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How Repeatedly Failed Students Perceive the Mathematics Remediation Program and Their Failures

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ABSTRACT

Mathematics remediation is crucial in higher education, serving as a cornerstone to prepare under-equipped students. However, numerous Mathematics Education students in one of the public universities in Indonesia have repeatedly failed in this program. Failure experiences have an essential role in pre-service mathematics teachers' personal and professional development. While some research has explored the students' failure experiences, a significant gap exists in exploring the perception of repeatedly failed students in MR. Our qualitative narrative case study delves into the perceptions of repeatedly failing students regarding the MR and their failures. Five themes emerged through analysis of reflective writing and interview data: perceptions of mathematics and its learning, perspectives on the MR program, attitudes toward failure, factors contributing to participant failures, and expectations for MR program development. This study provides valuable insights to enhance the effectiveness of MR, shedding light on the intricate dynamics surrounding students' experiences with the program.

Keywords: academic failure, mathematics education, mathematics remediation, narrative case study, student's perception.

ABSTRAK

Matrikulasi Matematika sangat penting dalam pendidikan tinggi, karena berperan sebagai dasar untuk mempersiapkan mahasiswa yang kurang kompeten. Namun, banyak mahasiswa Pendidikan Matematika di salah satu universitas negeri di Indonesia yang berulang kali gagal dalam program ini. Pengalaman gagal sangat beperan penting dalam pengembangan akademis dan profesional calon guru matematika. Meskipun beberapa penelitian telah menjelajahi pengalaman gagal mahasiswa, terdapat kesenjangan signifikan dalam menjelajahi persepsi mahasiswa yang gagal berulang dalam MR. Studi kasus naratif kualitatif kami menelusuri persepsi mahasiswa yang gagal berulang mengenai MR dan kegagalan mereka. Lima tema muncul melalui analisis tulisan reflektif dan data wawancara: persepsi terhadap matematika dan pembelajarannya, pandangan terhadap program MR, sikap terhadap kegagalan, faktor-faktor yang menyebabkan kegagalan peserta, dan harapan untuk pengembangan program MR. Penelitian ini memberikan wawasan berharga untuk meningkatkan efektivitas MR, menjelaskan dinamika yang rumit seputar pengalaman mahasiswa pada program matrikulasi.

Kata kunci: kegagalan akademik, matrikulasi Matematika, Pendidikan Matematika, persepsi siswa, studi kasus-naratif.

INTRODUCTION

Mathematics remediations (MR), commonly known as matrikulasi in Indonesia, have entrenched themselves as a cornerstone of education in numerous academic institutions, particularly within science, technology, engineering and mathematics (STEM), and economics-related departments (Büchele et al., 2022). These programs are meticulously designed to equip

students with essential knowledge and skills, with a specific emphasis on mathematics. The demand for these courses has been further underscored by the emergence of Generation Z undergraduates, who often grapple with a deficiency in mathematical proficiency (Latterell, 2024). This challenge has been exacerbated by the far-reaching impact of the COVID-19 pandemic, which catalyzed a seismic shift in the educational landscape. The onset of the pandemic ushered in a transformation, pushing both students and educators into uncharted territory with the adoption of online. The consequence was a noticeable surge in what is termed “learning loss,” most acutely experienced by the student. Within this academic landscape, one segment grappling with these challenges comprises pre-service mathematics teachers (PMT). Many of them face significant hurdles in mastering mathematical concepts. For them, a failed exam is not just an academic setback; it is a profoundly personal experience that can significantly shape their personal identity and professional development (Lutovac, 2019, 2020).

