Anxious but Capable: Science Test Anxiety and Self-Efficacy among Grade 10 Students

Sitti Aeeza E. Ibba[1], Michael Jayro D. Gilua[2], Ivy E. Banquiao[3], Prences Mae M. Langga[4], Ace B. Acejo[5], Sittie Aina T. Pandapatan[6*]

[1,2,3,4,5]Mindanao State University-Main Campus Bataraza Extension, Bataraza, Palawan, Philippines

[3,4,5]Department of Secondary Teaching, College of Education, Mindanao State University-Main Campus, Marawi City, Lanao del Sur, Philippines

[6]Mamitua Saber Institute of Research and Creation, Mindanao State University-Main Campus, Marawi City, Philippines

DOI: https://doi.org/10.47772/IJRISS.2026.1026EDU0629

Received: 17 September 2026; Accepted: 22 September 2026; Published: 10 October 2026

ABSTRACT

This study examined the anxiety, self-efficacy and factors affecting science testing of Grade 10 public secondary school students in Bataraza, Palawan. This study utilizes a mixed-method research design, that is, a convergent parallel design, to obtain a deeper understanding of the relationship between levels of anxiety and self-efficacy and factors affecting the students in taking a science test. Data were collected from 256 students in five schools using adapted survey questionnaires and semi-structured interviews with selected respondents. Quantitative data were analyzed using weighted mean and Spearman's rho, while qualitative data were analyzed through thematic analysis to explore students' experiences and factors which contribute to science testing. The results revealed that students' level of anxiety is interpreted as "moderate" (WM=3.14), indicating that anxiety is experienced in specific situations, particularly related to fear of failure, academic performance, and peer comparison. Meanwhile, students demonstrated a high level of self-efficacy (WM= 3.90), showing strong confidence in their ability to understand lessons and perform well in science tests. The results of the study showed no significant relationship between anxiety and self-efficacy (r= -.053, p=.403), implying that students may maintain confidence in their abilities while still experiencing anxiety driven by external pressures. Qualitative data show the emotions across the testing process and identified preparation practices, expectations, perceived test difficulty, and contextual influences as contributors to both anxiety and self-efficacy. The study highlights the need for interventions that address situational anxiety and support self-efficacy to manage external pressures to improve science testing outcomes.

Keywords: Anxiety, Self-efficacy, Science Testing, Pedagogical Implications, Science Education

INTRODUCTION

Science education requires high-level critical thinking, which is mutually dependent on cognitive responses, as emotions such as anxiety and self-efficacy modulate and accompany cognitive processing (Burns et al., 2021). Learners struggle to demonstrate an understanding of science tests not only because of the academic difficulty of the subject but also because of cognitive barriers that affect their science testing (Marion et al., 2023). Test anxiety is a psychological response that accompanies a concern about possible consequences, such as a loss of competence. This response can interfere with the normal thought process, leading to deficits caused by the learners' inability to retrieve related information. On the other hand, self-efficacy is the learner's capability related to learning behaviors such as effort and persistence that support the students' learning process (Cruz & Cruz, 2022).

The continuous underperformance in the Philippines raised concerns about scientific literacy in the 21st century, where the underlying determinants of understanding the approach predominate the current discourse

(Cabural, 2024). Through this, the comprehensive and contextualized factors of scientific literacy allow every student to acquire scientific knowledge, skills, and mastery of subject matter. The meta-analysis of developing higher-order thinking skills in the context of science education identifies that the discipline of teaching scientific concepts to students, in terms of their psychological capacity, is not well established (Antonio & Prudente, 2024). The underlying variables in psychological capacity, such as anxiety and self-efficacy, are insufficient in the context of science testing, and this can be a concern in society.

Test anxiety is a common concern among students in evaluative situations. Students with high levels of test anxiety are at greater risk of poor academic performance, underachievement, and diminished emotional well-being, highlighting the need for early identification and appropriate intervention (Tan et al., 2025). Meanwhile, self-efficacy identifies factors affecting students' academic performance, which is considered the effectiveness and skills to cope with life's struggles. The strength of self-efficacy is based on one's perception of one's own capability to accomplish tasks and goals (Ormrod, 2006). However, the relationship between self-efficacy and test anxiety perpetuates academic underachievement, which calls for the urgency of proactive educational interventions that make a significant impact and enhance students' long-term resilience.

In the study by von der Embse et al. (2018), test anxiety was examined through a meta-analytic approach that synthesized findings from various quantitative studies, emphasizing the statistical relationship between test anxiety and academic outcomes. However, the broad nature of these studies provided limited attention to students' contextual experiences and the specific factors influencing anxiety within particular educational environments. These methodological and contextual gaps provided the foundation for the present study, which aimed to examine the relationship between science test anxiety and self-efficacy among students while identifying the factors affecting students during science testing.

