ISSN: 3116-3475
International Journal
of Education, Research, and Innovation Perspectives
Volume 2 Issue 3 (March 2026)

Academic Failures: Navigating STEM Students` Coping Strategies During Setbacks

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Date Submitted:
January 27, 2026

Date Accepted:
February 28, 2026

Date Published:
March 9, 2026

DOI:
10.5281/zenodo.18925968

ABSTRACT

This research examined the coping mechanisms utilized by Senior High School students in the STEM strand when dealing with failure. The study made use of a qualitative research approach. The research focused on the exact demographic of Senior High School students enrolled in Saint Louis School of Don Bosco. This study employed a purposive sampling design. The data were collected through interviews and were analyzed using Colaizzi's method of data analysis. The findings suggest that difficulties with the material and a lack of understanding are the main causes of academic failure. In addition to highlighting the different coping strategies, students use to overcome obstacles and demonstrate how important support networks and motivation are to academic resilience. By analyzing student learning practices, these insights support psychology and mental health research and are important for the educational system in improving students' coping mechanisms.

Keywords: *Academic Failure, Academic Setbacks, Coping Strategies, Motivation*

INTRODUCTION

Poor academic performance is a significant issue that demands attention, making it essential to determine its root causes to develop effective solutions (Maloney et al., 2021). While academic failure has been extensively researched, most studies focus on undergraduate or college students, leaving a gap in understanding how Senior High School (SHS) STEM students handle setbacks. This study investigates the impacts of academic failure on SHS STEM students at Saint Louis School of Don Bosco, exploring their coping strategies and sources of motivation to comprehend how they overcome academic challenges. By addressing this research gap, the findings aim to provide educators with valuable insights to improve curriculum development, strengthen support systems, and implement targeted interventions. Ultimately, ensuring struggling students receive the necessary academic and emotional support will help them overcome setbacks more effectively.

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Academic setbacks and failure are experienced by students worldwide, affecting their educational, psychological, and physical well-being. Middleton and Millican (2020) argue that such experiences test students' emotional and physical states, leading to brief emotional reactions such as worry, low self-esteem, and decreased determination. This issue is particularly relevant in the Philippines, where STEM students face challenges specific to their coursework, personal struggles, and socio-cultural pressures (Rogayan, 2021). However, Lin-Siegler et al. (2023) claim that successful learners embrace failure as part of the learning process. Velliaris (2024) posits that despite its discomfort, failure is crucial for growth. Thus, analyzing the factors contributing to academic failure both internationally and locally is necessary to identify effective coping mechanisms, as students have diverse ways of handling setbacks, which can address global concerns regarding academic resilience and student mental well-being.

The goal of this study is to investigate the impact of academic setbacks on STEM students, specifically how they deal with challenges and what motivates them to persevere. Academic failure can affect a students' emotional, psychological, and academic well-being. Hence, it is critical to assess their coping techniques. Understanding these responses enables the development of focused strategies that promote student achievement. This study also seeks to investigate the factors that influence motivation and resilience among struggling STEM students. The findings can be used to build intervention programs and academic policies that help students overcome setbacks and improve their academic performance.

Objectives

The study aimed to discover the experiences and coping strategies of the STEM Senior High students.

Specifically, it sought to answer the following sub-problems:

1. What are the experiences of the students in handling academic failures?
2. What are their coping strategies in dealing with these setbacks?

METHODS

Respondents and Site of Study

The participants in this study were Saint Louis School of Don Bosco senior high school students enrolled in the STEM program for the 2024–2025 academic year. They must fulfill three inclusion criteria to be eligible: they must be formally enrolled at Saint Louis School of Don Bosco, admitted to senior high school, and be in the STEM strand. The study utilized purposive sampling, a non-probability sampling in which respondents are purposefully chosen based on certain qualities that match the study's criteria (Palinkas et al., 2015).

Research Design

Phenomenological research is a qualitative approach that centers on the experiences of people who have firsthand knowledge of a phenomenon (Creswell & Poth, 2018). In contrast, descriptive

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research aims to provide a thorough grasp of a subject by studying and classifying characteristics (Singh, 2023). Both approaches are useful for examining how STEM students deal with setbacks and stay motivated, which may challenge preconceived notions.

