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# Lived Experience of Students in a Remedial Mathematics Class

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## Abstract

Students who do not pass the entrance mathematics examination in a tertiary school are required to take a remedial mathematics class. In remedial education, the goal is to get the student to the mainstream. The remedial courses are designed to give students the skills needed for tertiary-level courses. This study pursues the lived experience of students in a remedial mathematics class. There are 9 males and 5 females who are participants in this study. Their ages range from 19 to 28. These participants were selected using purposive sampling. The needed information was generated using the student's journal for the remedial mathematics class. Journal writing allows one to reflect, to further investigate deeper into the heart of the words, beliefs, and behaviors. Writing one's thoughts allows us to step into one's mind and reach further into the interpretation of the behavior and beliefs. The finding showed the social and emotional learning of students in a remedial mathematics class. The finding also revealed the coping and self-regulating strategies the students used in the remedial mathematics class.

**Keywords:** Underprepared Student, Mathematics Remedial Class, Journal Writing, Lived Experience, Learning Emotions

## INTRODUCTION

Theories of emotions have developed within a historical context. Champions of the nature of emotions are Sigmund Freud, Charles Darwin, William James. In general, the notion of emotion is a relatively new subject within the area of social sciences. Since the year 1980, the sociology of emotions has emerged and become recognized as social theory. There are about six theories of emotion, first, Evolutionary Theory; second, James-Lange Theory; third, Cannon-Bard Theory; fourth, Schachter-Singer Theory; fifth, Cognitive Appraisal Theory; and sixth Facial-Feedback Theory.

First, Charles Darwin was the first synthesizer of the concept of nature of emotion or the Evolutionary Theory of Emotion. Darwin believed that the idea of evolution applied not only to physical structures but also to the "mental life" of animals (Plutchik, R., & Kellerman, H, 1980). According to this theory, emotions exist because they serve an adaptive role. Emotions "motivate people to respond quickly to environmental stimuli, to help them improve their chances of survival" (Despo Pishiri · 2021, p. 232).

Second, James-Lange Theory of Emotion, in which James Lange suggests that such emotions occur as a result of psychological reactions to events. In other terms, external stimuli trigger psychological reactions. The emotions are too dependent on the interpretation of physical reactions (Rose McDermott, 2004, p. 164).

Third, Cannon-Bard's Theory of Emotion, the proponent of this theory is Cannon in 1920, where he said an emotional reaction takes place too quickly to be simply part of the physical state. To be precise, emotions result when the thalamus sends a message to the brain in response to a stimulus, which will result in an emotional reaction (Carolyn M. Aldwin, 2007). Fourth, Schachter-Singer's Theory of Emotion at times is called the two-factor theory of emotion. Schachter-Singer draws from the previous two theories in which psychological arousal takes place first, and later the person should identify the causes for such arousal. In this way, Schachter-Singer proposes that people conclude that emotions take place based on psychological reactions. (J. Kim Penberthy & J. Morgan Penberthy, 2020).

Fifth, Cognitive Appraisal Theory of Emotion and Richard Lazarus spread headed this kind of emotion. Lazarus suggested that thinking takes place prior to the person experiencing an emotional reaction. Any sequence of events must involve some kind of stimuli, followed by thoughts; as a result, it will finally lead to psychological reactions (J. E. Roeckelein, 2006). Sixth, the Facial-Feedback Theory of Emotion proposes that facial reactions are part and parcel of experiencing emotional responses. Proponents of this theory suggest that emotions are, in one way or another, related to facial actions. According to Knowledge Flow, "emotions are directly tied to changes in facial muscles" (Knowledge Flow, 2020, p. 232).

A student in a remedial class in mathematics is identified through undergoing an entrance examination in mathematics. Freshmen students in universities are given entrance examinations in mathematics by the Asia-Pacific International University (AIU), Muak Lek, Saraburi, Thailand. Universities set these entrance examinations for the purpose of identifying an underprepared student. First-year students who do not pass the mathematics entrance examination are required to take a remedial class in mathematics. A student in the remedial mathematics class is underprepared and does not meet the criteria that would allow them to register for a regular university-level mathematics course.

Students who take remedial courses suffer from stigma and disengagement. They are labeled as underprepared for courses at the tertiary level. Unfortunately, some teachers who do not teach developmental classes or remedial classes may label these students as underprepared or non-college ready. Some teachers say that remedial students lack skills and express frustration when these students are allowed to take their classes (Sachar et al., 2019).