However, there remains a lack of studies that examine science test anxiety, self-efficacy, and the factors affecting them, which are mainly focused on students' science testing within the Philippine basic education system, particularly among public secondary school students, leaving their combined role in students' science testing experiences and outcomes insufficiently understood. It mainly focused on students' physics performance, which revealed that students have high self-efficacy and a moderate level of anxiety (Eleccion, 2018). This study directly addresses the gap by focusing primarily on public secondary Grade 10 students in Bataraza, Palawan and examining science test anxiety, self-efficacy, and factors affecting them, providing context-sensitive evidence on how these variables relate to the students' science testing experiences, whereas earlier studies that examine anxiety and self-efficacy focus on physics performance, not mainly on the students' science testing.

This study is anchored on Bandura's Social Cognitive Theory (SCT) and Zimmerman's Self-Regulated Learning (SRL) Theory, which explain how students' beliefs, emotions, and behaviors influence their academic experiences. Social Cognitive Theory emphasizes the role of self-efficacy, defined as students' beliefs in their capability to perform tasks and achieve desired outcomes (Bandura, 1997). Students with higher self-efficacy are more likely to demonstrate persistence and confidence when facing academic challenges. However, self-efficacy does not necessarily eliminate anxiety, as students' emotional responses are also influenced by task difficulty, previous experiences, and environmental factors (Bandura, 1997). This explains why students may feel confident in science while still experiencing test anxiety. Meanwhile, Self-Regulated Learning Theory highlights students' ability to manage their cognition, motivation, and behaviors through processes such as planning, monitoring, and self-reflection (Zimmerman, 1989, 2000). In science testing, self-regulation may help students prepare effectively and manage test-related pressures. However, anxiety may persist when students perceive tests as threatening or experience uncertainty during assessments.

The study focused on science testing, levels of anxiety and self-efficacy, and the factors affecting them among Grade 10 students in Public Secondary Schools in Bataraza, Palawan. Also, the study determined whether a significant relationship existed between these variables and explored the factors affecting students' science testing to provide a deeper understanding of learners' academic experience in testing. Moreover, the study serves as a basis for developing targeted interventions and supportive educational strategies that can reduce anxiety, strengthen students' self-efficacy, and promote an inclusive and effective learning environment for learners.

This study contributes to inclusive and equitable quality education and promotes lifelong learning opportunities by identifying the factors that contribute to science test anxiety and self-efficacy, providing valuable insights for educators, school administrators and policymakers. This is valuable for the development of targeted interventions and support systems to reduce test anxiety and strengthen self-efficacy, and to enhance students' academic performance and interests in science. Moreover, the study promoted a supportive learning environment that addresses the diverse needs of students. The following research questions are answered in this study:

1. What are the anxiety and self-efficacy levels of the respondents in science testing?
2. Is there a significant correlation between the respondents' anxiety level and self-efficacy level in science testing?
3. What are the factors affecting anxiety and self-efficacy levels?
4. What pedagogical implications can be drawn from the data?

METHODOLOGY

The study used a mixed-method research design, a convergent parallel design, which involves using both quantitative and qualitative methodologies. Quantitative data were collected through adapted survey questionnaires designed to assess the test anxiety and academic self-efficacy of the Grade 10 students, and statistical methods were used to examine the relationship between the students' anxiety levels and their confidence in science testing. Qualitative data were collected using semi-structured interviews to investigate students' individual experiences, perceptions and coping strategies with regard to science tests. The study was conducted in Bataraza, Palawan, which consists of five public high schools, with selected respondents from each school with diverse levels of resources; stratified random sampling was utilized, making it appropriate for investigating students' anxiety levels, levels of self-efficacy and factors affecting them during science testing. The sample consisted of two hundred fifty-six (256) in total: one hundred fifty-six (156) respondents from Bataraza National High School, seventeen (17) respondents from Malihud National High School, fifty-one (51) respondents from Tarusan National High School, twenty-one (21) respondents from Amando Carlos Lahoz National High School, and eleven (11) respondents from Sarong National High School.

The quantitative data were gathered by utilizing a validated and pilot-tested survey questionnaire comprising two parts to assess the respondents' levels of anxiety and self-efficacy in science testing. The first part of the survey was adapted from the work of Asamoah (2018) and comprised the test anxiety survey, which contains 30 indicators to elicit a wider spectrum of students' feelings and attitudes before and after taking a science test. Meanwhile, the second part comprises 10 indicators adopted from Erickson et al. (2018), which were used in this study, where modifications have been made, and the questions reflect the study's specific context in self-efficacy, to know the students' ability, and achieve the goal that influences their effort and persistence in taking a science test. The survey questionnaire used a 5-point Likert Scale, where responses indicate the extent of agreement with each statement (1 = strongly disagree, 5 = strongly agree).

