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iJOINED ETCOR  
P - ISSN 2984-7567  
E - ISSN 2945-3577



The Exigency  
P - ISSN 2984-7842  
E - ISSN 1908-3181

## Mathematics in the Modern World: A Phenomenological Inquiry into University Students' Learning Challenges in Cavite

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Received: 04 March 2025

Revised: 06 April 2025

Accepted: 08 April 2025

Available Online: 10 April 2025

Volume IV (2025), Issue 2, P-ISSN – 2984-7567; E-ISSN - 2945-3577

<https://doi.org/10.63498/nxz2st262>

### Abstract

**Aim:** This study addressed a critical gap by investigating the relationship between emotional factors and cognitive engagement and how collaborative and supportive environments could help students overcome these challenges.

**Methodology:** A phenomenological research design using Moustakas' modification of the Stevick-Colaizzi-Keen method was employed to capture the essence of students' lived experiences. A total of 12 university students from Cavite participated in the study through in-depth interviews. Data analysis combined the use of NVivo software for coding and organizing data with manual thematic analysis to ensure deep engagement with the participants' lived experiences.

**Results:** The results showed that emotional factors like anxiety and frustration significantly hinder students' engagement and performance, often leading to avoidance of mathematical tasks. Additionally, cognitive challenges, particularly in understanding abstract concepts, further impacted students' problem-solving abilities.

**Conclusion:** These findings emphasized the importance of addressing emotional and cognitive barriers through practical applications and supportive environments.

**Keywords:** Mathematics, Modern World, Emotional challenges, Cognitive barriers, Supportive learning environments, Math Anxiety

### INTRODUCTION

Mathematics is a foundational subject that influences cognitive skills and problem-solving abilities essential in modern society. The Philippine Commission on Higher Education (CHED) recognizes this by including Mathematics in the Modern World as part of the General Education Curriculum. This course aims to provide students with an appreciation of mathematics' relevance to real-life scenarios, foster interdisciplinary learning, and develop critical thinking skills. However, despite its importance, many students continue to perceive mathematics as challenging and anxiety-inducing, resulting in poor academic outcomes and negative attitudes toward the subject. Recent studies have shed light on the importance of creating engaging and supportive learning environments for students enrolled in Mathematics in the Modern World. Barete and Taja-on (2024) highlighted the positive effect of real-world applications on students' engagement and motivation, emphasizing the importance of relating mathematical concepts to everyday life. Similarly, Torrejos (2024) explored the combined influence of perceived teaching performance and critical thinking skills on student engagement, showing that students are more engaged when they perceive their instructors positively and can effectively employ critical thinking.

Furthermore, Booc et al. (2024) examined the mediating role of technostress in the relationship between metacognition and engagement in blended learning environments. Their study revealed that technostress significantly impacts student engagement, suggesting that managing technological stress is critical to enhancing cognitive engagement. While these studies focus on factors such as teaching performance, critical thinking, and technostress, emotional challenges such as anxiety and frustration are underexplored in the context of Mathematics in the Modern World. Adding to this, MSc and Edig (2022) provided important insights into the challenges college students face in this course. Their study identified significant struggles related to class interaction, resource availability, and learning techniques. Students have developed coping mechanisms, such as improving technological

129



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skills and adopting positive attitudes, to overcome these obstacles. The study also highlighted the relevance of real-world applications, with students recognizing the practical value of the course content. However, despite the identification of these challenges and coping strategies, there remains a gap in understanding the emotional and cognitive challenges students experience while engaging with abstract mathematical concepts and the role supportive environments play in reducing these difficulties.

This paper will contribute to the literature by focusing on the emotional and cognitive challenges, such as anxiety, frustration, and difficulties with abstract concepts, that students face in Mathematics in the Modern World. Unlike previous studies, this research will explore the specific role that supportive learning environments and collaborative activities play in helping students overcome these emotional barriers and enhance their problem-solving abilities. By examining the emotional dimensions of learning mathematics, this study will provide new insights into how students' emotional states interact with cognitive engagement, an area that has been largely overlooked in prior research. Furthermore, this study will provide actionable recommendations for educators to create supportive environments that address both emotional and cognitive challenges, making mathematics education more accessible and engaging for students.