Students in remedial courses are at risk of dropping or failing classes early on in their college trajectory. A pattern that jeopardizes not only their learning but also their grade point average and their degree completion. They should receive enhanced advising, mentoring, and academic

support (Deil-Amen, 2011). Students coming to college unprepared for the tertiary level curriculum are a problem faced by nearly all post-secondary institutions (Shaeffer et al., 2019).

Students who are doing remedial courses based on placement test scores exist in an ambiguous status. They pay for college courses, and some are allocated financial aid privilege and are called college students, yet their institutionally designated status as remedial students restrict their access to other college-level work (Deil-Amen, 2011).

Sultan (2019) laid out the characteristics of remedial students in learning numeracy as:

-Have attendance problem

-Learning problems. Students do not give answers when asked

-Family problems

-Weak self-management

-Health problems

-Cannot focus in class during the learning process

-Do not like to attend school

Students in higher education undergo various negative psycho-emotional states such as depressed mood, sadness, anxiety, concern, decreased intellectual productivity, decreased working ability, states of stress, depression, fear, rigidity, and frustration. Such are pre-determined by the new conditions of a student's life. Negative psycho-emotional states affect young people and lead to deterioration of their wellness and health conditions, as well as to the rise of psychosomatic and psychoneurological diseases. Studies show that not all gradually overcome and control their negative emotions and experiences (Vasylenko et al., 2020).

Remedial education was offered to assist students enrolling in post-secondary level who are not adequately prepared to succeed in tertiary-level courses (Sanabria, Penner & Domina, 2020). It is noteworthy that many students benefit from remedial education.

The goal of remedial education is to get students to return to mainstream classes (Ljusberg, 2011). Remedial education courses were designed to give students the skills needed for tertiary-level courses (Quarles & Davis, 2017). The remediation is to ensure that students are able to succeed in tertiary-level classes.

Remedial classes can be a burden. As long as a student have noncredit-bearing remedial courses in reading, writing, or math, the student cannot register for courses in their majors or advance toward a degree (Hellman, 2013).

Rai and Penjor (2020) studied the impact of remedial classes on students' learning achievement. The learning satisfaction of students, as reflected from their journal, shows that the

remedial class helped them to enhance their knowledge by a better understanding of the course content. The remedial class gave access to learn more content, engage in-class activities and give students opportunities to learn from their friends. In the study of Quarles and Davis (2017), it was revealed that remedial math (Intermediate Algebra) was not related to earning a degree in college.

Remedial education today is far from ideal. Only 28% of community college students who started in a remedial course manage to earn a degree within eight years, according to Community College Research Center (CCRC) at Columbia University, New York, United States. However, it is harmful to create changes in remedial education without a proper understanding of what the students are going through in their experience in a Mathematics remedial class (Mendoza, 2017). There is not enough research data in the area of students' mathematics learning emotions to use in creating changes in remedial mathematics education. It is the thrust of this research to extract themes from the lived experience of students in a remedial mathematics class. In the same light, this research intends to suggest potentially helpful changes in remedial mathematics classes.

Specifically, this study aimed to answer (a) what are the learning emotions and social, emotional learning of students in a remedial mathematics class? (b) what are the coping mechanisms that students in a remedial mathematics class have? (c) what are the issues that remedial students encounter?

## METHODOLOGY

This phenomenological study investigated the lived experiences of fourteen students who were registered for a remedial course in mathematics at AIU. There were five females and nine males who participated in this study. Their ages range from 19 to 28 years old. These participants were selected using purposive sampling. All participants gave consent to the use of their journal entries written for their remedial mathematics class for research study purposes.

The needed information was generated using the students' journals for the remedial mathematics class they were taking.

In a certain study involving pharmaceutical students, it was revealed that students' reflective journal was writing shared experiences that are meaningful (Hughes et al., 2019). Common themes identified from the students' reflective journal writing included: curricular experiences (12.7%), co-curricular experiences (18.4%), and experiential training (68.6%). The entries showed the student's growth in the curricular, co-curricular, and affective domains. Student reflective writing entries illustrated how impactful the aspects of the curriculum are. Shown below is an eight-step reflection model that was used to capture the mentioned results.

1. Prioritize and list 3 significant learning experiences.
2. Identify the one most important learning experience.
3. Explore the experience objectively.

4. Recall the specifics of the events subjectively.

5. Evaluate the experience and discuss what did or did not go well.

6. Describe how the experience confirms or challenges existing knowledge.

7. Assemble all of the new ideas into newfound knowledge or insight.

8. Develop actionable plans for positive change.

Components of self-reflection have been used in continuous professional development for professionals in health care fields, business and, education. Self-reflection stimulates learning and provides new insights to enhance practice. Students exposed to self-reflection methods learn to refine their written communication skills, learn to think and use metacognition, and link learned information to practical applications.