Mathematics is often seen as a discipline where the contrast between success and failure is as clear as it gets (Trninic et al., 2018). Failure in the exam and having to take repeat exams are the most common experiences labeled as a failure for pre-service mathematics teachers (Lutovac & Flores, 2021). The interpretation of failure is often personal and subjective, and it can become deeply ingrained in a teacher's identity and approach to teaching (Lutovac & Kaasila, 2021). However, while some literature has explored the experiences of PMT when facing failure (see Jakšić & Malinić, 2018; Lutovac, 2020; Lutovac & Assunção Flores, 2021; Lutovac & Kaasila, 2018, 2021, 2021; Lutovac & Kaasila, 2021), there is a conspicuous gap in research when it comes to understanding how students who repeatedly struggle in MRs perceive their experiences. This gap in the current literature is substantial. While there is extensive research on the experiences of PMTs facing failure, there is a notable absence of studies exploring the perspectives of students who continuously grapple with MRs. This gap is particularly pertinent within the context of the Mathematics Education department at the Teacher Training and Education Faculty of one of the public universities in Indonesia. Our research delves into how these students perceive MRs and their repeated failures, aiming to offer fresh insights that could inform better support mechanisms and course design.

As far as our exploration, studies regarding MR are conducted using quantitative research using surveys or experimentations, and they can be found in several works of Buchele et al. (see Büchele et al., 2022; Büchele, 2020b, 2020a; Büchele et al., 2021; Büchele & Feudel, 2023). Although Büchele et al. (2022) work intensively in MR and cover many constructs such as anxiety, self-efficacy, self-concept, interest or motivation, learning strategies, and student performance, the setting is centered in a German university context. In the Indonesian context, regarding the importance, there is still too little about MR in higher education, and all of the existing research is conducted using a quantitative approach (see Armianti et al., 2016; Kawuwung & Palit, 2016; Noviantari, 2022; Susiaty, 2016). We also need another approach to comprehend the issues related to the MR program, such as students' perception toward the program or how the students experience the program, so the program can be developed more effectively and efficiently. Moreover, Boatman and Long (2018) present research findings suggesting that remediation can

have both negative and positive effects on students, depending on their academic preparedness levels. Meanwhile, Lutovac (2020) acknowledges and addresses experiences and personal understandings of failure, which is crucial in teacher education pedagogies in an endeavor to support PMT in the development of their professional identity. Reflecting on failure from various perspectives is a key to understanding how it impacts both students and teachers. This reflection can also influence pedagogical choices, including assessment methods. We aim to understand how students in a cycle of failure view MRs, focusing on their engagement and performance (Lutovac, 2019, 2020).

Concerning the issue, we propose a central question to this research, “How do repeatedly failing students perceive MRs and their failures?” In light of this research question, the study aims to describe the perception of students who repeatedly fail in MR programs and their experiences of failures. This research is more about the students' perception of MR than MR per se. Exploring how the students view mathematics content courses is also necessary to understand the perceptions. Consequently, failed students' perception of mathematics and its learning also needs to be explored. Due to the objectives of the research, we choose qualitative research and narrative case study as strategies to explore repeatedly failed students' perception related to mathematics and its learning, perception related to the followed MR program, their attitudes toward failures, factors contributing to their failures while following the MR program, and their expectation for developing MR program.

METHOD

In this research, we set out to delve deeply into the experiences and perceptions of prospective mathematics teacher students who have encountered repeated failures in MRs. The objective of this study was to gain a comprehensive understanding of how these students perceive both the courses and their failures. Given the exploratory nature of our study, with a specific focus, a qualitative research approach that utilizes a case study strategy was the approach method (Creswell & Creswell, 2017). Recognizing that this research revolves around the personal experiences of our participants, primarily drawing from their memories and emotions, we also integrated a narrative approach (Uitto et al., 2018). Therefore, the methodology employed closely aligns with a narrative case study approach, in line with Merriam and Tisdell (2016).

Table 1. Demographic Profile of Participants

Participant	Smt*	Background	Year	F**	Age (Year)	GPA***
PMT#01	7	Senior High School	2020	4	21	3.15
PMT#02	7	Vocational School	2020	3	21	2.81
PMT#03	5	Vocational School	2021	3	18	3.10
PMT#04	5	Senior High School	2021	3	22	3.15
PMT#05	3	Senior High School	2022	2	19	3.31
PMT#06	3	Vocational School	2022	2	19	3.19
PMT#07	3	Senior High School	2022	2	20	3.40

Note: *) Smt = The last semester when students followed the remediation program; **) F = The frequency of participants following the program; ***) GPA = current grade point average.