### Objectives

This study addressed a critical gap by investigating the relationship between emotional factors and cognitive engagement and how collaborative and supportive environments can help students overcome these challenges.

Specifically, this study addressed the following questions:

1. How do emotional factors, such as anxiety and frustration, affect university students' engagement and performance in Mathematics in the Modern World?
2. What cognitive challenges do students face in understanding and applying abstract mathematical concepts, and how do these challenges impact their problem-solving abilities?
3. In what ways do supportive learning environments and collaborative activities influence students' ability to overcome the difficulties associated with learning Mathematics in the Modern World?

### METHODS

#### Research Design

This study employed a phenomenological research design using Moustakas' modification of the Stevick-Colaizzi-Keen method. The purpose of this design is to explore the essence of students' lived experiences in learning Mathematics in the Modern World and understand the challenges they face. The phenomenological approach is appropriate for capturing the emotional and cognitive complexities of learning a subject often associated with anxiety and difficulty.

Following Moustakas (1994), intuition served as the primary source for generating knowledge about participants' lived experiences. Intuition activates the wholeness of these experiences, capturing participants' particular perceptions, which were evoked in consciousness and reflected in diverse emotional states (Moustakas, 1994). This method emphasized bracketing, allowing the researcher to suspend preconceptions to better understand participants' experiences and ensure neutrality. By using this approach, the study focused on the emotional responses, such as anxiety and frustration, that students experienced while engaging with abstract mathematical concepts and navigating supportive learning environments.

#### Population and Sampling

The study involved university students enrolled in a university in Cavite, who were purposively selected based on the following qualifications:

1. Officially enrolled in the second semester of the academic year 2024–2025;
2. Enrolled in the Mathematics in the Modern World course; and
3. Actively engaged in e-learning modality during the specified period.

These participants took part in virtual Focus Group Discussions (FGDs) and in-depth interviews conducted via video conferencing platforms. Interview questions were presented on a shared screen to help guide responses. All sessions were digitally recorded, transcribed, and analyzed using the constant comparative method to extract themes and patterns from the data.



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The study specifically focused on a purposively selected sample of 12 university students from Cavite who had experienced notable learning challenges in Mathematics in the Modern World. These participants were chosen based on their willingness to share personal learning experiences, as well as their diverse levels of mathematical performance, providing varied perspectives on the challenges faced in the subject.

### Instrument

Data were collected through a semi-structured interview guide and a focus group discussion (FGD) guide, both developed to explore students' experiences, perceptions, and challenges in learning Mathematics in the Modern World. The questions were aligned with the study's three core research areas: emotional factors, for example, anxiety and frustration, cognitive challenges, for example, abstract reasoning and problem-solving, and the influence of supportive learning environments, for example, collaborative activities and instructional support.

The interview guide consisted of open-ended questions designed to encourage participants to reflect on their academic and emotional experiences in mathematics. Sample prompts included: "Can you describe how you feel during math classes?" and "What strategies help you deal with difficult concepts?" The FGD guide mirrored the same structure but was adapted to encourage peer-to-peer interaction and collective reflection.

Before data collection, participants were provided with an informed consent form outlining the study's purpose, procedures, confidentiality measures, and their rights as participants. All interviews and discussions were audio-recorded with permission and later transcribed for analysis.

The instruments were reviewed by experts in education and qualitative research to ensure clarity, relevance, and alignment with ethical and academic standards. The complete interview and FGD guides were available from the corresponding author upon request.

### Data Collection

Data were collected through in-depth semi-structured interviews designed to elicit detailed reflections on participants' experiences with learning Mathematics in the Modern World. Open-ended questions were used to allow participants to discuss their challenges, emotions, and coping strategies. The interviews were audio-recorded and transcribed verbatim for analysis. Additionally, an optional focus group discussion (FGD) was conducted to gather collective insights and foster a dialogue about common struggles.

### Data Analysis

The data collected from in-depth interviews were analyzed using a combination of NVivo software and Moustakas' Phenomenological Approach to ensure both a systematic and interpretive analysis. NVivo facilitated the coding and organization of large amounts of qualitative data by identifying themes, patterns, and recurring emotional and cognitive experiences described by participants. This software enabled the categorization and linking of themes across participants, allowing for a structured analysis consistent with Moustakas' (1994) method of phenomenological analysis, which emphasized grouping significant statements into themes and developing textual and structural descriptions of participants' lived experiences.