Research Instrument

The research instrument used in the study was the interview questionnaire or guide, which includes questions regarding how students in the STEM strand cope with academic setbacks and remain motivated in the face of failures. The interview provided insight into how STEM students handle academic failures and maintain motivation. It assists in recognizing typical difficulties, useful coping mechanisms, and matters that sustain their motivation. Records on student experiences and academic obstacles were also employed in this study, as they are critical in assessing the STEM students' coping mechanisms, motivations, and emotional struggles during academic setbacks.

Data Gathering Procedures

The researchers submitted an official letter signed by the research adviser, recognized by the senior high coordinator, and approved by the principal to conduct interviews with the chosen STEM individuals. The letter was delivered to the individuals involved. The study's goal and purpose were outlined first. The researchers also explained the advantages of participation in the specified activity.

Upon receiving the letter, the researchers conducted the interviews, which were recorded with permission from the interviewees. Questions on the academic challenges they experienced and how they remain motivated in the face of setbacks were posed. Each interview lasted from 10 to 15 minutes. Following the collection of data from various interviews and records, the data were analyzed and interpreted.

Data Analysis

This research study made use of Colaizzi's phenomenological methodology to guarantee and ensure the trustworthiness of information needed in the research including the emotional congruence concerning the lived experience of each participant's point of view. Moreover, it utilized the descriptive approach to gain a comprehensive understanding of the relationships among variables and use it to produce generalizations.

The researchers collaborated in transcribing the gathered information. After transcription, the leader reviewed the recordings to correct any errors. Each interview was carefully analyzed to capture unique perspectives, enabling the researchers to fully grasp the essence of participants' experiences. Significant statements and formulated meanings were drafted, and emergent themes were framed.

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RESULTS AND DISCUSSIONS

Academic Struggles and Challenges among STEM Students

Many students find it extremely difficult to comprehend scientific and mathematical topics, especially when faced with complex computations and abstract ideas. These subjects include Pre-Calculus, Chemistry, Physics, General Mathematics, and Basic Calculus. These findings are backed up by a study by Laguindab et al. (2025) where they mention that students usually view subjects like Physics as abstract and numerically demanding, which lowers their interest and engagement. Furthermore, many students perceive Mathematics as a difficult and intimidating topic, which hinders their ability to study and succeed (Capinding, 2022).

Additionally, as revealed by the interviews undertaken, the fast-paced teaching of educators frequently makes comprehension problems worse. This is supported by a study by San Bolkan and Goodboy (2024), who posit that the students understood the course material more thoroughly because they felt less receiver apprehension when teachers were generally clearer in the teaching process. Suggesting that students understand the lesson more comprehensively when the teacher is giving clearer insights during discussions.

STEM Students' Coping Strategies for Academic Setbacks

Some students are willing to prioritize their studies and make use of different coping mechanisms to respond to academic setbacks. These mechanisms may involve using known study techniques such as Pomodoro and Feynman Techniques, procedures on reading and writing, and recall and repetition. This aligns with a study by Dominguez et al. (2022) which mentions that using the Pomodoro Technique greatly enhances students' motivation, focus, note-taking, output quality, time management, and general productivity. Additionally, if the Pomodoro technique helps students create productive habits, it might be a useful tool for helping those who have trouble with efficiency and self-discipline.

The participants also prioritized personal health for improved study habits, personalized studying techniques, seeking support from teachers and family, and using non-study-related coping mechanisms such as socialization or eating. This corresponds with a study by Jiang et al. (2023) where students use seven coping mechanisms following initial exam failures, which are increased help-seeking behaviors, improved learning motivation, improved exam preparation, library resource utilization, enhanced time management, and enhanced English language skills with asking friends, peers, seniors, and teachers for assistance being the most popular.

The information provides insight into the flexibility of coping mechanisms students use when facing any challenges in their academics. This information also highlights four key themes observed in coping mechanisms among Senior High School STEM students. These include dependency on support, control of emotional aspects, beneficial study strategies, using resources for their academics, proper communication, and the effective use of time (Maco & Maco, 2024).

