# Mathematics Online Learning Among College Students

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**ABSTRACT**
In the midst of the corona virus disease 2019 (COVID-19) pandemic, online learning in rural areas where resources are scarcecaused students to experience excessive stress while learning mathematics. This study aimed to determine the experiences of college students when learning mathematics online, particularly their struggles and coping mechanisms. It entailed a descriptive method and a qualitative research design. The participants were Bachelor of Secondary Education students of University of Southern Mindanao Kidapawan City Campus school year 2020-2021 who were chosen through purposive sampling procedure. A one-on-one in-depth interview was employed to gather the needed information which was subjected to thematic analysis. It emerged that students experienced the following struggles in learning through online learning: poor internet connection;self-learning difficulty;financial problem; andpoor time management. Also, results revealed that the students employed the following coping strategies: looking for a good location and time;seeking help from classmates and peers;borrowing learning materials; and Browsing the Internet;self discipline;developinginterest in the lesson; diverting attention, andpracticing time management. On students' concern towards their classmates and teachers, it was found out that they are bothered with the following: setting of deadlines;scarcity of instructional materials; and limited time in entertaining queries. This study providedcoping strategies that studentwith the same experience may apply.
**Keywords:** *Qualitative,coping strategies, online learning, Mathematics, COVID-19 pandemic, Philippines*

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## I.    INTRODUCTION

Mathematics learning can be a stressful event due to the mode of instruction, demands and expectations of the society for USM-KCC students in terms of mathematics as a subject. Misra & McKean (2000) stated that this elevates stress among students especially for those who find mathematics difficult. Thus, while working with others, some students adopted tactics aimed at obtaining success in mathematics by doing work, asking help, attempting to understand the study material, and solving mathematical problems. According to Coping strategy, according to Chowdhury (2020), is a collection of abilities used by an individual to avoid burnout. Berjot and Gillet (2011) added that it is a reactive activity that an individual engages in to shield himself or herself from vexatious inputs that create concern and stress. In this study, coping is a technique or strategy utilized by students to be able to handle stressful situations related in learning mathematics in an online learning.

Meanwhile, in online learning, students are engaging within the process of learning however they cannot interact with by raising their hands to ask and answer some critical questions unlike inside the classroom. Today, students have limited access to learning because not all students have quality gadgets and good internet connection at home. In terms of understanding mathematical concepts and problems there are certain students who find it challenging. Despite their troubles in solving mathematics problems, more students are not thinking adversely about how they deal with their challenges. They used strategies to resolve immediately, the problems that they're facing on their different quite challenges within the mathematics subject. Students will be able to solve more math-related problems and will be able to tell themselves that they enjoyed the lesson. That it will give them the the confidence to answer more math problems, and if a student works hard enough, they will be able to prevent and treat math anxiety in themselves (Lossi, n.d).

In terms of getting power or right and self-regulated learning, coping strategies are critical. The strategies' goal is to make learning simple and to respond quickly to various activities. According to Gasco, Domingo & Goni (2014), in having plenty of strategies allows us to respond to more acivities quickly.

This research will descriptively address the strategies on how students cope with learning mathematics through online learnings.Thus, the goal of this study is to determine the struggles and coping strategies of students in learning mathematics through online learning.

**Research Objectives**

This study aimed to determine the coping strategies in learning mathematics through online learning among students taking up Bachelor of Secondary Education Major in Mathematics of the University of Southern Mindanao-Kidapawan City Campus school year 2020-2021.

Specifically, this sought to answer the following questions:
1. What are the struggles of USM-KCC students in learning mathematics through electronic leaning system?
2. What are the coping strategies used by the participants in managing the struggles of learning mathematics through online learning?
3. What concerns do the participants would like to address?

**Theoretical Lens**

This study is anchored from the theoretical support of the coping theory by Lazarus and Folkman (1984) which defined coping as persistently transforming behavioral and cognitive efforts to handle particular externa internal and external stresses that are assessed as challenging or beyond the person's resources. This is where students utilized either negative or positive coping techniques, solution-focused or emotion-focused, adaptive or maladaptive depending on whether they improved or worsened their mental health. Consequently, the type of coping strategies and interventions we choose to employ, impact our entire lifestyle.

**Delimitations and Limitations of the Study**

The study focused on the struggles and coping strategies of students in learning mathematics. The respondents of this study were the students taking up Bachelor of Secondary Education Major in Mathematics of the University of Southern Mindanao - Kidapawan City Campus in S.Y 2020-2021.

This study was delimited to determine the strategy types used by the students in learning mathematics through online learning.

The focus of this research is on mathematics education. It does not attempt to compare or contrast students' coping behaviors in other learning contexts with those in mathematics learning. As a result, the findings are limited to students' coping mechanisms in the context of mathematics learning in USM-KCC students using an online learning.

## II. METHODOLOGY

This study employed a qualitative research design using a descriptive approach. According to Creswell (2013), a qualitative research design entails a process of discovery that allows the researcher to build details. The descriptive approach is one of the methodologies used in qualitative study design. It's a method of describing the current state of a phenomenon without attempting to modify it (Mertler, 2009). Thus, based on this information, a qualitative-descriptive research design is appropriate for this research which has the primary purpose to determine the coping strategies of the students in learning mathematics through online learning.