There are several benefits of reflective journal writing. Student teachers are compelled to reflect on their experiences when they plan and produce artifacts for their portfolios (van Wyk, 2017). They can also rethink classroom practices and make informed decisions to improve their teaching and learning.

Micheal van Wyk's (2017) study showed some areas that Economics education student teachers viewed as the use of reflective journal writing.

1. Gratitude for constructive feedback by the mentor teacher to enhance the teaching of Economics.

2. Improving and advancing critical thinking abilities.

3. Develop a teaching philosophy.

4. Advance learning.

5. Become a reflective teacher.

6. Mentor and coaching support.

Journal writing allows one to reflect, to investigate further and deeper into the heart of the words, beliefs, and behaviors we describe in our journal. Writing down one's thoughts allows us to step into one's inner mind and reach further into interpretations of the behaviors and beliefs. Janesick (1998) lists seven techniques for journal writing.

1. Lists. This technique is writing lists of activities like things to do, things that upset a person, or things that are problematic.

2. Portraits. The writer describes a person or any number of persons.

3. Maps of consciousness. This is drawing a map of what one is thinking. Stick figures, lines, or shapeless blobs are used.

4. Guided imagery. Daydreaming images allow an individual to start writing about any given topic.

5. Altered point of view. The writer takes a different perspective on any given activity. A third person's voice is used.

6. Unsent letters. This is about writing a letter to someone without any intention of showing it to the person.

7. Dialogues. This can be a written exchange between you and your body.

Writing and reflecting using visual journals could be done in various subjects. This can be done at the end of a lesson or week to reflect on a student's learning experience (Darke, 2019). Two known techniques in visual journals are Doodle and Collage. Doodle is simply drawing lines and shapes without a preconceived final image. Collage is a process of taking magazine pictures, paper, fabric, photographs and assembling them into a new image. A visual journal is a great way for students to reflect on the current lesson or reflect on how they feel about the school week.

The data from the journal entries of the students in a remedial mathematics class was coded. Then patterns were identified, after which meaning from the data was drawn.

## RESULTS AND DISCUSSION

Four themes resulted from the study of lived experiences of students in a remedial mathematics class. The themes will be presented in this order: learning emotions of students in a remedial mathematics class, social-emotional learning, coping mechanisms, and issues that remedial students in mathematics encounter.

### Learning emotions of students in a remedial mathematics class

Emotions are central to how students experience learning in mathematics (Parr et al., 2019). According to Kort's emotional learning spiral, the learners go through a pattern of emotions that are necessary when learning something new (Drew, 2019). In the words of Robert Sylwester, an expert on the brain and learning, stated that emotional learning is "very important to the educative process because it drives attention, which drives learning and memory" (Robert Sylwester, 1995, p. 72). Sylwester (1995) outlines six major areas in which emotional and social learning ought to come together for the benefit of pupils and schools. First, accepting and controlling our emotion; second, using metacognitive activities; third, using activities that promote social interaction; fourth, using activities that provide an emotional context; fifth, avoiding intense emotional stress in school; and finally, recognizing the relationship between emotions and health (p. 117). Emotions are crucial for human well-being, decision-making, and even make us human (Larsen, 2017).

There are four stages in Kort's emotional learning spiral. These stages are investigating, diagnosing, discarding misconceptions, and fresh research. Stage one consists of positive emotions like satisfaction, curiosity, and awe. The second stage shows disappointment, puzzlement, and confusion. In the third stage, emotions of despair and frustration appear. These negative emotions are necessary for learning difficult concepts. Lastly, in the fourth stage, learners feel emotions like determination and hopefulness (Drew, 2019).

***Stage 1 Investigating***

The following statements showed the participants' experience in this stage. It expressed positive emotions of the students at the beginning of the remedial mathematics course.

Student 13: *I feel good because I understand the teacher*.

Student 5: *I felt satisfied. The result I got from the test is actually quite decent, to be honest*. *I will look forward to this class again*.

Student 7: *My experience this past few weeks is so far good; in a way, I learned a few things like math phrases which I'm currently having a hard time with*.

Student 11: *Today, I feel better about mathematics because I can picture and understand it more*.

Student 8: *What I felt about the test result is I was relieved to know that I did not fail*.

***Stage 2 Diagnosing***

Student 8 and Student 10 expressed their disappointment and confusion.