Generally, the study was based on relevant items, ensuring the validity of answers obtained through the functional scale, with some adaptations made specifically for this study of anxiety, self-efficacy, and factors affecting students' performance in taking science tests. Before the actual data gathering, the questionnaires underwent validation and pilot testing to ensure their reliability and suitability for the study. The pilot test was able to identify potential points of confusion and to determine the average completion time. Cronbach's Alpha was used to measure the reliability of instruments used in the study; the result showed the coefficient of the instrument for anxiety level is $\alpha = 0.878$ and for self-efficacy level is $\alpha = 0.782$, which is considered acceptable for the final study and ensures the items within the variables consistently measure an underlying construct.

In the qualitative part, the factors affecting students in taking science tests were adapted from Patton (2002), a qualitative framework for in-depth interviews in an educational setting, which serves as a tool in this study to explore the external factors influencing test anxiety and self-efficacy among students. Thematic analysis was used to identify the recurring patterns and themes from the interview responses.

The data were analyzed using statistical software such as Microsoft Excel and the Statistical Package for the

Social Sciences (SPSS) to make the analysis accurate and systematic. The computed means were interpreted using a five-point Likert scale. For the purpose of construct-level interpretation, the computed overall weighted means were classified as low (1.00-2.33), moderate (2.34-3.67), and high (3.68-5.00). The relationship between variables was examined using descriptive statistics. Specifically, the Spearman rank-order correlation (rho) was used to measure the correlation of variables and determine the strength and direction of the relationship between two ordinals of the students' anxiety and self-efficacy in the science test.

In this study, ethical clearance was obtained from the research ethics committee of Mindanao State University-Main Campus for involving human respondents. Permission was also obtained from the schools involved prior to the conduct of the study. Respondents were informed of the procedures and purpose of the study. To protect their privacy and confidentiality, identifiable information was not included.

RESULTS AND DISCUSSIONS

I. What are the anxiety and self-efficacy levels of the respondents in science testing?

Table 1 *Respondents' Science Anxiety Level*

Indicators	Weighted Mean	Interpretation
1. I experience less difficulty than the average student when taking a science test.	2.44	Disagree
2. I think about the consequences of failing a science test.	3.65	Agree
3. I worry about what my peers will say about my science test performance.	3.36	Agree
4. After a science test, I worry about whether I did well enough.	3.84	Agree
5. I worry that I might forget the science lesson I have studied on the day of the test.	3.6	Agree
6. I worry about what my grade will be on a science test.	3.96	Agree
7. I feel calmer than other students when taking a science test.	2.66	Undecided
8. Most science test feel difficult for me.	3.12	Undecided
9. There is a fear in me when taking a science test.	3.27	Undecided
10. I feel emotionally stressed a day before a science test.	3	Undecided
11. I think that I should have studied harder for the science test.	3.84	Agree
12. I feel nervous when taking a science test.	3.32	Undecided
13. I check the time constantly when taking a science test.	3.11	Undecided
14. I feel restless to sit still during a science test.	3.07	Undecided
15. On the whole, my heart beats fast during a science test.	3.03	Undecided
16. My hand shakes when taking a science test.	2.64	Undecided
17. I need to use the washroom multiple times while taking a science test.	2.48	Disagree
18. I often recall the answers after a science test is over.	3.47	Agree
19. I find it difficult to concentrate when a science test is approaching.	3.17	Undecided
20. On the whole, I feel uncomfortable when taking a science test.	2.79	Undecided
21. I have trouble sleeping because I worry about a science test.	2.7	Undecided
22. I wonder if I will pass the science test.	3.46	Agree
23. I think other students will do better than I will on the science test.	3.66	Agree
24. I am confident in my abilities before, during, and after taking a science test.	2.54	Disagree

25. I think I am going to get unsatisfactory score on the science test.	3.25	Undecided
26. I perform well in science tests that have strict time limits	2.81	Undecided
27. I make careless mistakes when taking a science test.	3.33	Undecided
28. I stay calm even if I see unexpected questions on a science test.	2.53	Disagree
29. During the science test, I often feel I studied the wrong topics.	3.11	Undecided
30. I think that the majority of my answers on the science test were wrong.	3.16	Undecided
Overall Weighted Mean	**3.14**	**Moderate Anxiety Level**

Legend: 1.00-2.33 = Low Anxiety Level 2.34-3.67 = Moderate Anxiety Level 3.68-5.00 = High Anxiety Level

Table 1 presents the data of the overall weighted mean for all selected public secondary schools on their anxiety level in science testing, which was 3.14 and corresponds to a verbal interpretation of "moderate anxiety level". The result shows that respondents neither strongly agreed nor disagreed that they feel anxious in science testing, indicating that there is no strong leaning toward anxiety; students experienced anxiety in certain situations, but not consistently enough to show a consistent level of anxiety (Jonge et al., 2024). The results indicate that students are generally uncertain and situationally anxious during a science test but not consistently anxious across all test experiences. Also, the results suggest that some learners are comfortable with factual items in science tests but become uneasy with computation, analysis, or problem-solving questions that push the average toward the middle, rather than toward a strong agreement in the students' anxiety during science testing (von der Embse et al., 2018). The students struggle at least as much as their classmates, and viewing science tests as inherently demanding is a pattern showing that lower self-efficacy predicts higher test anxiety, and students who feel at a disadvantage experience more anxiety regardless of their effort and preparation for a science test.