Participants in the current study were seven repeatedly failed students in MRs from the institution's Mathematics Education department (in the introduction). This diverse group comprised two students from 2020, two from 2021, and three from 2022. Different year participants were involved to delve rich data; thus, understanding how repeatedly failed students perceive MR and their failures were more wholly compared to if the participants were simply from the same year—moreover, students who experience failures repeatedly in different years. The participants were recruited by distributing online forms. From 21 respondents who repeatedly failed students fulfilled the questionnaire, seven students agreed to be participants in this research.

The data collection process was multifaceted, comprising two primary methods: questionnaire and interview. Questionnaire/Google Form contained open questions to collect students' narratives, reflective writing about preparation in mathematics content courses, their experience during following MR, their suggestions related to the development of MR, good practice during the program, factors that caused them to fail in MR test, and their agreement as participants in this present research (see Appendix 1). Interview 1 (Int_1) was conducted with participants to explore the collected narrative from the questionnaire by developing questions in the questionnaire (Appendix 2). Interview 2 (Int_2), a member-checking stage where the impermanent findings or conclusions were verified, was conducted after data from Int_1 was analyzed using thematic analysis. Int_1 and Int_2 were semi-structured, and these interviews were meticulously recorded and transcribed verbatim.

Data analysis followed thematic analysis, a structured sequence of steps outlined by Creswell and Creswell (2017) and (Nowell et al., 2017). We began by condensing the data collected from questionnaires and interviews to make it more manageable. Then, we conducted thorough and repeated readings of this data to gain a comprehensive understanding. Coding was the next step, where labels or codes to data segments aligned with the research questions were assigned systematically. We went on to identify and describe themes within the coded data, grouping similar codes into thematic categories. The interpretation phase allowed us to extract meaningful insights from the data. Throughout the analysis, we utilized NVivo® 12 for data organization.

Ensuring the validity of our findings was a critical aspect of our research analysis. We scrutinized data accuracy and the consistency of codes and themes generated. Triangulation by cross-referencing data from questionnaires and interviews was employed to guarantee the research validity. Moreover, we conducted member checking, verifying the alignment of our analysis and interpretations with the participants' experiences and perceptions. In this way, our research methodology was a systematic and rigorous process designed to gain a deep understanding of the perceptions and experiences of prospective mathematics teacher students facing repeated failures in MRs.

RESULT AND DISCUSSION

As said in the method section, thematic analysis was implemented to analyze collected data. Consequently, the findings showed in themes. There were five themes as findings: perceptions of

mathematics and its learning; perceptions of the mathematics remediation program; attitudes toward failure; factors contributing to participant failures in the mathematics remediation program; and expectations for the development of the mathematics remediation program.

Table 2. Repeatedly Failed Students Perceived Mathematics Remediation and Their Failures

Main Theme	Focused Codes	Example Supporting Quotation
Perceptions of mathematics and its learning	Seen as different and complex at the university level; occasionally enjoyable; evoking feelings of fear and anxiety; feeling unprepared for university-level math classes	"*Learning mathematics is both difficult and enjoyable, Sir. There are parts that are difficult and parts that are enjoyable* [...] *when I start to understand, Sir, I feel happy. When we can solve it, I'm happy.*" [PMT#3, Int_1]
Perceptions of the mathematics remediation program	Recognizing the importance of mathematics remediation; acknowledging assistance from the program in university studies; not significantly helpful for university studies; considering mathematics remediation to be less important	"*This program is somewhat helpful for learning subjects focused on mathematics, but it's not that helpful; the impact is not too significant*." [PMT#7, Int_2]
Attitudes toward failures	Experiencing disappointment; experiencing sadness; anticipating failure beforehand; feeling regretful; feeling shocked	"*Yes, when I knew my remediation score was low, I felt sad and thought, 'Can I retake it soon, pass and qualify for the proposal seminar?*'" [PMT#4, Int_2]
Factors contributing to participant failures in the mathematics remediation program	Lack of focus during program participation; insufficient dedication to the program; poor internet connection; carelessness while taking tests; lack of motivation to engage in the program; test questions beyond participants' scope; discrepancy between expected and actual learning experiences; program conducted during drowsy hours	"*At the beginning of my participation in this remediation program, I already felt less enjoyable because I was still adapting to my friends. I find it very difficult to adapt to others, and on top of that, I felt somewhat pressured during the remediation activities. So, I didn't feel any hope when the results came out.*" [PMT#5, Int_2]
Expectations for the development of the mathematics remediation program	Incorporating group learning activities; developing assignments and test questions; providing instructional videos implementing face-to-face learning; adjusting program schedules; providing discussion forums on the learning management system; enhancing lecturers communication skills	"*Frankly, in my opinion, learning mathematics on Zoom is very ineffective. The interaction through online meetings is not optimal* [...] *So, I believe that face-to-face is better.*"[PMT#6, Int_1]