The interview data were analyzed using Moustakas' Phenomenological Approach. The following steps were employed:

1. Horizontalization, where each statement was treated with equal significance.
2. Phenomenological Reduction, which involves the elimination of redundant or irrelevant statements, focusing only on those related to the learning challenges.
3. Clustering of Themes, where similar statements were grouped into themes related to anxiety, problem-solving difficulties, and conceptual misunderstandings.
4. Textural and Structural Descriptions, describing the "what" and "how" of students' experiences.
5. Synthesis, integrating both descriptions to uncover the essence of students' experiences in learning Mathematics in the Modern World.

### Ethical Considerations

Informed consent was obtained from all participants, and confidentiality was ensured by anonymizing all personal information. Participants were informed of their right to withdraw from the study at any time.



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## RESULTS and DISCUSSION

### Emotional Factors Affecting Engagement and Performance in Mathematics in the Modern World

The study revealed that emotional experiences significantly shaped how students engaged with and performed in Mathematics in the Modern World. Three major themes emerged from the data: (1) *Pre-existing Math Anxiety*, (2) *Psychosomatic Responses to Learning Difficulty*, and (3) *Fear of Judgment and Isolation in Learning Environments*.

#### Theme 1: Pre-existing Math Anxiety

Students entered the course with longstanding negative perceptions of mathematics, often rooted in prior academic failures or discouraging experiences. These beliefs cultivated a fixed mindset and an expectation of failure, which directly hindered motivation and performance.

One student shared,

*"I always felt like math was just not for me. It's hard, and every time I try, I feel like I'm failing before I even start."*(CD\_M, Pos. 42)

Such deeply internalized math anxiety not only affected students' self-confidence but also led to early disengagement from tasks requiring complex reasoning. This aligned with studies indicating that mathematics anxiety (MA) correlates with avoidance behaviors and lower achievement (Mustafa, 2024; Shabab, 2023).

#### Theme 2: Psychosomatic Responses to Learning Difficulty

Several participants described emotional stress manifesting in physical symptoms—such as headaches and nausea—especially when faced with abstract mathematical concepts.

*"Math makes me feel sick sometimes. When I don't understand, I get a headache, and it's hard to focus."*(CB\_L, Pos. 37)

These psychosomatic symptoms as stated by Booc et al. (2024), further obstructed students' ability to persist through challenging material. In this way, the emotional toll of mathematics learning became not just psychological but physically debilitating, underscoring the holistic impact of affective factors.

#### Theme 3: Fear of Judgment and Isolation in Learning Environments

Many students reported hesitancy to ask questions or seek clarification, particularly in online or large-class settings. The fear of appearing incapable intensified their reluctance to participate.

*"I don't feel like I can ask questions in class because everyone else seems to get it, and I don't."*(CC\_T, Pos. 21)

This sense of alienation reflected broader issues in educational design, particularly in remote learning contexts, where the absence of peer interaction and instructor presence could magnify emotional disconnection. Students with weaker foundational skills were especially vulnerable to this cycle of anxiety and silence. Although moderate levels of anxiety have been shown to enhance focus and effort (Mustafa, 2024), the findings of this study highlighted the more common experience of chronic anxiety leading to disengagement.

One participant reflected this sentiment clearly:

*"Math has always been something I'm bad at, and when the problems get harder, I just give up."*(CC\_M, Pos. 29)

This aligned with existing studies suggesting that when students perceive failure as inevitable, their willingness to engage diminishes significantly (Shabab, 2023).

These results reinforced the importance of addressing affective domains in mathematics education. Strategies that promote emotional resilience, normalize struggle, and foster psychological safety—especially in online or hybrid environments—might significantly reduce emotional barriers to learning.



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## Cognitive Challenges in Understanding and Applying Abstract Mathematical Concepts

Students in this study encountered significant difficulties when engaging with abstract mathematical content in the course Mathematics in the Modern World. Through the phenomenological analysis of participant narratives, three major themes emerged:

- (1) Disconnection Between Abstract Concepts and Real-Life Applications,
- (2) Negative Mathematical Mindsets as Cognitive Barriers, and
- (3) Lack of Conceptual Understanding Due to Traditional Teaching Approaches.