Table 2 *Respondents' Self-efficacy Level*

Indicators	**Weighted Mean**	**Interpretation**
1. I believe I understood the science lessons taught this year.	3.85	Agree
2. If I try hard enough, I can answer difficult science questions.	3.91	Agree
3. With regular practice, I can improve my skills in answering science tests.	3.97	Agree
4. Even when science questions are challenging, I persist and continue trying until I find the correct answer.	3.95	Agree
5. I feel confident that I will do well on my science tests.	3.7	Agree
6. When I encounter a difficult lesson in science, I stay focused instead of getting discouraged.	3.7	Agree
7. I believe I will succeed in science if I continue to exert effort.	4.05	Agree
8. I can apply the science concepts I learned to answer test questions.	3.79	Agree
9. Practicing regularly improves my science test performance.	4.03	Agree
10. My science test ability grows with effort	4.08	Agree
Overall Weighted Mean	**3.9**	**High Self-efficacy Level**

**Legends: 1.00-2.33 = Low Self-efficacy Level 2.34-3.67 = Moderate Self-efficacy Level 3.68-5.00 = High Self-efficacy Level*

Table 2 shows the interpretation of "agree" with the students' level of self-efficacy, revealing that the respondents have a high level of self-efficacy in science testing, as indicated by the overall weighted mean of

3.90. The result shows a positive response pattern, indicating that students generally believe they can perform well on science tests and that they are confident, persistent, and able to handle the demands of science tests. A study of junior high school learners found that self-efficacy in science was positively related to science proficiency and to other affective factors, such as motivation (Digo & Disca, 2025). This result explains the findings of Ernawati et al. (2022) that students are confident in their ability to answer science test items and manage the demands of the test, indicating that self-efficacy in science testing is positively associated with motivation, attitude, and science proficiency, which explains why students generally have a positive level of self-efficacy.

II. Is there a significant correlation between the respondents' anxiety level and self-efficacy level in science testing?

The results from a sample of 256 Grade 10 students in public secondary schools in Bataraza indicate that there is no significant correlation between anxiety and self-efficacy in the context of science testing, the null hypothesis was not rejected. The findings were obtained using Spearman's rho, with a coefficient of r =-.053 and a p-value of .403. This shows a lack of correlation: students' belief in their ability to succeed does not automatically decrease their anxiety or diminish their self-efficacy. The result is supported by Self-Regulated Learning Theory, which may help to explain the non-significant relationship between anxiety and self-efficacy (Usher & Pajares, 2008). Students may believe they can succeed in science testing, but their anxiety may persist if they lack effective planning, monitoring, and coping strategies. Thus, self-efficacy alone may not be sufficient to reduce test anxiety without corresponding self-regulatory skills. Ultimately, since there is no significant correlation between anxiety and self-efficacy in science testing, this is supported by related evidence that self-efficacy does not always significantly predict anxiety. This result is explained by the Social Cognitive Theory, which posits that personal beliefs, behavior, and environmental influences interact mutually. Although self-efficacy reflects students' confidence in their ability to succeed, it does not automatically eliminate anxiety, as students' fear of tests may be influenced by task difficulty, prior experience, and the environment in which the science test takes place (Liu et al., 2023). The present finding that anxiety and self-efficacy are not significantly correlated in the science context suggests that academic self-efficacy influences test anxiety through variables such as fear of failure and sense of life, indicating that the relationship between variables is not always direct. This implies that students' confidence may not automatically reduce anxiety unless other emotional factors are also addressed (Jia et al., 2023). The lack of correlation observed is deeply compelling; it implies that these Grade 10 students have cultivated a distinct psychological compartmentalization, distancing their internal confidence in their scientific abilities from the external pressures of assessment, which diverges markedly from typical educational norms. The students may still experience anxiety when they lack planning, monitoring, and coping strategies, showing that personal beliefs, behavior, and environmental influences interact mutually, meaning self-efficacy alone is not enough to remove anxiety. Moreover, the results showed that the relationship between anxiety and self-efficacy is not direct, which indicates that self-efficacy may influence anxiety only through mediating factors that explain why no significant correlation was found in the context of science testing.

III. What are the factors affecting anxiety and self-efficacy levels?

A total of two themes emerged from the respondents' factors affecting their anxiety level in science test. These themes are: (1) Fear of Failure, Academic Pressure, and Anticipatory Anxiety and (2) Cognitive Uncertainty.

Fear of Failure, Academic Pressure, and Anticipatory Anxiety

Informant 2: *"Before the test I feel a bit nervous, during the test I was calm and after the test I feel excited."*

Informant 3: *"I feel nervous and worried kasi naiisip ko na baka ang makuha kong score ay mababa na baka magkaroon ng epekto sa aking grades."* (English Translation: I feel nervous and worried because I think I would get a low score that might affect my grades.)