Perceptions of mathematics and its learning. The research finding reveals that participants perceived mathematics as different and complex at the university level, posing academic challenges. Although some participants occasionally enjoyed mathematical learning, a more familiar experience was the feeling of fear and anxiety, often attributed to the subject's complexity. All participants expressed a sense of unpreparedness for university-level math classes, highlighting a gap in their prior education. For example, Participant PMT#7, in her reflective writing (RW),

stated, "*I feel unprepared to take mathematics content courses because my basic knowledge and skills are still very lacking* [...]." [PMT#7, RW]

Perceptions of the mathematics remediation program. Participants generally acknowledged the importance of the MR program as a transitional step toward university studies. Some participants appreciated the program's support and assistance in preparing them for university-level studies. However, some participants did not find the program helpful, making them consider MR less critical in their academic journey. Participant PMT#1 said in the first interview, "*In my opinion, the remediation is not that important anymore because I will soon be working on my thesis, but this remediation is a requirement for the proposal.*" [PMT#1, Int_1] She explained that she could still follow mathematics content courses although she had not passed the MR posttest. She stated she was going to work on her thesis, but she could not because passing the remediation program was one of the requirements for the thesis proposal presentation.

Attitudes toward failure. Attitudes toward failure were characterized by participants commonly experiencing negative emotions such as disappointment and sadness when encountering academic setbacks, including failures in the MR program. Some participants even foresaw failure in advance, leading to feelings of regret and shock when it occurred. For example, Participant PMT#5 expressed, "*Sad* (because of not passing the remediation program). *I feel regretful because I lacked enthusiasm for learning. I feel like a failure. I already suspected I would fail because when working on it* (=posttest), *I was unsure whether it was right or wrong, and throughout the program, I did not participate well in Zoom learning.*" [PMT#5, Int_2]

Factors contributing to participant failures in the mathematics remediation program. Several factors contributed to participant failures in the mathematics remediation program. These factors included a lack of focus during program participation, insufficient dedication, and a lack of motivation to engage effectively. Technical issues, such as a poor internet connection, also hindered participants' ability to perform well. Anxiety and carelessness during test-taking and encountering questions beyond their scope of understanding were additional factors leading to failure. The misalignment between participants' expectations and the actual learning experience also played a role. Furthermore, the program scheduling during drowsy hours negatively impacted participant performance. For example, Participant PMT#6, in her account, wrote:

> The reasons I did not pass in mathematics remediation are that I did not prepare myself to practice previous problems, so, during the posttest, there were several questions that I could not solve. Another reason for not passing is that I lacked focus, was less meticulous, and did not develop myself to face similar problems. Lack of focus prevented me from understanding the material well, even though focus is the main thing that must be possessed to understand well. Precision is also an essential factor in solving mathematical problems. My lack of precision and anxiety led me to wrong answers. Therefore, I am determined to be more careful in completing tasks and practicing in mathematics. Self-development in practicing problems is also something that needs to be improved. [...] Another challenge I faced was the delivery of the material. Sometimes, explaining mathematical material feels too fast and confusing, so I do not understand the material. [PMT#6, RW]

Expectations for the development of the mathematics remediation program. Participants expressed specific expectations for the development of the mathematics remediation program.

