Article DOI: https://doi.org/3126/ajme.v8i1.95372
Academic Journal of Mathematics Education
A Double-blind Peer Reviewed Journal
ISSN 2645-8292; Volume 8, Issue 1, December 2025, pp. 97-107
Indexed in Nepal Journals Online (NepJOL)

Lived Experiences of Undergraduate Students Failing in Mathematics Examinations: A Phenomenological Study

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Abstract

This study explored the experiences of undergraduate students who failed mathematics examinations using a phenomenological approach. Seven participants took part in in-depth interviews, providing rich narratives of their emotional responses, social interactions, and coping strategies. Thematic analysis identified seven key themes, revealing mathematics failure as a multifaceted experience marked by anxiety, shame, and diminished self-confidence, often reinforced by social comparisons and institutional practices. Simultaneously, students demonstrated resilience, reflection, and persistence. Findings highlight that mathematics failure is not merely an academic deficit but a transformative experience that can promote self-awareness and growth when supported appropriately. The study emphasizes the importance of equitable pedagogical and instructional strategies that acknowledge students' diverse experiences and provide constructive pathways for improvement.

Article Info.
Article History
Received: 26 October 2025
Revised: 5 December 2025
Accepted: 20 December 2025

Publisher
Council for Mathematics Education
Branch, Surkhet

Keywords: mathematics failure , phenomenology, coping strategies, academic resilience.

Introduction

Despite significant investment in the education system aimed at improving educational outcomes, persistent challenges continue to hinder students' academic success. According to the Office of the Controller of Examinations under Tribhuvan University, a total of 45,535 students submitted their Bachelor of Education examination forms, yet only 8,172 successfully passed (Edusanjal, 2024). Although these figures represent the overall B.Ed. first-year results rather than mathematics alone, they nonetheless highlight a persistent gap between institutional expectations and actual student

performance. This gap is particularly critical in mathematics, a subject that has consistently been regarded as demanding and discouraging for many undergraduates.

Mathematics has long been perceived as a difficult subject that requires not only cognitive rigor but also resilience to psychological barriers. Undergraduate students without a prior mathematics background experience anxiety, reduced confidence, and stress when engaging with mathematical concepts in their coursework (Malik, 2015; Caneda et al., 2024; Austerberry et al., 2024). These challenges extend beyond academic struggle, influencing students' sense of self-efficacy and their willingness to engage with learning. Smith and Fotou (2023) further found that undergraduates frequently view mathematics as a barrier to continuing higher education, even when they possess strong motivation to succeed.These statistics and observations are not merely indicators of academic performance but reflect a deeper and persistent challenge in mathematics education at the undergraduate level. A high rate of failure suggests that many students are not only struggling with content knowledge but are also experiencing emotional, psychological, and social difficulties associated with repeated failure. However, existing research has largely focused on mathematics anxiety, achievement, and instructional strategies, with limited attention given to the lived experiences of students who actually fail in mathematics examinations. This lack of focus creates a significant gap in understanding how failure is experienced, interpreted, and managed by learners themselves. Addressing this gap is essential for developing more responsive pedagogical approaches and support systems that can effectively assist students facing academic difficulties in mathematics.

Assessment adds another dimension to these difficulties. Examinations are typically treated as the ultimate benchmark of achievement, yet they also carry emotional and social consequences. Failure in mathematics examinations may result in frustration, self-doubt, and in some cases, withdrawal from academic pursuits. Wang et al. (2024) argued that learning-oriented assessment encourages students to take greater responsibility for their learning, particularly in first-year mathematics courses, suggesting that assessment practices shape resilience as much as knowledge acquisition. In addition, broader contextual factors play a role in shaping students' experiences. Variables such as family background, socio-economic conditions, and time management strongly affect how undergraduates engage with mathematics (Yadav, 2021). In many cases, pressure from family expectations or the challenge of balancing academic and personal responsibilities intensifies the emotional impact of failure.