Informant 5: *"Kinakabahan po ako kapag binigay na ng guro namin ang test paper pero kalamado na po habang nagsasagot."* (English Translation: Getting nervous when my teacher gives a test paper, but I become calm when answering.)

The responses of the respondents indicate that the students' anxiety was closely connected with fear of failure, academic pressure and anticipatory worry before tests. Informant 3 indicated anxiety about poor results that may damage grades, while informants 2 and 5 revealed emotions of uneasiness before interacting with the examination itself. Responses indicate that students view science assessments as high-stakes academic undertakings that can greatly impact their academic status and how they evaluate themselves. The results also suggest that the pupils' anxiety was mostly anticipatory. Students already felt emotional strain from the uncertainty of the consequences of their performance before reading the exam questions. This indicates that anxiety was impacted by the difficulty of the examination, the mental expectations of the students and fear of negative assessment. The respondents seemed to correlate the science assessment with the pressure to do well in school, which made them more worried before the test. Furthermore, responses indicate that adolescents absorb academic expectations from themselves, instructors and parents. The psychological distress can increase during science testing partly because of worries about letting people down, and the anxiety is tied to grades. It is not only some raw emotional ride; anxiety also folds in the mental evaluation of possible repercussions and how capable someone feels academically in their perceived aptitude in that area.

These findings are in line with the study of Zeidner (2020), who highlighted that fear of failure and negative assessment are key factors in test anxiety among students. Similarly, von der Embse et al. (2018) revealed that students have higher levels of anxiety when exams are considered high-stakes evaluations. In summary, the theme emphasizes that fear of failure, academic expectations, and anticipatory anxiety are important factors contributing to students' emotional suffering in science testing circumstances.

Cognitive Uncertainty

Informant 4: *"I feel nervous mas lalo na kapag hindi ko alam ang sagot."* (English Translation: When I don't know the answer, I feel nervous.)

Informant 5: *"Kapag mahirap na po ang tanong nag-aalala ako husto."* (English Translation: I worry when the questions are too difficult.)

The responses suggest that anxiety was experienced during the test-taking procedure, particularly when students face difficult or unfamiliar questions. Informants 4 and 5 were nervous and overly concerned when they were not sure of their answers. The results indicate that students experience high levels of anxiety when they perceive that they do not possess sufficient knowledge or are unable to respond properly to science topics. The findings also demonstrate that uncertainty has a major effect on the mental state of students during tests, as students could overthink, worry and lose concentration if they are not sure if their answers are correct. This demonstrates a close relationship between anxiety and students' evaluation of their academic competence and understanding. In addition, science themes are often associated with the requirement for critical thinking, understanding complex terminology, and problem-solving abilities that may enhance students' anxiety during testing. If pupils are asked difficult questions, they may lose confidence, and this can cause further mental stress and emotional instability. This might be the reason why, occasionally, even if the students study ahead, they face issues focusing.

The results are consistent with those reported by Thomas et al. (2018), which revealed that uncertainty and a general feeling of difficulty are huge parts of test anxiety for students. They also found that in problem-solving situations, anxiety tends to show up when students feel unsure about whether they can give the right answer. The results appear to be consistent with Cognitive Interference Theory, which suggests that irritating or intrusive ideas tend to compete for attention and then reduce the mental resources needed for best results. Overall, uncertainty in scientific examinations, and how that uncertainty ends up making students anxious, especially when they are faced with something different or a more complex situation that they have not really encountered before.

Moreover, three themes emerged from respondents' factors affecting their self-efficacy in science tests. These themes are: (1) Confidence Developed Through Task Engagement, (2) Positive Emotional Evaluation After Testing, and (3) Self-Efficacy as a Regulator of Anxiety.

Confidence Developed Through Task Engagement

Informant 1: *"Habang sinasagutan ko ang mga tanong mas nagiging confident ako."* (English Translation: I became more confident as I answered the questions.)

Informant 2: *"Habang sumasagot ako mas nagiging kalmado po ako."* (English Translation: During answering, I became calm.)

The students gained confidence while being actively engaged in scientific tests. Informants 1 and 2 said that they felt calmer and more confident when answering the test questions. These data imply that self-efficacy increased throughout real task performance, especially when students believed that they were able to react correctly to the assessment items. Furthermore, the results show that active involvement in academic activities decreases emotional strain and improves students' perception of competence. Students develop confidence in their ability when they answer questions correctly. This enables them to stay calm and focused while writing the examination. This suggests that confidence may not necessarily be there before testing but rather may grow gradually as the job is worked through. In addition, the replies of the respondents are indicative of mastery-based confidence, where positive experiences bolster students' confidence in their academic ability. Students who feel that they can answer questions appropriately become more secure emotionally and less anxious. This means that pleasant academic experiences and active engagement in testing circumstances enhance self-efficacy.