They desired to incorporate group learning activities to foster collaboration and shared learning experiences. There was a strong call for developing relevant assignments and test questions that aligned with university-level expectations. Providing instructional videos was seen as essential to make complex concepts more accessible. Implementing face-to-face learning opportunities was also mentioned, especially for specific subjects and interactions. Adjusting program schedules to accommodate participants' peak learning times was a common request, as it was believed to improve engagement and performance. Additionally, there was a desire for the program to offer discussion forums on the learning management system to facilitate peer interaction and knowledge sharing. Enhancing lecturers' communication skills was also considered crucial to creating a more supportive and instructive learning environment. For example, in her reflective writing, Participant PMT#4 stated:

> I want to improve my skills by studying more diligently to pass mathematics remediation and qualify for the seminar for (the proposal presentation) later. Here, I also hope that the lecturer forms groups when giving assignments so that group members who are capable and less capable can help when they cannot. Like me, I am less proficient or less capable. I hope to have groupmates who can explain the material again in a way that aligns with their understanding [...] When lecturers explain the material, it should not be too fast, and if possible, use media tools so that students can understand the topic. When lecturers assign tasks in the remediation program, do not make them too difficult so that we can answer them. [PMT#4, RW]

The findings from this study provide valuable insights into the perceptions, experiences, and challenges of participants, particularly in the context of mathematics education at the university level and their engagement with MR. These findings raise important considerations for educators and institutions looking to improve their students' academic journey.

The perception of mathematics as complex and challenging at the university level is a common thread among participants. This perception can significantly impact students' motivation and confidence in the subject (Schoenfeld, 2022). Addressing this perception by implementing more engaging and accessible teaching methods may be essential to improving the overall experience of learning mathematics. It is worth noting that while some participants occasionally found enjoyment in mathematics, many faced feelings of fear and anxiety (Boaler, 2022). Identifying strategies to make mathematical concepts more approachable and less intimidating can be a crucial focus for educators. Frelin (2015) finds that the educators-student relationship creates an emotionally safe teaching-learning environment. Additionally, addressing the feeling of unpreparedness highlights the importance of ensuring students have a strong foundation in mathematics before entering university.

Recognizing the importance of MR in bridging the gap between low performance in mathematics and university-level mathematics is a positive aspect. It is encouraging that some participants acknowledged the course's role in preparing them for university studies, mainly through academic support. Büchele and Feudel (2023) address the decline in mathematical skills among students entering university and emphasize the need to study how students' mathematical process competencies have changed over the last decade. This decline in mathematical skills has implications for higher education programs, and remediation might be a mighty endeavor. However, the finding that a portion of participants did not find the course significantly helpful suggests that there may be room for

improvement in the course's content and delivery. This finding shows that the impact of remediation is still debated (Büchele, 2020; Büchele & Feudel, 2023). Boatman and Long (2018) highlight the importance of tailoring remediation programs to the specific needs of students, suggesting that a one-size-fits-all approach may not be practical.

A more comprehensive evaluation of MR components and alignment with university expectations is needed to enhance the effectiveness of the MR. Identifying specific areas where the course can better assist students in their development to university-level studies is vital. The study reveals that negative emotions, including disappointment, sadness, and regret, mark participants' attitudes toward failure. Anticipating failure beforehand can further exacerbate these emotional responses. These findings highlight students' need to develop resilience and a growth mindset (Boaler et al., 2022; Lutovac, 2019; Lutovac & Flores, 2021). Promoting that mathematical abilities can be improved through learning and practice and that PMT's intelligence is malleable rather than fixed is highly recommended (Xu et al., 2022). Educators can play a crucial role in fostering a supportive environment that encourages learning from setbacks and promotes a positive approach to challenges. Teachers should encourage pre-service teachers to reflect on their strategies for achieving desired outcomes and coping with failures (Lutovac, 2020).