### Theme 1: Disconnection Between Abstract Concepts and Real-Life Application

A prominent challenge cited by students was their struggle to see the practical value of abstract mathematical topics, such as graph theory and proofs. The perceived irrelevance led to demotivation and disengagement.

One participant expressed,

*"I struggle because I don't see how this helps me in real life. The concepts feel disconnected from anything I'll actually use."* (CD\_T, Pos. 34)

Despite the potential applications of graph theory in fields such as chemistry, physics, and computer networks (Lazarova et al., 2022), students were often unable to bridge the gap between theory and use. The lack of contextual learning made abstract concepts feel distant and unapproachable, compounding their cognitive load.

### Theme 2: Negative Mathematical Mindsets as Cognitive Barriers

Many participants described long-standing aversions to mathematics, shaped by prior struggles and failures. These psychological barriers impeded cognitive engagement, particularly when faced with higher-level abstract problems.

*"Math has always been something I'm bad at, and when the problems get harder, I just give up."* (CC\_M, Pos. 29)

This fixed mindset, rooted in past academic trauma, influenced how students approached learning tasks, often leading to avoidance and resignation. The interplay between cognition and emotion was evident, as students' mental blocks restricted their willingness to attempt unfamiliar or abstract content (Koerunnisa et al., 2024).

### Theme 3: Lack of Conceptual Understanding Due to Traditional Teaching Approaches

Students frequently cited teaching methods as a contributing factor to their cognitive struggles. The emphasis on memorization and procedural problem-solving limited their ability to understand underlying mathematical concepts.

As one student noted,

*"We just learn formulas, but I don't really understand why we're using them or how they work in real life."* (CB\_L, Pos. 37)

This surface-level learning approach hindered students' capacity to transfer knowledge to novel problems. Consistent with the work of Chance et al. (2024) and Alam & Mohanty (2024), participants emphasized the need for instruction that connects abstract theory to practical contexts and encourages deeper reasoning.

The study highlighted the complex cognitive challenges faced by students when navigating abstract mathematical content. These difficulties were not purely academic but were shaped by emotional, instructional, and perceptual factors. As Alam & Mohanty (2024) suggested, integrating inquiry-based and technology-enhanced learning strategies might help make abstract concepts more tangible and meaningful. Doing so could also support the development of students' conceptual thinking, metacognitive strategies, and problem-solving confidence. Addressing these challenges required not only pedagogical innovation but also a shift in how mathematics was positioned within the curriculum — as a tool for inquiry and real-world thinking rather than as a gatekeeping subject rooted in procedural fluency.



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## Supportive Learning Environments and Collaborative Activities in Overcoming Mathematics Challenges

In exploring how supportive learning environments and collaborative activities influenced students' experiences in Mathematics in the Modern World, three key themes emerged from the phenomenological analysis:

- (1) Peer Collaboration as a Source of Solidarity and Decreased Anxiety,
- (2) Instructor Support as a Catalyst for Confidence and Persistence, and
- (3) Real-World Relevance as a Motivator for Engagement and Understanding.

### Theme 1: Peer Collaboration as a Source of Solidarity and Decreased Anxiety

Students described how working collaboratively with peers helped them realize that their struggles were shared, not unique. This collective experience reduced anxiety and made abstract topics more approachable through mutual explanation and shared problem-solving.

*"When we worked on problems as a group, I realized I wasn't the only one struggling. It made the material less intimidating, and we helped each other understand better."* (CB\_N, Pos. 23)

Collaborative environments fostered a sense of community that empowered students to engage more deeply. This aligns with the findings of Firman and K. Dedy Sandiarsa S. (2024), who emphasized that cooperative learning enhances both problem-solving and motivation.

### Theme 2: Instructor Support as a Catalyst for Confidence and Persistence

Supportive behaviors from instructors — such as patience, availability, and personalized feedback — emerged as vital for student persistence and engagement. Instructor encouragement helped reduce the fear of failure and created an environment where students felt safe to ask questions and express confusion.

*"Whenever I had a question, the professor would explain patiently. It made a big difference because I didn't feel scared to ask for help."* (CD\_F, Pos. 38)

This finding was reinforced by research from Verdeflor et al. (2024), who showed that emotional support from instructors reduces burnout and improves self-efficacy. Likewise, Weatherston et al. (2024) found that teacher support reduced anxiety and promoted sustained engagement in learning.