The results are consistent with Bandura's Self-Efficacy Theory, which states that mastery experiences are the most effective source of developing confidence. Likewise, Honicke and Broadbent (2016) noted that effective involvement in the task fortifies students' academic self-belief and emotional stability while learning activities. The overall theme is that self-efficacy is developed by active participation in tasks, and that effective contact with examination questions slowly enhances the students' confidence and emotional serenity.

Positive Emotional Evaluation After Testing

Informant 2: *"After ng test po, nagiging excited po ako."* (English Translation: After the test, I felt excited.)

Informant 4: *"Masaya dahil natapos ko ang exam kahit na mahirap."* (English Translation: I felt happy when I finished the exam even if it was difficult.)

The results indicate that students had favorable emotional reactions after taking scientific tests. Informant 2 was excited after the test, and Informant 4 said that he felt happy and had a sense of success, despite the difficulties of the examination. These comments indicate that passing the test helped the students to feel more confident and emotionally satisfied. The results also show that positive emotional appraisal can promote students' academic self-efficacy. Students who are happy with their performance are more hopeful and driven toward future academic challenges. In return, these positive experiences may enhance students' ability to actively participate and continue in scientific learning activities while encountering hurdles. In addition, the replies suggest that being able to complete challenging activities successfully is part of students' sense of achievement and competence. Emotional pleasure following tests can assist in lessening self-doubt and building confidence over a period of time. This illustrates the significant association of emotional experiences and the development of self-efficacy in academic environments.

The findings are in line with Phan (2016), who said that pleasant emotional experiences boost students' confidence and academic drive. Likewise, Talsma et al. (2018) said that positive result anticipation is linked to increased engagement and persistence of students in learning activities. In general, the theme indicates that

positive emotional appraisal following testing strengthens students' confidence and leads to the development of self-efficacy in science learning.

Self-efficacy as a Regulator of Anxiety

Informant 4: *"Hindi ako masiyaong kinakabahan dahil alam kong nagreview ako at masasagutan ko ito."* (English Translation: I did not feel very nervous knowing I can answer because I knew I studied.)

The response above highlights that self-efficacy played a huge role in overcoming fear throughout science tests or information retrieval quizzes. Informant 4 states that they managed to review and prepare themselves enough that they felt confident going into the exam, which made them feel less uneasy. This supports that when students have confidence in their academic skills, they can control their emotions and remain calm during a testing situation. The theme also discovered that confidence played a role in whether students felt that academics were difficult. When students felt confident that they had reviewed enough and were prepared for the exam, it allowed them to feel as if it were an easier test. This allows students to not feel stressed out, fearful, or overthinking. When taking a science exam, students can focus on answering the questions. In addition, this response uncovers that self-efficacy is used as a strategy to control emotions when put under academic pressure. Students who are confident in their academics were not only knowledgeable about controlling their emotions better but were also able to focus more on the task at hand, which could possibly lead to them excelling under pressure. Uncovering this allows us to understand the relationship between students' self-efficacy and anxiety control when taking science exams.

This relates with Zuffiano et al.'s (2017) conclusion that students with high levels of self-efficacy are emotionally equipped to deal with demanding situations. Along with this study, Nie et al. (2021) found that students with higher confidence levels can deal with stressful situations and maintain focus on schoolwork. This discovery can be tied to Bandura's Self-Efficacy Theory, as the information discovered explains that people with high self-beliefs are able to control difficult and stressful situations.

IV. What pedagogical implications can be drawn from the data?

The findings of the study offer several pedagogical implications for science education in public secondary schools in Bataraza, grounded directly in the data on students' anxiety and self-efficacy. The overall weighted mean for anxiety in science testing is 3.14, interpreted as a "moderate level," which shows that students are not consistently anxious but experience situational anxiety, especially around performance-related outcomes such as grades and failure. This suggests that teaching strategies should shift from high-stakes tests and instead emphasize low-stakes, frequent formative assessments, which can reduce the perceived threat evaluation without eroding students' learning.

The anxiety of students is tied to fear of failure and concerns about grades, as reflected in the results, such as worrying about what the grade will be and whether they did well enough on a test. This pattern indicates that anxiety is driven by their academic performance rather than general anxiety; therefore, educators should redesign assessment practices to focus on mastery, feedback, and growth by shifting towards tools like quizzes, self- assessment, and reflection tasks that teachers can use to transform tests from sources of dread into routine opportunities for learning and improvement, directly addressing the data on post-test worry and grade-related distress.

In addition, students' sensitivity to peer comparison and social evaluation is evident in the students' results: those who do better than they do and their anxiety about what others say about their results in science tests. This suggests that competitive classroom practices such as public rankings and norm-referenced grading may amplify anxiety even when students have high self-efficacy. To counter this, schools should adopt criterion-referenced grading and cooperative learning structures that focus on personal progress, which aligns with the data showing that students feel disadvantaged compared to their classmates and view tests as highly demanding.