Therefore, this study aims to explore the lived experiences of undergraduate students who have failed in mathematics examinations, with particular focus on their emotional responses, perceptions of the learning environment, and coping strategies, in order to generate insights for more responsive and supportive pedagogical practices.

Research Objective

This study aims to explore and interpret the lived experiences of undergraduate students who have failed in mathematics examinations, with particular emphasis on their emotional responses, perceptions of the learning environment, and coping strategies, in order to generate insights that can inform more responsive and supportive pedagogical practices.

Research Question

The research questions for this study are articulated as follows:

- How do undergraduate students emotionally and socially experience failure in mathematics examinations?
- What factors in the learning environment contribute to their failure?
- What coping strategies do students develop following failure, and what implications do these have for teaching practices?

Literature Review

A consistent theme across the literature is that undergraduate students frequently encounter mathematics anxiety, which influences both their confidence and academic performance. In a phenomenological study, Malik (2015) found that learners experienced persistent anxiety and challenges in mathematics classrooms. Similarly, Caneda et al. (2024) explored the lived experiences of Bachelor of Secondary Education Mathematics students and found that collaborative learning and peer interaction played a crucial role in reducing anxiety and enhancing conceptual understanding. Kiarshi and Ebrahimi (2021) further identified limited prior knowledge, lack of parental support, and low motivation as key factors shaping students' negative learning experiences in mathematics.

More recent studies have expanded these insights. A qualitative exploration in higher education revealed that undergraduate students reported spikes of anxiety during oral presentations and problem-solving sessions but emphasized that peer collaboration and supportive teaching served as coping mechanisms (Nolasco, 2025). In the health sciences context, Austerberry et al. (2024) found that nearly 75% of nursing undergraduates reported fear of mathematics, linking mistakes to reduced confidence and avoidance of participation. Similarly, Saha et al. (2022) studying Bangladeshi university students, identified prior preparation, instructional quality, and learning environments as structural factors contributing to mathematics success or failure.

Within the Nepali context, several studies have highlighted persistent challenges in mathematics learning that contribute to students' academic difficulties. Khanal et al. (2021) reported that students frequently struggle with ineffective learning strategies and limited conceptual understanding in mathematics. Similarly, Panthi and Belbase (2017) identified systemic issues such as teacher-centered instructional practices and lack of interactive learning environments as barriers to effective mathematics learning in Nepal. Furthermore, Dhakal (2023) documented that undergraduates' expectations from instructors – such as clarity, responsiveness, and constructive feedback – significantly influenced their engagement in mathematics classes. Likewise, Paudel and Ghimire (2024) found that low mathematics self-efficacy is closely associated with poor academic performance and reduced engagement among students. In addition to this, a phenomenological investigation involving first-year calculus students revealed that tasks requiring interdisciplinary collaboration and instruction focused on discussion not only facilitated conceptual comprehension but also alleviated anxiety (Armenta & Dominguez, 2024).

Although these studies provide valuable insights into undergraduate students' perceptions and lived experiences, none of them has directly examined the narratives of students who have failed in mathematics examinations. Students who fail frequently face stigma, loss of confidence, and discouragement from peers and family, yet they also attempt to adopt coping strategies such as peer support, re-studying or avoidance. Evidence from STEM education suggests that reappraisal, skills

practice, and help-seeking can mitigate negative effects of failure (Shim & Pelaez, 2022) but these strategies have rarely been studied immediately after failure in mathematics examinations.

Therefore, this study seeks to address these gaps by exploring the lived experiences of undergraduate students who have failed in mathematics examination, with particular emphasis on their emotional responses, perceptions of the learning environment, and coping strategies. By foregrounding students' voices, this research aims to contribute to a deeper understanding of mathematics failure and to inform more responsive and supportive pedagogical practices.

Method

This study employed a qualitative phenomenological approach to explore and interpret the lived experiences of undergraduate students who had failed in mathematic examinations. Phenomenology was selected as it allows for an in-depth understanding of participants' subjective experiences and the meanings they attach to those experiences. The approach enabled the researcher to capture the essence of failure as lived and perceived by students within their educational and social contexts.

