

BSED-MATHEMATICS EDUCATION STUDENTS: COPING MECHANISM ON THE CHALLENGES DURING ONLINE CLASSES

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ABSTRACT: *In the dynamic landscape of online learning, this study dives into the experiences of 4th-year students of the program Bachelor of Secondary Education major in mathematics at the University of Science and Technology of Southern Philippines—Cagayan de Oro City. The study explores the coping mechanisms of mathematics education students with the challenges encountered during online learning. Thematic analysis was used to analyse the data gathered during the interview relative to the questions on how the students cope with the challenges faced during online classes. It was revealed that, amidst the many obstacles, students were able to carry the load by actively listening during the virtual class, developing the character of flexibility and adaptability, taking the initiative of seeking other learning options such as YouTube tutorials, and prioritising their mental well-being through stress-relieving activities and strong social support networks. It is recommended that institutions allocate budget for students' subsidies for students to subscribe to a good internet connection, parents should provide a conducive learning environment, and instructors should be sensitive enough to the psychological problems of the students by initiating collaborative activities among students.*

Keywords: coping mechanism, challenges, online learning, mathematics education

1. INTRODUCTION

The new landscape of the educational process has been adopted in the Philippines. Online learning is one of the portals used to deliver academic instructions. It has been adopted in higher education institutions even after the COVID-19 pandemic. However, a lot of challenges, such as poor internet connections, unavailability of gadgets, and a learning environment, were faced by the students, as revealed by several research studies. The study revealed that factors affecting clear academic instructions during online classes are lack of research or working area dedicated to online activities and lack of good Internet connection. It was supported by the study, which revealed that limited or poor access to the Internet, technology, and networks were the constraints of e-learning in less developed countries. In the process of giving academic instructions, a good learning environment is very much necessary for fruitful learning. Meanwhile, the ability or the mechanism to cope with various stressors positively contributes to student academic achievement. The study revealed that students face challenges during online learning and teaching, which requires them to develop coping strategies. It stated that during the pandemic some students cope with the challenges of online teaching and learning by accepting their responsibilities and seeking social and academic support. found out that students who lacked resources to participate in online teaching and learning resorted to joining groups that shared free resources and consulted with teachers to overcome the challenges. In addition, it was revealed that some students dealt with the challenges that they face in online teaching and learning by asking for help from their families and using the resources available.

On the other hand, studying stress and coping strategies among people from different backgrounds aged between 20 and 64 years revealed that sharing emotions, activities, humour, turning to faith, having hope, avoiding negative thinking, and problem-solving were among the most common coping strategies used by the respondents. Talking to people and sharing feelings, keeping busy, praying, and remaining hopeful are some of the other coping strategies shared by the respondents.

In addition, we examined the coping strategies used by 200 secondary school students in Pakistan who took mathematics classes online during the COVID-19 lockdown. The researchers developed a survey to assess different coping mechanisms (e.g., seeking social support, positive reframing, behavioural disengagement) and administered it to the students. The results showed that the most commonly used coping strategies were seeking social support from peers and positive reframing of the situation. Implications are that fostering social connections and a growth mindset may help students cope with the challenges of online mathematics learning.

Wang [11] conducted a correlational study that investigated the association between coping strategies and academic performance in 100 undergraduate students enrolled in introductory mathematics courses delivered fully online due to the pandemic. The researchers administered surveys to measure students' use of problem-focused coping, emotion-focused coping, and avoidance coping strategies, as well as collected final course grades from institutional records. The findings indicated a significant positive relationship between problem-focused coping (e.g., increasing efforts to understand mathematics concepts) and end-of-term grades, while emotion-focused coping (e.g., venting negative feelings) and avoidance coping (e.g., engaging in recreational activities instead of studying) were negatively correlated with academic performance. The implications are that encouraging adaptive coping strategies may support students' mathematics learning in online environments, the coping strategies used by 20 undergraduate students in the U.S. who reported high levels of math anxiety and were taking calculus online during the COVID-19 pandemic. Through interviews, the researchers identified themes around cognitive restructuring, emotional regulation, problem-solving approaches, and help-seeking behaviours. The findings suggested that adaptive coping, such as reframing negative thoughts and actively seeking academic support, was associated with more positive academic and emotional outcomes compared to avoidant coping strategies. The implications are that targeted interventions could help students with math anxiety develop effective coping skills for

online learning contexts. conducted a multinational study that administered surveys to 1,213 middle and high school students from Spain, Mexico, and Colombia taking required math courses online during the COVID-19 pandemic. The surveys measured the use of problem-focused, emotion-focused, and avoidance coping strategies as well as final grades. Results indicated that problem-focused coping, such as planning and active problem-solving, positively predicted academic performance across all three countries, while emotion-focused and avoidance coping were negatively associated with grades. The findings suggest coping skills training may help optimize mathematics learning in online environments internationally. In a local study, it was revealed that Filipino students used a combination of personal coping strategies by connecting with friends and family, talking and motivating themselves, and diverting attention to other things at home to stay away from the stress caused by COVID-19. In this research paper, the researchers aim to describe the coping mechanism of students in online learning challenges.