Students' self-efficacy reflects a growth mindset—the belief that deliberate practice helped improve not only scientific test scores but also the skills behind the scores. A growth mindset enables the regular use of retrieval practice and active learning in everyday instruction. Teachers should incorporate frequent low-stakes activities such as concept checks, application problems, and short quizzes under test-like conditions because students feel more successful when they are frequently practicing and applying concepts to test questions. These strategies encourage the development of cognitive schemas, transfer of knowledge and reduce the anxiety of uncertainty and perceived difficulty, making formal science exams a more natural extension of classroom activities.

There was no significant correlation between anxiety and self-efficacy ($r = -.053$, $p = .403$), meaning high self-efficacy does not necessarily mean low test anxiety, or high anxiety does not mean low self-efficacy. This finding points to the need for a dual support system: one that encourages academic competence and preparedness, with components such as goals, organized practice and feedback that increase self-efficacy and one that reduces test-related anxiety. Relaxation techniques, time management skills and anxiety awareness training should be employed with the understanding that students can have confidence in their abilities but still be anxious about science tests.

CONCLUSIONS

The findings of the study show that students' experiences of science testing are influenced by both emotional reactions and personal beliefs about their abilities. Although the respondents experienced situational or mixed anxiety in scientific testing, they nonetheless felt confident in their ability to understand science topics, answer questions and develop through preparation and effort. This shows that students can have good academic self-belief in scientific learning even in the face of worry.

The study also found that anxiety and self-efficacy were not directly related in the sample, indicating that both ideas can co-exist and can be influenced by different emotional, cognitive and environmental variables. Students were concerned about grades, fear of failure, peer comparison, and exam difficulty. But these experiences did not necessarily reduce their confidence in doing science-related activities. Therefore, the results show that anxiety and self-efficacy could not necessarily be seen as direct opposites, and students could still feel confident even when suffering from exam anxiety.

Furthermore, the study notes that students' experiences of scientific testing are affected by preparation, classroom expectations, past learning experiences, teacher support and perceived difficulty of examinations. These characteristics influence students' emotional preparedness, motivation, and self-confidence in science testing. Results highlight the value of positive teaching approaches and supportive classroom settings in helping students deal with anxiety and build self-efficacy.

This study adds to the increasing body of scientific literature on test anxiety and self-efficacy by demonstrating that students can be confident and anxious simultaneously. The findings point to the need for learner-centered scientific instruction that caters to students' cognitive, affective, and motivational needs during science testing experience.

This study has several limitations. First, it was conducted only among Grade 10 students in selected public secondary schools; thus, the findings may not be generalized to other educational contexts. Second, the study relied on self-reported measures of anxiety and self-efficacy, which may be influenced by students' perceptions and response biases. Third, the cross-sectional design limits the ability to establish causal relationships among the variables. Future studies may consider broader samples and multiple data sources to further examine changes in students' science test anxiety and self-efficacy over time. Despite these limitations, the study provides valuable context-specific insights into students' science testing experiences.

REFERENCES

1. Asamoah, D. (2018). Development and validation of an instrument to measure test anxiety among students. *American Journal of Humanities and Social Sciences Research, 3* (6), 203-208.