Participants

A total of seven undergraduate students who had failed in mathematics examinations participated in this study. Participants were selected through purposive sampling to ensure that individuals with direct experience of the phenomenon could provide rich and meaningful insights. The sample size aligns with phenomenological research traditions, which prioritize depth of understanding over breadth and typically involve a small number of participants to allow detailed exploration of lived experiences.

The participants were enrolled in Bachelor of Education programs across three campuses affiliated with Tribhuvan University. Efforts were made to include diversity in terms of gender and academic background to capture a range of perspectives. This variation allowed for a more comprehensive understanding of how different contextual factors shape students' experiences of failure.

Data Collection

Data were gathered through semi-structured, in-depth interviews, which provided flexibility for participants to express their experiences in detail while maintaining focus on the research objectives. Each interview was conducted individually in a quiet and comfortable setting to ensure openness and confidentiality. Interviews were audio-recorded with participants' informed consent and later transcribed verbatim. The interview protocol included open-ended questions designed to explore students' emotional responses, perceptions of the learning environment, and coping strategies following failure in mathematics examinations. Follow-up probing questions were used to clarify responses and deepen the discussion.

Data Analysis

Data were analyzed following Moustakas' (1994) phenomenological method, which involves systematic procedures to uncover the essence of lived experiences. First, epoche (bracketing) was applied, where the researcher consciously set aside personal assumptions and biases to approach the

data with openness. Second, horizonalization was conducted by identifying significant statements from the interview transcripts and treating each statement with equal value. These statements were then grouped into meaning units and clustered into themes based on similarities and patterns across participants' experiences. To ensure the credibility of the findings, themes were reviewed and refined through repeated reading of the data, and interpretations were checked against the original transcripts. Finally, textural descriptions (what participants experienced) and structural descriptions (how they experienced it) were developed, leading to a composite description that represents the shared essence of the phenomenon.

Ethical Considerations

Ethical standards were strictly maintained throughout the research process. Informed consent was obtained from all participants prior to data collection. Participants were assured of confidentiality, and pseudonyms were used to protect their identities. Participation was entirely voluntary, and participants were informed of their right to withdraw from the study at any stage without any negative consequences. Ethical approval for the study was obtained from the relevant institutional authority.

Limitations of the Study

This study has certain limitations that should be acknowledged. The use of a small sample size, although appropriate for phenomenological research, limits the generalizability of the findings. Additionally, the use of purposive sampling may introduce selection bias, as participants were chose based on specific criteria. Researcher bias is also a potential concern in qualitative studies; however, this was minimized through the application of bracketing and careful reflection during the analysis process. Despite these limitations, the study provides in-depth insights into the lived experiences of students, which can inform future research and pedagogical practices.

Findings

The phenomenological analysis of undergraduate students' lived experiences of failure in mathematics revealed a complex and interrelated set of emotional, social, and academic dimensions. These themes not only describe students' experiences but also provide insights into how failure is interpreted, internalized, and managed within specific learning contexts.

Emotional Turmoil and Fear of Mathematics

Participants consistently described mathematics as a source of fear, anxiety, and distress. The fear was not limited to examinations but extended into their daily school routines and private study. Participant D stated, "When the exam approaches, I find it difficult to sleep. I dream about numbers and questions. My head feels heavy before the paper starts. I feel like I will forget everything. "Participant A shared feelings of humiliation and discouragement, "I failed again and again. My friends laugh at me. I feel like mathematics is only for talented people, not me. I try, but it never works." This illustrates that repeated failure generated both emotional stress and a sense of inferiority.

Participant B described the physical impact of fear, "Whenever mathematics is taught, my hands shake, and my heart beats fast. I feel like running away. I cannot focus no matter how much I try." Emotional turmoil was closely linked with psychological and physiological reactions, highlighting the intense burden of repeated failure. Several participants also expressed shame and embarrassment when compared with peers, further deepening their anxiety. Participant E noted, "I feel

bad when the teacher asks questions. I want to answer but I feel I will give a wrong answer. My face feels hot, and I just keep quiet." Participant C described internal conflict, "I know some answers, but my fear blocks me. I feel helpless and frustrated every time."