Understanding the factors contributing to participant failures in MR is crucial for program improvement. The study identifies issues related to focus, dedication, motivation, technical difficulties, and test-taking skills, among others. Addressing these factors may involve providing additional support and resources to help participants overcome challenges, such as technical assistance and study skills development. Participants' expectations for the development of the MR suggest several areas for improvement. Incorporating more interactive and engaging learning activities, aligning assignments and assessments with university-level expectations (Nushi et al., 2022; Simamora et al., 2022), and providing instructional resources like videos (Schoenfeld, 2017) are essential steps in enhancing the course's effectiveness. Moreover, the desire for face-to-face learning opportunities, flexible scheduling, and improved lecturer-student communication (Di Battista et al., 2020) indicates the need to create a more personalized and adaptive learning environment. These expectations can guide future enhancements of the course to meet its participants' diverse needs better.

CONCLUSION

The study underscores students' challenges in their journey through university-level mathematics education and their interaction with MR. Participants consistently perceive mathematics as complex and daunting, leading to fear and anxiety. Due to the negative emotion, adopting innovative teaching techniques and ensuring a stronger foundation in fundamental mathematical concepts in earlier educational stages is imperative. While MR is recognized for bridging the gap between pre-university and university-level studies, its effectiveness varies among students. A continuous evaluation process and alignment with university expectations are crucial to enhance its impact. The emotional response to failure, marked by disappointment and sadness, calls for establishing a supportive learning environment. Encouraging resilience and a growth mindset can be instrumental in helping students navigate challenges and setbacks. Factors contributing to students' struggles, such as lack of focus,

technical difficulties, and motivation, require targeted support and resources. These factors may include tailored study skills programs and technical assistance. Expectations for the course development include incorporating interactive learning methods, aligning assessments with university-level expectations, providing instructional resources, and creating personalized learning experiences.

Implement innovative teaching methods in mathematics to make the subject more engaging and approachable. Continuously evaluate and refine the MR to align with university expectations and develop critical skills. Foster a supportive learning environment that encourages resilience and a positive response to setbacks. Provide additional resources and support to address specific challenges faced by students. Prioritize personalization in the learning experience, including options for face-to-face learning, flexibility, and improved communication with instructors.

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APPENDIX

Appendix 1. Open Questions in The Questionnaire

1. Tell your readiness regarding knowledge and basic skills or prerequisite competencies when participating in mathematics content courses, such as Calculus, Number Theory, Trigonometry, etc.
2. Tell us about your experience participating in the mathematics remediation program conducted in the mathematics education department.
3. Tell the alignment of your expectations with the implemented mathematics remediation program you have attended.
4. What positive aspects have you experienced or gained during the mathematics remediation program? Please tell.
5. In your opinion, what factors prevented you from completing the mathematics remediation program? Please elaborate on any reasons that may have hindered your performance in the mathematics remediation assessments.
6. Are you willing to participate in an interview?
7. If you answer “Yes,” please provide your active mobile phone (WhatsApp) number.

Appendix 2. Interview 1

Introduction

The researcher initiated the interview warmly. The researcher communicated the purpose of the interview, emphasizing that participants were encouraged to share their thoughts and not to feel afraid. Responses from participants would not be judged as right or wrong. Subsequently, the researcher provided opening questions:

1. In general, what do you feel or think when studying Mathematics, both during lectures with professors and outside of lectures?
2. Please tell us about positive or good experiences you have had while studying Mathematics from elementary school until now.
3. Please share negative or less favorable experiences you have had while studying Mathematics from elementary school until now.
4. Share your experience in choosing the Mathematics Education major at this university!
5. Are you confident about pursuing a career as a Mathematics teacher in the future? Please tell us.