Student 8: *I'm having a bad grade on the midterm exam. I studied with my friend, and she taught me very well, but when midterm exam time came, I couldn't do it*.

Student 10: *I'm a bit sad because I already know I'm going to have an average or poor score in the math exam*.

***Stage 3 Discarding misconception***

Below are the experiences of student 12 and student 13 that show despair and frustration.

Student 12: *My experience about determinants is very bad due to poor practicing, and I have personal stress as well*.

Student 13: *I still find math hard and difficult. Today I also had a hard time, and I'm afraid I cannot understand because now I have to learn math in the English language. I have no idea what will turn out with my class*.

***Stage 4 Fresh research***

Students' emotions in this stage are hope and determination. Below are the statements extracted from the participants' journals showing their determination in learning in the remedial mathematics class as well as their hopes.

Student 7: *What I learned is not to give up because I'm bad at it; just practice and ask the teacher more often about the problems I do not understand*.

Student 8: *I am very poor in math, so for the final exam, I will try my best and practice one week before the final exam*.

Student 9: *The most important learning for students is a challenge for those things you have never seen or tried before. Do not give up*.

Student 12: *I hope I am doing well with a new friendly teacher*.

Cognitive theorists state that the early part of the emotion process somehow includes the manipulation of information thus, should be understood as a cognitive process (Larsen, 2017). Emotions involve the personal and moral evaluation of a human about their judgment about one's own desires, values, interests, and goals. Hence, these processes are part of the cognitive domain. Clearly, it can be drawn that without judgment, there can be no emotions.

**Social-Emotional Learning**

Walker and Martin (2020) enumerated the component of social-emotional learning. Social-emotional learning covers relationship skills, self-management, responsible decision-making, social awareness, and self-awareness.

In a study, it was reported that problem-solving skills contribute to explaining social learning scores. Supporting problem-solving skills increases social-emotional learning. High metacognitive awareness contributed positively to social-emotional learning (Yuksel, 2021).

Some social-emotional learning patterns were extracted from the journals of the students in the remedial mathematics class. They are presented as self-awareness, self-management, social awareness, and relationship skills.

***Self-awareness***

Some participants wrote down in their journal their emotions, values, their strengths, and challenges.

Student 8: *The test was hard because I'm a slow person in math. I really do not understand mixture and motion*.

Student 9: *Although I got a low score this time, it makes me try to do better in the next test. I confess that in the past, I have a bad attitude with this subject, but now I want to challenge my ability to study math*.

Student 7: *To study for my midterm exam and lessons in class, I used the power points and some questionable practices in the class to review. Also, few sources from the internet. It helped me to understand the problems and how to answer them step by step through the examples. However, for some of the topics, I had a really hard time digesting, especially functions*.

Student 1: *For the test, I learn from my friend and YouTube*.

Student 3: *During lectures, I tend to stay diligent with taking notes. And after classes, I always review my notes to end the day. An additional module of reviewing for the test I used was our previous assignment. I did not understand one question, so I asked some of my friends to explain it to me. Thankfully I was able to understand it*.

***Self-management***

Sultan (2019) says the concentration of remedial students is not focused on the learning process. The remedial students have weak self-management due to their low maturity levels. Burgess and Jones (2010), in their study, reported that 101 undergraduate students out of 209 had been enrolled in a college remedial reading course. It was found that these students spend more time playing video games compared to non-remedial students. Remedial students report that reading was too much hassle and do not see reading books as fun or for pleasure.

Extracts from three participants show how they manage their emotions and behaviors to achieve in the remedial class.

Student 12: *Since I have been studying Algebra, I have a problem with practicing, and I also have a weak point in studying. Firstly, peer pressure makes me fail in time management, so sometimes, I have less time to do homework. Second, roommate pressure and noise pressure in the room. This weakens my concentration, so sometimes I get mad at myself that I'm not the same as other people. I'm a person who likes to be in silence when studying*.

Student 12 further expressed that he sleeps late, often after midnight, to study. This makes students 12 drowsy during day time. Despite this, student 12 resolved to change.

Student 12: *After the midterm, I need to change my time management and technique in studying. Change from studying at my place to the library every night*.

Student 3: *In order to prepare, I studied the review paper that the teacher gave us to review. I used power points uploaded in Moodle and my notes. I believe these helped me a lot in preparing for my midterm exam*.

Student 9: *When I did not know how to solve the problems in math, I search the question on the internet. And I learned how to do it step by step and repeat to do two or three times each. Teacher, I am not smart in calculating, but I will do my best to get good scores! The important thing to do in the test is reading, and you must get the questions clearly*.