### Theme 3: Real-World Relevance as a Motivator for Engagement and Understanding

Many students reported increased motivation and comprehension when mathematical concepts were presented in practical, real-life contexts. Seeing the relevance of abstract ideas provided a reason to persist and encouraged active participation.

*"When we learned how the math could be used in real-life situations, it clicked for me. I finally saw why it mattered, and it made me want to work harder to understand it."* (CB\_R, Pos. 45)

Instructional approaches such as Realistic Mathematics Education (RME) have been shown to enhance understanding by linking abstract theory to tangible experiences (Koerunnisa et al., 2024). The use of the Abstract Visual Concrete (A-V-C) method also supported this transition, enabling learners to internalize concepts through relatable experiences (Reyes, 2024). These strategies are echoed by Verdeflor et al. (2024), who stressed the importance of real-world applications and case-based learning to increase student motivation and understanding.

This study highlighted the transformative role that supportive environments and collaboration play in mathematics education. Through peer cooperation, students found emotional reassurance and cognitive support. Instructor responsiveness encouraged persistence, while context-driven instruction made learning meaningful. Together, these factors helped students navigate the cognitive and emotional challenges inherent in abstract mathematical learning. Educators were encouraged to design learning environments that emphasize community, provide emotional scaffolding, and ground mathematical instruction in practical contexts. Doing so might help explain mathematics and empower students to view the subject not as a barrier but as a tool for real-world thinking and problem-solving.

## Conclusions

The findings of this study confirmed that students' negative emotions, such as anxiety and frustration, played a significant role in shaping their experiences in learning Mathematics in the Modern World. These emotions



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were often rooted in prior negative experiences with mathematics and were aggravated by the abstract nature of mathematical concepts. This aligned with existing research, which suggested that emotions like anxiety could hinder students' ability to engage with and understand mathematical content. Problem-solving emerged as one of the most significant challenges for students. Many struggled to apply abstract mathematical concepts to real-world problems, particularly when they felt disconnected from their instructors in online learning environments. This finding was consistent with previous studies that highlighted the difficulties students faced in problem-solving due to a lack of foundational understanding and real-life application.

### Recommendations

In light of the findings, it is recommended that educators and institutions adopt a more holistic and student-centered approach to teaching Mathematics in the Modern World. First, emotional support should be intentionally integrated into mathematics instruction by fostering a psychologically safe environment where students feel comfortable expressing confusion and making mistakes without fear of judgment. To reduce feelings of isolation and anxiety, collaborative learning strategies—such as peer discussions, group activities, and problem-based learning—should be employed to promote a sense of community and mutual support among learners. Furthermore, lessons should consistently highlight the real-world relevance of mathematical concepts, helping students make meaningful connections between abstract ideas and practical applications. Inquiry-based and conceptual teaching methods, such as the Abstract-Visual-Concrete (A-V-C) approach and Realistic Mathematics Education (RME), are also recommended to deepen understanding and encourage active learning. Instructor accessibility is another critical factor; teachers must be approachable, responsive, and available to provide timely feedback and guidance, especially in large or online classes where students may feel overlooked. Lastly, professional development opportunities should be offered to equip mathematics instructors with the tools and strategies necessary to address both the emotional and cognitive challenges students face. By implementing these recommendations, mathematics education can become more engaging, supportive, and effective in meeting the diverse needs of students.

### Acknowledgments

We offer our deepest gratitude to everyone who has supported us throughout this journey. To our families, your unwavering belief and encouragement have been the foundation of our efforts. Your love and support have made this article possible, and we are eternally grateful. We also wish to thank the faculty, staff, and peers at National University, Philippines for their invaluable guidance and encouragement, which have significantly influenced this work. Lastly, we are deeply grateful to the editors and reviewers for their expertise and dedication in refining this article. Above all, we thank God for the wisdom, grace, and strength that have guided us every step of the way. This article is dedicated to all who have supported and inspired us throughout this journey.