These findings suggest that mathematics anxiety is not merely a cognitive difficulty but an embodied emotional experience that affects both psychological and physical functioning. This aligns with recent research indicating that mathematics anxiety significantly disrupts working memory and problem-solving processes (Austerberry et al., 2024; Nolasco, 2025). From a pedagogical perspective, this highlights the need for emotionally supportive classroom environments where fear is minimized and students feel safe to engage in learning.

Identity and Self-Perception

Repeated failure affected students' sense of self and identity. Participant B reflected, "Sometimes I think maybe I am not made for study. I see my friends passing, but I am always the one failing. It feels like my destiny. I feel less capable than others." Participant E shared, "I feel invisible in class. When friends celebrate marks, I just sit quietly. Mathematics makes me feel I am always behind, and it stays with me everywhere I go." Participant C described a struggle with internal labels: "I call myself weak in mathematics. I start believing that I cannot do it, and even before trying, I feel defeated." Participant D added, "Even when I study hard, I feel it's never enough. I feel small compared to others who understand quickly."

This internalization reflects the influence of academic emotions on self-efficacy and motivation, as explained in control-value theory (Pekrun, 2014). Recent studies also emphasize that low self-efficacy is strongly associated with disengagement and poor performance in mathematics (Paudel & Ghimire, 2024). These findings suggest that instructional practices should focus on reinforcing growth mindsets and supporting positive academic identity formation among students.

Perceptions of Teaching and Classroom Practices

Classroom practices played a major role in participants' experiences. Many students described teaching as fast-paced, exam-oriented, and teacher-centered. Participant C explained, "Our teacher only solves examples and moves on. I wanted him to explain slowly, but there was no time. At times, I experience a sense of confusion due to my inability to keep up with rapid explanations." Participant B stated, "Even if I do not comprehend, I remain silent." Asking questions is difficult because the teacher may scold me. I feel I am bothering the class. Participant D likened classroom instruction to a train moving too fast, "In class, mathematics runs like a fast train. I cannot catch it. I try to understand, but we always move to the next topic before I am ready." Students frequently described a lack of individual attention. Participant E shared, "The teacher does not check if everyone understands. I sit quietly, hope that someone else will answer, and try to copy from friends. Still, I make mistakes." Participant A added, "Sometime I wish the teacher could notice who is struggling and explain slowly, but lessons always feel rushed." These findings are consistent with research in the Nepali context highlighting the limitations of teacher-centered approaches and the importance of learner-centered instruction (Khadka et al., 2022; Bhandari & Kshetree, 2024). The results suggest that adopting differentiated instruction and formative assessment strategies can help address diverse learning needs and improve student engagement.

Peer Influence and Social Comparison

Participants' accounts indicate that peer interactions played a significant role in shaping both their engagement with mathematics and their sense of self. Many described experiences of comparison and ridicule, where being evaluated against higher-performing classmates led to feelings of inadequacy and diminished confidence. Participant A recalled, "Friends say, 'You are always failing, you will never pass.' Their words hurt me. Sometimes I feel like I am the only one who cannot do anything right." Similarly, Participant D reflected, "At home, everyone asks why I fail only in mathematics. In class, friends laugh sometimes. I feel like I am always behind." These experiences suggest that peer environments can reinforce a sense of marginalization, where academic struggles become publicly visible and emotionally burdensome.

Participant B further expressed frustration arising from constant comparison, stating, "I see my friends getting marks easily while I struggle. I feel frustrated and sometimes I think maybe I am not good enough. It makes me not want to try." This illustrates how repeated exposure to peer success, when combined with personal failure, may gradually weaken motivation and increase withdrawal from learning activities. At the same time, participants also highlighted the presence of supportive peer relationships that contributed positively to their learning. Participant C noted, "One of my friends she taught me step by step. With her, I could solve some problems. I wished teachers also did the same." Likewise, Participant E shared, "I have one friend who always checks my work. When she explains slowly, I understand. I feel happy and hopeful that maybe I can do better next time." These accounts demonstrate that peers can also function as accessible sources of guidance, encouragement, and reassurance, particularly when formal instructional support is perceived as insufficient.