***Social awareness***

Student 8 shows the emotion of recognition of friends as support in learning mathematics in a remedial class.

Student 8: *I review lessons with my friends. For example, in the evening, we review the lessons through PowerPoint presentations and sometimes on Youtube. After the test, I review it with my friend again, and I understand more*.

***Relationship skills***

Student 14 formed a positive relationship with friends in the remedial mathematics class.

Student 14: *Early this month, before the midterm exam, I reviewed my lessons and did a bit of practice with friends*.

***Coping Mechanism***

Some participants wrote in their journals how they cope with the difficulty in learning mathematics.

Student 5: *My mother told me that I do not need to worry. All you need is to study diligently and stay vigilant*.

Student 7: *I learn that I have to be more confident in asking for help*.

Student 10: *When I saw my test score just now, I knew I was weak in math because I couldn't understand English, so I had to calculate with my mother tongue to find the answer quickly and understandably*.

This is in line with previous research concluding that positivity and optimism are important coping mechanism measures at preventing burnout and decreasing emotional exhaustion (Rose et al., 2021).

**Issues that remedial students encounter**

Starfire (1999) stated the difference between laziness and slow learning. Lazy students do not show up for make-up classes. Slow learners, however, are repeaters; they are frequently absent and sit alone in class when they do attend. Regardless of the student is lazy or slow in learning, each learner must feel respected, dignified, and successful.

My own response, while this is undoubtedly true, it is still difficult to see how to coddle the lazy ones. To champion laziness in pedagogical spheres does not mean to slow our teaching learning processes. Lazy and slow learners should be identified and given the opportunity to learn at their own pace.

***Not good in math***

Students in the remedial class expressed in their journal many times that they are not good at mathematics.

Student 8: *First of all, I would like to write about my math background. I'm not good at math*.

***Bad math learning experience***

Many of the students in the remedial class had written about their bad experiences when they were learning mathematics at the secondary level.

Student 7: *Going to high school, I studied geometry with a new teacher. My experience was bad, and he did not try to explain well, which I ended up failing*.

Student 10: *Every math exam or test, I never get good scores*.

***Repeating mathematics remedial class***

There were some participants who were repeating the remedial class.

Student 4: *I have taken Algebra twice in high school. This is my second time in this class*.

Student 2: *I have already failed this class twice, and I do not wish to fail it again.*

***Time gap***

Some participants narrated that there was a long length of time gap from their last encounter with mathematics to the present mathematics learning. This caused them to start slow in the class.

Student 14: *Actually, I graduated from grade 12 two years ago, so I did not remember much about math*.

Student 12: *It has been three years and a half since I stopped studying after I graduated from high school*.

***Rarely ask questions***

Some participants have a problem asking the teacher about lessons that they do not understand.

Student 7: *The problem with me is once I have a hard time understanding a topic, I rarely ask a question*.

If a learner has had a bad experience in school, they will be reluctant to engage with their peers or teacher (Drew, 2019). This may mean they have a negative perception or fragile learning experience when compared with their colleagues and tutors. The reluctance to participate with their peers can be traced back to how they felt at the beginning of their course. They have been reluctant to engage in any sort of learning.

## CONCLUSION AND RECOMMENDATION

A student's journal entries can uncover the lived experiences in a remedial mathematics class. You can follow the genesis of the student's emotion by extracting the learning experiences written in their journal.

A student in a remedial mathematics class goes through an emotional learning pattern. The student feels good and satisfied as they embark on a new lesson presented. Then the student experiences confusion and anxiousness when challenging mathematical concepts are explored. After this, the student questions and realize in frustration that mathematics is hard and difficult and the English language used in mathematics instruction makes matters complicated. However, the student feels determined and hopeful as they prepare for the final examination. This signifies that they understand the mathematical concepts and need practice for mastery.

The students in a remedial mathematics class have social-emotional learning. The students expressed self-awareness, self-management, social awareness, and relationship skills. Some expressed weak self-management when relating about their study time and behavior.

The coping mechanism practiced by students in a remedial mathematics class is showing positivity and optimism. This practice can easily be picked up when reading their journal entries.

There are issues students in a remedial mathematics class encounter. Identified in this study are: not good in math, bad experiences in mathematics learning, repeating a remedial class in mathematics, a time gap from the time they finished grade 12 to starting studies at university, and rarely asking questions in class.

This study could be used to inform teachers of remedial mathematics courses about the lived experiences of individual humans called students. The findings of this study could improve remedial mathematics teaching and learning. This study can lead to further research on the relationship of learning emotions to academic achievement in mathematics at the tertiary level.

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