroom activities cater to their needs, even seemingly unmotivated students can actively participate in learning. Essentially, effective learning demands both attention and interest, making motivation essential.

Table 5. Regression analysis on the significant combined influence of science laboratory environment and student motivation towards science learning on student attitude towards Physics

Independent Variables	Unstandardized Coefficients		Standardized Coefficients			Decision on H_0	Interpretation
	B	Std. Error	Beta	t	Sig.		
(Constant)	0.237	0.184		1.292	0.199		
Science Laboratory Environment	0.028	0.083	0.025	0.342	0.733	Failed to Reject	Not Significant
Student Motivation Towards Science Learning	0.896	0.076	0.878	11.775	0.000	Reject	Significant

Presented in table is the regression model showing the combines influence of predictor variables Science Laboratory Environment and Students Motivation on Students Attitude towards Physics Lesson. The variable Science Laboratory Environment having a standardized coefficient beta of 0.025 and a p - value of .733, indicate not a significant influence on student attitude. While the Student Motivation towards Physics with the beta of .878 and a p -value of 0.000 is significant variable to influence the dependent variable. It implies that putting the two (2) predictor variables altogether, only one becomes significant predictors of student attitude towards Physics. The t- value of 11.775 for the predictor variable of Student Motivation towards Physics has the highest value, and the Science Laboratory Environment with the t- value of .342. That means that there is a significant evidence against the null hypothesis (Apriyanti & Ayu, 2020).

However, combining the two predictor variables Science Laboratory Environment and Student Motivation it shows a significant influence on Student Attitudes towards Physics. The R2 value of .810 or 81% of the variance, explained by the combined predictors variables Science Laboratory Environment and Students Motivation, contributed to Students Attitudes towards Physics Lesson. Furthermore, as reflected by the F- value of 275. 015 with the corresponding p-value of 0.000, the regression analysis is significant.

Saraswati et al. (2021) found that having good science labs is important for teaching science in Malaysia. They showed that when students have a positive experience in the lab, they are more likely to enjoy learning science. This backs up Asabe's towards science learning. Additionally, conducted a study in Turkey and found that having access to labs is crucial for students to develop positive attitudes toward them. They discovered that using labs in Physics, which involves complex concepts, helps students grasp the scientific method, improve problem-solving skills, and apply their learning to real-life situations. This aligns with the findings of Liunokas (2019), who emphasized that focusing on attitudes that influence students' science knowledge gains can help educators assess the effectiveness of interventions in boosting enrollment in advanced science courses and encouraging pursuit of science careers.

According to Eccles and Wigfield's, as cited by Shin expectancy value theory suggests that students' motivation stems from their needs and the importance they place on the goals set in their environment. It highlights that students' actions are influenced not only by how much they value a goal but also by their belief in their ability to achieve it. Motivation is what drives someone to act. It prompts behaviors, provides a sense of purpose, and keeps them going. In essence, it's the force behind starting, guiding, and sustaining actions. Students' self-efficacy boosts their confidence, enabling them to make informed choices and succeed in learning activities. Moreover, previous research has demonstrated a strong link between learning motivation and self-efficacy: when motivation to learn is high, so is self-efficacy.

In the study of Nwaukwa & Okolocha (2020) figured out that numerous research studies have explored how students' motivation correlates with their attitudes toward learning mathematics. For instance, a study titled "Attitudes towards Mathematics: Effects of Individual, Motivational, and Social Support Factors" concluded that variables related to motivation are key predictors of attitudes toward mathematics. Additionally, when reviewing literature on attitudes and their development, researchers have consistently identified motivation as a significant factor influencing students' attitudes toward mathematics. The moderate but significant relationship between the learning environment and students' attitudes toward mathematics. They concluded that institutions should pay attention to both the learning environment and teacher factors to foster positive attitudes toward mathematics among students.

According to Efendi et al. (2020), their research underscores the crucial role of motivation in predicting academic success. While cognitive abilities are undeniably important, other student attributes also matter. In higher education, particularly in selective universities, the selection process minimizes disparities in intellectual abilities among students (Strelan et al., 2020). This emphasizes the significance of personal

qualities like character traits, individual learning methods, and motivation in determining different levels of academic.

Conclusion

Based on the research findings, the following conclusions are presented: Regression analysis tested the combined effects of science laboratory environment and students' motivation on physics learning. The results revealed that students' motivation toward science learning had a significant positive impact on students' attitudes toward Physics, indicating that as students' motivation toward physics learning increased, their attitudes toward Physics also increased. However, the science laboratory environment did not have a significant effect on students' attitudes toward physics learning. This indicates that variations in the science laboratory environment are not strongly correlated with changes in students' attitudes toward physics learning. Overall, the regression model showed a strong relationship between the independent variables (students' motivation toward science learning and science laboratory environment) and students' attitudes toward physics learning, as indicated by the high R-value. The F-value of 275.015 with a p-value of 0.000 further supports the significance of the overall model.

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Author Contributions
Nadrah: writing original draft preparation introduction, result, discussion, methodology, and then conclusion. She also had ideas for the research process, data processing, converting to English, reviewing, editing.

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Conflicts of Interest
The authors declare no conflict of interest.

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