This contrast reveals that peer influence operates in multiple ways, simultaneously shaping both discouraging and enabling experiences. Within the broader sociocultural setting of Nepal, where academic performance is closely linked to social recognition and family expectations, peer comparison tends to intensify personal interpretations of success and failure. In such contexts, struggling in mathematics may not remain an individual academic difficulty but becomes a socially interpreted condition that affects students' confidence and classroom participation. Consequently, external judgements from peers often become internalized, contributing to self-doubt and heightened anxiety.

Despite these pressures, students demonstrated adaptive responses by selectively engaging with peers who provided constructive support and distancing themselves from negative interactions. This suggests that peer relationships can act as both a risk and a protective factor depending on the nature of interaction. Consistent with recent research, supportive and collaborative learning environments have been shown to reduce mathematics-related anxiety and foster greater academic confidence (Caneda et al., 2024). Therefore, structured peer-based approaches such as cooperative learning, guided group activities, and peer-assisted instruction may play a critical role not only in improving understanding but also in creating emotionally supportive learning spaces for students experiencing repeated failure.

Societal and Familial Expectations

Family and societal expectations emerged as powerful influences shaping students' emotional responses to failure in mathematics. Participant E reflected, "At home, father always asks why I fail only in mathematics. He says without passing it, I cannot succeed in life. I feel pressure every day."

Similarly, Participant B described external judgement from the community: "People ask why I fail. I feel ashamed. Mathematics failure is like a label people remember, and it hurts my confidence." These accounts indicated that failure is not experienced privately but is socially constructed through interactions with family members and the wider community.

Participant D further explained the impact of comparison within family structures: "Sometimes my family compares me to my cousins who are good at mathematics. I feel stressed and sad, but I also feel musty try harder." Participant C added, "Teachers and parents expect me to perform. I feel that everyone is watching, and that pressure is heavy, but I still hope to succeed." These narratives demonstrate how external expectations become internalized, intensifying students' anxiety, self-doubt, and fear of repeated failure. Recent studies suggest that such external pressures significantly interact with students' emotional and cognitive experiences in mathematical learning. Research indicates that family expectations and socio-cultural norms can heighten mathematics anxiety and negatively affect academic performance, particularly when success is closely tied to social recognition and future opportunities (Du, 2025). Additionally, studies in higher education contexts highlight that students' coping strategies are shaped by their social environments, where emotional stress, lack of support and contextual constraints influence how they respond to academic challenges (Lopez-Ramirez et al., 2025).

In the Nepali socio-cultural context, where academic achievement is often associated with family prestige and career mobility, these pressures may become even more pronounced. Such expectations can exacerbate students' internal struggles, leading to avoidance behaviors or reduced confidence, while in some cases motivating persistence through a sense of obligation. These findings suggest that addressing mathematics failure requires not only pedagogical interventions within classrooms but also greater awareness among families and communities to create supportive, non-threatening learning environments that encourage resilience and constructive coping.

Coping Strategies and Adaptive Responses to Failure

Repeated failure led students to develop coping strategies, frequently manifesting as avoidance behaviors. Participant D shared, "When mathematics period comes, I feel like escaping. Sometimes I hide my book. Sometimes I just look outside the window and pretend to be thinking." Participant A described selective engagement, "I avoid answering in class because I am scared of being wrong. I only try questions at home when nobody is watching." Participant B showed persistence despite fear, "I solved past questions again and again. I thought this time I will pass. But I failed. Still, I will try. I keep practicing, even if it is difficult." Participant C added, "Sometimes I skip difficult topics to avoid frustration, but I return to them later when I feel calmer." Participant E noted, "Avoiding class participation sometimes helps me stay safe from embarrassment, but it also makes me feel guilty for not learning."