### REFERENCES

- Alam, A., & Mohanty, A. (2024). Unveiling the complexities of 'Abstract Algebra' in University Mathematics Education (UME): fostering 'Conceptualization and Understanding' through advanced pedagogical approaches. *Cogent Education*, 11(1). <https://doi.org/10.1080/2331186x.2024.2355400>
- Barete, M., & Taja-On, E. (2024). Students' perception in Learning the course Mathematics in the Modern World: A Qualitative Study. *East Asian Journal of Multidisciplinary Research*, 3(7). <https://doi.org/10.55927/eajmr.v3i7.10071>
- Booc, N. B. B., Cortez, N., Enriquez, D., Espino, R., Loteria, J. L., & Sabanal, J. (2024). The mediating effect of technostress on the relationship between metacognition and blended learning engagement of students in mathematics in the modern world. *European Journal of Contemporary Education and E-Learning*, 2(1), 44–52. [https://doi.org/10.59324/ejceel.2024.2\(1\).04](https://doi.org/10.59324/ejceel.2024.2(1).04)
- Chance, S., Fayyaz, F., Campbell, A. L., Pitterson, N. P., & Nawaz, S. (2024). Guest editorial Special issue on Conceptual Learning of Mathematics-Intensive Concepts in Engineering. *IEEE Transactions on Education*, 67(4), 491–498. <https://doi.org/10.1109/te.2024.3416649>
- Firman, E. & K. Dedy Sandiarsa S. (2024). The effect of learning environment on students' motivation in learning [Research Article]. *Jurnal Ilmiah Mandala Education (JIME)*, 10–10(4), 1056–1056. <https://doi.org/10.58258/jime.v10i4.7614>



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- Koerunnisa, K., Rianto, R., Novita, S. D., Nurasih, Z., Abdullah, A., Aliah, A., Fallo, H., & Rasilah, R. (2024). The influence of a realistic mathematical approach on student learning in elementary schools. *Journal of Mathematics Instruction Social Research and Opinion*, 4(1), 105–114. <https://doi.org/10.58421/misro.v4i1.282>
- Lazarova, L. K., Stojkovicj, N., Stojanova, A., & Miteva, M. (2022). Application of graph theory in teaching and understanding of the mathematical problems. *2022 IEEE Global Engineering Education Conference (EDUCON)*, 23, 1594–1601. <https://doi.org/10.1109/educon52537.2022.9766566>
- MSc, E. M. C., & Edig, M. M. N., PhD. (2022b). Looking through the New World of Mathematics: Experiences of College Students in Mathematics in the Modern World Course. *International Journal of Research Publications*, 95(1). <https://doi.org/10.47119/ijrp100951220222887>
- Moustakas, C. (1994). *Phenomenological research methods*. <https://doi.org/10.4135/9781412995658>
- Mustafa, A. N. (2024). MATHEMATICS ANXIETY CAUSES, CONSEQUENCES, AND COPING STRATEGIES. *International Journal of Advanced Research*, 12(11), 1268–1276. <https://doi.org/10.21474/ijar01/19941>
- Shabab, C. R. (2023). Understanding mathematics anxiety: loss aversion and student engagement. *Teaching Mathematics and Its Applications an International Journal of the IMA*, 43(2), 107–124. <https://doi.org/10.1093/teamat/hrad008>
- Torrejos, R. L. (2024). College students' engagement in mathematics in the modern world: the influential role of perceived teaching performance of instructors and critical thinking skills in a blended learning environment. *European Journal of Contemporary Education and E-Learning*, 2(3), 74–89. [https://doi.org/10.59324/ejceel.2024.2\(3\).07](https://doi.org/10.59324/ejceel.2024.2(3).07)
- Verdeflor, R. N., Tenedero, E. Q., Bordios, A. G., Panit, N. M., & Espinosa, C. G. (2024). Instructional management strategies for addressing low student engagement in mathematics. *Environment and Social Psychology*, 9(12). <https://doi.org/10.59429/esp.v9i12.3229>
- Weatherton, M., Schussler, E. E., Brigati, J. R., Ferguson, H., Boyd, I., & England, B. J. (2024). Is Support in the Anxiety of the Beholder? How Anxiety Interacts with Perceptions of Instructor Support in Introductory Biology Classes. *CBE—Life Sciences Education*, 23(4). <https://doi.org/10.1187/cbe.24-02-0092>