2. Antonio, R. P., & Prudente, M. S. (2024). Effects of Inquiry-Based Approaches on Students' Higher-Order Thinking Skills in Science: A Meta-Analysis. *International Journal of Education in Mathematics, Science and Technology, 12*(1), 251-281.
3. Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Prentice-Hall.
4. Burns, E. C., Martin, A. J., Kennett, R. K., Pearson, J., & Munro-Smith, V. (2021). Optimizing science self-efficacy: A multilevel examination of the moderating effects of anxiety on the relationship between self-efficacy and achievement in science. *Contemporary Educational Psychology, 64*, 101937. https://doi.org/10.1016/j.cedpsych.2020.101937
5. Cabural, A. (2024). Beyond Benchmarking: A Diagnostic Inquiry into the Underlying Determinants of Low Performance in Philippine PISA Science. *Journal of Tertiary Education and Learning 2*(3). https://doi.org/10.54536/jtel.v2i3.3063
6. Cruz, A. D., & Cruz, M. D. (2022). The Influence of Mathematical Test Anxiety and Self-Efficacy on Students' Performance. Philarchive.org. https://philarchive.org/rec/DELTIO-31
7. Digo, E. & Disca, B. (2025). Students' Motivation, Attitude, Self-Efficacy, and Proficienc y Level in Science. *Psychology and Education: A Multidisciplinary Journal 41*(3), pp. 410-423. https://doi.org/10.70838/pemj.410309
8. Eleccion, D. M. V. (2018). Physics anxiety, habits of mind and self-efficacy as predictors of students' academic performance. Wvsu.edu.ph. https://hdl.handle.net/20.500.14353/686
9. Ernawati, M. D., Sanova, A., Kurniawan, D. A. & Citra, Y. D. (2022). The junior high sc hool students' attitudes and self-efficacy towards science subjects. *Jurnal Inovasi P endidikan IPA 8*(1), 23-36. https://doi.org/10.21831/jipi.v8i1.42000
10. Erickson, G.A.S., Soukup, J.H., Noonan, P.M., & McGurn, L. (2018). Self-efficacy formative questionnaire technical report. Retrieved from http://www.researchcollaboration.org/uploads/SelfEfficacyQuestionnaireInfo.pdf
11. Erickson, G.A.S. & Noonan, P.M. (2018). Self-efficacy formative questionnaire. In The skills that matter: Teaching interpersonal and intrapersonal competencies in any classroom (pp. 175-176). Thousand Oaks, CA: Corwin
12. Honicke, T., & Broadbent, J. (2016). The influence of academic self-efficacy on academic performance: A systematic review. *Educational Research Review, 17*, 63–84. https://doi.org/10.1016/j.edurev.2015.11.002
13. Jia, J., Ma, Y., Xu, S., Zheng, J., Ma, X., Zhang, Y., Sun, W., & Liu, L. (2023). Effect of Academic Self-Efficacy on Test Anxiety of Higher Vocational College Students: The Chain Mediating Effect. *Psychology Research and Behavior Management, 16*, 2417–2424. https://doi.org/10.2147/PRBM.S413382
14. Jonge, S. D., Opdecam, E., & Haerens, L. (2024). Test anxiety fluctuations during low- stakes secondary school assessments: The role of the needs for autonomy and competence over and above the number of tests. *Contemporary Educational Psychology, 77*(102273), 102273–102273. https://doi.org/10.1016/j.cedpsych.2024.102273
15. Liu, A., Guo, M., Liao, R.-L., & Wang, X. (2023). The relationships between self-esteem, self- efficacy, and test anxiety: A cross-lagged study. *Stress and Health, 40*(3). https://doi.org/10.1002/smi.3346
16. Marion, S. B., Reynolds, J. A., Schmid, L., Carter, B. E., Willis, J. H., Mauger, L., & Thompson, R. J. (2023). Beyond Content, Understanding What Makes Test Questions Most Challenging. *BioScience, 73*(3), 229–235. https://doi.org/10.1093/biosci/biad007
17. Nie, Y., Lau, S., & Liau, A. K. (2021). Role of academic self-efficacy in moderating stress and academic engagement among adolescents. *Current Psychology, 40*(9), 4523–4532. https://doi.org/10.1007/s12144-019-00311-2
18. Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Sage Publication
19. Phan, H. P., Ngu, B. H., & Alrashidi, O. (2016). Role of student well-being: A study using structural equation modeling. *Psychological Reports, 119*(1), 77–105. https://doi.org/10.1177/0033294116656819
20. Talsma, K., Robertson, K., Thomas, C., & Norris, K. (2018). Achievement goals, behavioural engagement, and mathematics achievement: A mediational analysis. *Learning and Individual Differences, 68*, 12–19. https://doi.org/10.1016/j.lindif.2018.09.006
21. Tan, S. H., Cassady, J. C., Wong, J. K. C., Khng, K. H., & Leong, W. S. (2025). A systematic review of test anxiety identification and leveling in children and adolescents. *Psychology in the Schools, 62*(8), 2373–2389. https://doi.org/10.1002/pits.23473

22. Usher, E. L. & Pajares, F. (2008). Self-Efficacy for Self-Regulated Learning: A Validation Study. *Educational and Psychological Measurement, 68*(3), pp. 443-463. https:// doi.org/10.1177/0013164407308475
23. von der Embse, N., & Witmer, S. E. (2014). High-stakes accountability: Student anxiety and large-scale testing. *Journal of Applied School Psychology, 30*(2), 132-156.
24. von der Embse, N., Jester, D., Roy, D., & Post, J. (2018). Test anxiety effects, predictors, and correlates: A 30-year meta-analytic review. *Journal of Affective Disorders, 227*, 483–493. https://doi.org/10.1016/j.jad.2017.11.048
25. Weinstein, Y. (2017, February 16). The Learning Scientists. The Learning Scientists. https://www.learningscientists.org/blog/2017/2/16-1
26. Zeidner, M. (2020). *Test anxiety: The state of the art*. Springer.
27. Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology, 81*(3), 329–339. https://doi.org/10.1037/0022-0663.81.3.329
28. Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 13–39). Academic Press.
29. Zuffianò, A., Alessandri, G., Gerbino, M., Kanacri, B. P. L., Di Giunta, L., Milioni, M., & Caprara, G. V. (2017). Academic achievement and psychological well-being in school: The role of self-efficacy and positive relationships with teachers. *Learning and Individual Differences, 54*, 133–141. https://doi.org/10.1016/j.lindif.2017.01.006