These findings align with recent research highlighting the importance of adaptive coping strategies, such as practice and peer support, in mitigating the negative effects of academic failure (Shim & Pelaez, 2022). These coping strategies indicate that students do not passively experience failure but actively attempt to manage it through both avoidance and engagement-oriented approaches. This suggests that educators should design supportive learning environments that encourage help-seeking, reduce fear of mistakes, and promote adaptive coping mechanisms.

Resilience, Recovery and Learning-Oriented Adaptation

Despite repeated setbacks, participants retained hope and aspiration. Participant A shared, "If teacher helps me during confusion and provide feedback while doing mathematics, I can pass the exam. I will keep trying." Participant B stated, "I will try again. I aspire to succeed and bring pride to my family. I will not give up because I want to succeed one day."Participant C added, "I may fail now, but I will study, practice, and ask questions until I understand. I believe someday I can do it." Participant D shared, "Even if I fail again, I know I can improve. I will try different ways and ask friends or teachers for help." Participant E expressed a similar determination, "I dream of passing mathematics and proving to myself that I am capable. That keeps me going."

This reflects the concept of academic resilience, where students persist despite challenges (Tinto, 2012). Recent studies also highlight that reflective engagement with failure can foster personal growth and self-awareness (Ajjawi et al., 2019). These findings indicate that failure can serve as a turning point for developing resilience when appropriate academic and emotional support is available. This highlights the need for instructional practices that recognize failure as part of the learning process and actively support students in rebuilding confidence and engagement.

Summary

The findings reveal that repeated failure in mathematics is a multifaceted experience encompassing emotional, social, and academic dimensions. Students' experiences include fear, anxiety, shame, identity struggles, challenges in classroom learning, peer influence, coping efforts, hope, and societal expectations. These narratives provide rich, descriptive insight into the lived reality of mathematics failure, highlighting both vulnerability and resilience. These descriptions lay the foundation for the subsequent discussion of meaning, interpretations, and educational implications.

Discussion

The findings of this study demonstrate that failure in undergraduate mathematics is not solely an academic outcome but a deeply embedded emotional, social, and contextual experience. Students' narratives reveal how failure shapes their self-perception, motivation and engagement with learning, highlighting the need for a more holistic understanding of academic struggles. A key implication of this study is the importance of addressing mathematics anxiety as both a cognitive and emotional phenomenon. Teachers should be trained to identify early signs of anxiety, such as avoidance, silence, and physical discomfort, and adopt strategies that promote psychological safety in the classroom. Creating a supportive environment where mistakes are normalized can significantly enhance student participation and confidence.

The study also underscores the need for pedagogical transformation. Traditional teacher-centered approaches should be replaced with learner-centered practices that emphasize interaction, feedback, and differentiation. Formative assessment, peer collaboration, and scaffolding strategies can play a critical role in supporting students who struggle with mathematics. Furthermore, the influence of family and societal expectations highlights the importance of contextual sensitivity in educational interventions. In contexts like Nepal, where academic success is closely tied to social recognition, efforts should be made to engage families in understanding the emotional impact of failure and promoting supportive attitudes. At the institutional level, providing academic counseling, mentoring

programs, and remedial support can help students cope with failure more effectively. These interventions can transform failure from a discouraging experience into an opportunity for growth and learning.

Conclusion

This study provides a comprehensive understanding of the lived experiences of undergraduate students who fail in mathematics examinations. The findings indicate that failure is a complex phenomenon shaped by emotional, social, and instructional factors rather than an individual deficiency alone. Importantly, the study highlights that failure can serve as a transformative experience when supported appropriately. By shifting the perspective from failure as an endpoint to failure as a meaningful part of the learning process, educators and policymakers can develop more inclusive and responsive educational practices. Future research should explore longitudinal experiences of failure, examine the role of digital learning tool, and investigate teachers' perspectives on supporting struggling learners. Such efforts will contribute to a deeper understanding of how educational systems can better support students in overcoming academic challenges.

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