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Mindset and Emotional Growth Amidst Academic Struggles

Multiple students share a common belief that failures should not serve as hindrances. Instead of having a negative outlook, they perceive them as positive opportunities for learning and growth. They view setbacks in their grades and subjects as short-term obstacles to overcome. Furthermore, the significance of having a supportive atmosphere and keeping a balanced perspective is highlighted, as it aids individuals in regaining their drive. Lin-Seigler et al. (2023) assert that promoting a growth-oriented mindset and seeing setbacks as opportunities can help students succeed.

This aligns with Velliaris (2024), who argues that while encountering failure may be unpleasant, it plays a vital role in both learning and achieving success. Velliaris (2024) highlights that navigating failure enables students to cultivate important qualities like responsibility, resilience, and perseverance which are key traits for addressing academic obstacles. Furthermore, those who have experienced challenges are more inclined to develop confidence and determination, emphasizing that setbacks ultimately strengthen students for future achievements.

Impact of Support Systems and Motivation on Academic Resilience

Support systems contribute to a student's ability to adapt and recover from academic failure. While failure is often perceived negatively, many students use it as motivation for personal growth, turning setbacks into opportunities for development and perseverance. In an interview with STEM students who went through these setbacks, academic resilience is derived from motivational factors such as accepting failure as a necessary component of success, overcoming short-term obstacles, and seeing failure as a teaching opportunity.

Additionally, Eskreis-Winkler and Fishbach (2022) express that students may momentarily lose motivation to create goals and take on new difficulties when their emotional state is heavily impacted by failure. However, many students counter this by turning to their families as a primary support system, peer encouragement, and personal determination. Permatasari et al. (2021) further emphasize that family social support is the strongest factor in fostering academic resilience, reinforcing the idea that setbacks, when met with support and motivation, become steppingstones for growth and self-improvement.

CONCLUSION

This study thoroughly examined and analyzed the students' coping mechanisms in response to academic failure, successfully identifying major and emergent themes related to the research topic. These themes include areas where failure is prevalent among students and the significant factors contributing to it, coping strategies for academic setbacks and how students respond to them, the role of a growth mindset and emotional persistence in overcoming struggles which signifies the importance of mental and psychological factors in the role of coping mechanisms. It also underscores how motivation and outside support enhances academic resilience which recognizes the importance of positive factors in a student's environment. Overall, this research provides substantial insights that can contribute to the development of educational systems and psychological studies, addressing existing knowledge gaps in the field.

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RECOMMENDATIONS

Educators should prioritize growth mindset training and emotional persistence exercises in curricula, especially in failure-prone areas like STEM subjects, implying stronger student resilience and reduced dropout rates through proactive psychological support. Integrating motivation-boosting peer and family networks will enhance academic recovery, with implications for fostering inclusive school environments that lower overall stress and improve long-term performance. These strategies imply a shift toward holistic education models, bridging psychological gaps and elevating student well-being alongside grades. Future researchers must pursue longitudinal and cross-cultural studies on coping evolution, implying opportunities to refine interventions and fill demographic knowledge voids.

COMPLIANCE WITH ETHICAL STANDARDS

This research paper adheres to ethical considerations that contain multiple principles to maintain the protection of the participants. The student researchers upheld integrity and complete honesty in the gathering, processing, and reporting of data to guarantee that the results of the study correspond to the truth. Participants were treated equally, free from prejudice or discrimination, with their rights fully respected throughout the study. Confidentiality was maintained by safeguarding participants' personal information. The research followed the guidelines of informed consent, which involved providing the student participants with detailed information regarding the objectives, processes, possible risks, and advantages of the study. This guaranteed that every participant chose to take part willingly and with full understanding, along with the assurance that their involvement was completely optional and that they could opt to back out at any moment without facing any repercussions.

No conflict of interest existed in the conduct of the study. Furthermore, plagiarism was strictly and firmly avoided and respect for intellectual property was highly achieved. There was no prejudice in the analysis of the results and that, the findings were used purely for research.

ACKNOWLEDGEMENT

The authors are grateful for all the unwavering support and ceaseless encouragement they received throughout the conduct of the study.

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