2. METHODOLOGY

The study employed a qualitative method of research. Data were gathered using an individual interview with the graduating students of the program Bachelor of Science in Education majoring in mathematics. The interviewees were randomly chosen from the said group of students. Questions raised during the interview were focused on the coping mechanisms used by students in online classes to obtain a quality learning outcome in given challenges. The data gathered were analyzed using thematic analysis.

3. RESULTS AND DISCUSSION

The result of the analysis of the data gathered about the coping mechanism of the students to address the challenges encountered during online learning in mathematics. Researchers forwarded four themes, namely: active listening, adaptability, seeking learning options, and mental health care. It was supported by the study, which revealed that students face challenges during online learning, and teaching requires them to develop coping strategies.

1. Active listening

Relative to the challenge of limited time and the absence of a teacher during the virtual class, active listening is very important. Participants revealed that while actively listening to online discussions enables them to take the important information relative to the mathematics lessons. They said that *"Always take notes so that we can revisit the lessons"*. The responses of the students implied that active listening during online discussions was initiated. Taking notes relative to the topics discussed during online classes provides students with course materials that can help them in their studies. The result of the analysis conforms to the study of [6], who stated that during the pandemic when the mode of delivering instruction was online, some students cope with the challenges of online teaching and learning by accepting their responsibilities and seeking academic support.

2.

Adaptability

About the challenge of learning environment and poor Internet Connectivity, the participants possess adaptive character and flexibility. Participants stated that *they "find a place with a strong internet connection."* The answers of the students revealed the sense of adaptability and initiative of going to a place where there is a strong internet signal. Further, about the challenge of a comfortable learning space with adequate lighting, noise-free, and suitable temperature, participants stated that they *"move to another room if it is noisy", and "go outside when dark."* The students showed adaptability and flexibility in the phase of academic pursuit. They are flexible enough to counter the challenges relative to the learning environment. It was supported by the study of Barrot [7], who found out that students who lacked resources to participate in online teaching and learning resorted to joining groups that share free resources [8], by asking for help from their families and using the resources available.

4. Seek Learning options

About the ability to grasp the lecture online, the respondents developed the initiative of looking for other options to gain additional information to clarify concerns relative to mathematics learning. The coping strategies that respondents mentioned were online tutorials and reviews of class recordings. It was mentioned that online tutorials facilitate the learning of materials before classes and enable them to better prepare for classes. The participant said, *"To watch a YouTube tutorial or a reliable website, pave a way to study in advance or have more clarification on the topics."* Based on their statements, we may say that online tutorials have a positive effect on learning and the overall improvement of the student's level of understanding of the topics. Also, a review of class recordings enabled students to study the lecture materials at their own pace. As mentioned by participants, *"It's challenging to take notes during class lectures, so what I do is review the recordings and then take notes."* Students appreciate the ability to take better-written notes using recordings. It conforms with the study revealed that coping with the challenges in online teaching and learning by using the resources available.

4. Mental Health care

About psychological challenges, it was commonly disclosed in the interviews that "I don't pressure myself when there are activities. I make sure to allocate time for myself." The responses of students emphasized awareness of possible burnout and stress that is associated with online classes. Prolonged time-facing screens, tablets, and smart devices increase stress and anxiety. Additionally, it was mentioned that a supportive social circle or peer support enhances the online learning experience by providing academic, practical, and emotional support. The participant shared her utmost gratitude to her social circle which made her college life bearable. They said, "Surround yourself with a circle of friends who can help you." The responses of the participants signified a big help from friends to stabilize the emotion brought by the online class. Further, building a strong network of peers, whether in person or online, can provide

crucial support during the challenges of college. Peer support in higher education can enhance students' information, digital, and academic literacy skills and help them transition into higher education and beyond. It was supported by those who revealed that asking for help from their families and sharing emotions and activities with friends are ways to cope with the challenges of online learning, and it contributed to minimizing stress and anxiety and aiding mental health care.

5. CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis of the data, the researchers concluded that active listening during the virtual class was the mechanism used to overcome the challenge contributed by online learning, in which there is no personal appearance of the teacher. For the challenge of a not conducive learning environment such as poor internet connectivity and lighting, the students develop the character of flexibility and adaptability. They were flexible enough to address what the circumstances demanded by moving to another place where there is a strong internet signal and proper lighting even outside the house. For the difficulty of understanding the lessons, they took the initiative of seeking other learning options such as YouTube tutorials and repeatedly viewing the recordings. Regarding stress management, they established very strong connections with peers, particularly friends of the same program and major, to address the mental health issue. The researchers recommend that academic institutions should allocate a budget for a subsidy to students to subscribe to a good internet connection so that they will be able to access some other learning materials available online and be able to download them. Parents should support the students to maintain a conducive learning environment during online classes. Additionally, instructors should be sensitive enough to the feelings and pay attention to the behavioural problems of the students to minimize stress and anxiety. She must always monitor the attendance of the students during the class and address problems as early as possible. Also, instructors must initiate collaborative activities to maintain connections among students.

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