Core

6. In your opinion, has the mathematics remediation program you attended been beneficial in improving your mathematical abilities? Please explain.
7. Describe the connection between the topics studied in the mathematics remediation program and your mathematics content courses.
8. You have participated in the remediation program two/three/four times. Please share your experiences during each of these remediation programs.
9. Share how the remediation program has impacted you, including your attitude, mathematical abilities, or mathematical skills.
10. Describe your feelings or thoughts after failing the post-assessment of the remediation program two/three/four times.
11. Describe the alignment of the posttest with your learning experiences during the remediation program.
12. If you approach each mathematics remediation activity more earnestly, can you pass the posttest?
13. Please share what factors led to your failure in each remediation program. Tell us.
14. Explain which aspects of the remediation program need improvement.
15. What expectations of yours have been fulfilled in the remediation program you attended? Please share!
16. What expectations of yours have yet to be realized in the remediation program you attended? Please share!
17. Discuss the instructors' personality, interaction with students, mastery of the material, and teaching methods. Does it align with your expectations during the remediation program? Please elaborate!
18. Does the online format of the remediation program have a tangible impact on improving your mathematical abilities? Please share!
19. Are you confident about passing the next remediation program? Please tell us!

20. What suggestions do you have for developing the mathematics remediation program in future opportunities?

Closing

21. We have reached the end of this interview. Is there anything else you want to add or clarify about your previous responses? Please share!
22. If you have any questions related to this research, feel free to ask.

Appendix 3. Interview 2 (Member-Checking)

Perceptions of Mathematics and Its Learning

1. Based on our findings, there are various perceptions among participants regarding mathematics and its learning. Among them was the notion that “mathematics is difficult.” What is your opinion?
2. Some claimed that mathematics in school could be manageable, but university-level mathematics was different. It was much more challenging or became more difficult than mathematics in middle or high school. How do you view this?
3. Some said that mathematics was just like any other subject. What is your opinion?
4. Others described mathematics as akin to playing a game. What are your thoughts on this comment?
5. Let us continue with learning mathematics. Some participants expressed that studying mathematics was enjoyable. What is your experience?
6. How would you describe your motivation for learning mathematics content courses?
7. Some participants mentioned experiencing fear or anxiety during mathematics learning. What is your perspective?
8. Overall, how did you assess your ability to understand, solve, or master the materials in mathematics?
9. Understanding the personality of each student is crucial. However, some instructors still might not understand the personalities of students. What is your opinion on this?
10. You may have other views on mathematics and its learning. Please share.

Perceptions of the Remediation Program

11. We found that participants perceived the tests in this remediation program as difficult, with some saying they were excessively so. How do you respond to this?
12. Some participants said this program had helped them in their regular courses regardless of passing or failing. However, others disagree. What is your personal experience?
13. During the remediation program, some instructors were perceived as less effective in their explanations. How was your experience?
14. Some participants saw using videos during learning as very helpful. What is your opinion?
15. You may find other important aspects memorable and beneficial to share about your experience in the remediation program. Please convey them.

Attitude Towards Failure

16. Some people feel disappointed or shocked when they find out they failed the remediation program. However, others are more satisfied and view it as a learning experience. How was it for you? Please share.

Factors Contributing to Failure

17. We found that factors contributing to student failure in the remediation program include lack of preparation, insufficient understanding of the material, lack of attention to detail, lack of focus during learning or tests, feeling pressed for time, difficulty reading some questions, and questions beyond the participants' reach. What is your response to these findings based on your experiences during the activities?
18. Could a lack of motivation be a factor in your failure? Please explain.
19. Additionally, some attributed their failure to inadequate internet connections. What is your perspective?
20. How did you feel about instructors who did not meet expectations, causing difficulty understanding the material? Have you experienced this? Please share.

21. You may have other opinions that contributed to your failure in the remediation program. Please elaborate.

Participant Expectations for the Development of the Remediation Program

Various expectations have been identified for the development of this remediation program to prepare better participants, such as conducting face-to-face sessions, adjusting the speed of instructors' explanations to match students' abilities, increasing the number of questions, providing opportunities for group learning, offering answer keys for practice questions, providing recorded videos, and paying more attention to schedule planning as some meetings take place midweek.

22. Let us start with face-to-face learning. How do you feel about the remediation being conducted face-to-face?
23. What if it is a blended learning approach?
24. How about increasing the number of questions?
25. What is your opinion on group discussion opportunities?
26. How about providing answer keys for practice questions?
27. How about providing recorded videos?
28. How about schedule planning?
29. There may be other expectations for the program's development. Please share if you have more.
30. Finally, we need information about your GPA and age. Please provide this information.