The researcher served as facilitator and interviewer for one-on-one in depth interviews and then transcriber and analyst of the data collected. In collecting the data, the researcher's primary responsibility is to safeguard participants and their data. For the best research outcome, the researcher need to show interest and requires the intention be involved in research (Pereyra, 2012).

A total of 10 students served as participants of this study. Creswell (1998) recommends 5-25 participants in a qualitative research. Morse (1994) suggested at least 6 participants. The researcher chose 10 participants for research reliability. They will be chosen through purposive and convenient sampling techniques. Respondents were chosen based on their capacity to provide the required information, as well as their willingness to participate and availability at the time of data collection.

The instrument used to collect the data for this study is one-on-one in-depth interview. Pressed by the current restriction, the researcher had followed COVID-19 prevention protocols (wearing a face mask and a face shield correctly, as well as maintaining social distance) The researcher asked open questions design to gather responses about coping strategies of students in learning mathematics through online learning in the middle of the present situation. The questions were tailored by the researcher based on the study's focus.

The sought approval from the chancellor to conduct my study inside the campus. After receiving the approval, the researcher communicated with the USM-KCC Math Major students for data gathering.The intention of the study was presented and alongside with their roles, scope of the interview process through the Ethics Participant Consent Form (EPCF) and gave them a copy and discussed the Ethics Inforfmation Sheet (EIS) to give them background about the study, the importance of their responses and their rights as participants.

Then, the one-on-one in-depth interview was conducted to the first five participants. An in-depth interview was then done with another five participants for triangulation. The interview was taped through audio-recorder and it was agreed by the participants. Afterwards, the responses of the participants for each question were transcribed, translated to English statements stated in Filipino and Bisaya. Finally, data analysis took place.

Thematic analysis was used to analyze the data gathered from one-on-one in-depth interviews. According to Braun & Clark (2006), thematic analysis is a qualitative data analysis method that entails searching throughout a data set for, interpreting, and reporting recurrent keywords or patterns. The researcher utilizeed the triangulation method to examine the findings' confirmability and trustworthiness. According to Salkind (2010), triangulation is the practice of analyzing data from several sources or employing many approaches to improve the credibility of a research study. The researcher initially consolidated all the responses of the participants. The researcher first compiled all of the participants' responses. The identification of the codes are based on a preliminary examination of the data. These codes were scrutinized for similarities and differences until themes are formed.

In order to make this study more reliable and credible it must have the values of trustworthiness. This includes credibility, transferability, dependability and confirmability. According to Guba (1998) the following criteria stated need to be considered by the qualitative researchers to make the study worthy of trust.
The following considerations were being defined as follows:

**Credibility**: According to Lincoln and Guba (2000), one of the most significant criteria in building trustworthiness in order to create and consider the information valid is credibility. Furthermore, according to Merriam, the qualitative investigator's analogous notion, credibility, addresses the question of "How consistent are the findings with reality?" They also suggested that reseerchers hold frequent debriefing sessions with their superior to ensure that they accurately reported the phenomenon under examination.

**Transferability**: According to Gasson (2004), it concerns the extent to which a reader may adapt a study's findings to his or her own cicumstances, and it addresses the central question of "How far can a researcher claim that their theory can be applied broadly?"

**Dependability**: This addresses the essential issue of "conducting a study in a consistent manner across time, researchers, and analysis techniques" (Gasson, 2004 as cited by Shenton, 2004). It is also an assessment of the integrated data collecting, data analysis and theory production process.

**Confirmability**: This relates to the understanding that research is never completely objective. It addresses the crucial issue that "findings should reflect the reality inquiry as precisely as possible, rather than the researcher's views, pet beliefs, or biases" (Gasson, 2004 as cited by Shenton, 2004). According to Lincoln & Guba (1985) it's a gauge indicating how well the invetigation's findings are supported by the evidence acquired.

The aforementioned elements were implemented to this study in order to make the research reliable. To establish credibility, I maintained constant contact with my adviser, who served as a guide for the questions posed during the study. And for transferability, the following methods or process and organization in conducting these students were also presented. This give comprehensive notions on how this study was conducted.

In accordance, dependability was also applied. Since it deals with assessing the quality of integrated process of data collection, analysis of data and theory generation, I have the opportunity to create a coding sheet that will serve as the primary instrument in conducting this study. Furthermore, it also includes confirmability, I did not scrutinized the data by myself instead debriefers were present who checked the results and theme provided and a grammarian who scrutinized the content of the study. The conclusions were examined by my adviser and, the language and qualitative research experts for validation of the result. Furthermore, all information obtained are clear, concise, accurate, and reliable.

Certain ethical concerns have been raised about the study. One of the most essential aspects of the research is the ethical considerations. In conducting the study, I adhere to the following (9) ethical considerations by Brynan and Bell (2007).
1. Participants in research should not be subjected to harm in any ways whatsoever.
2. Prioritize respect for the dignity of research participants.
3. Prior to the conduct of the study, the researcher obtain full consent
   from the participants.
4. Research participants data privacy and confidentiality must be protected
5. Adequate level of research data confidentiality should be ensured.
6. Individuals taking part in the study must maintain their anonymity.
7. Any deception or exaggeration about the research's goals and objectives must be avoided.
8. All research related communication should be conducted with honesty and transparency.
9. Misleading information, as well as a skewed depiction of primary data findings, must be avoided.

## III. RESULTS AND DISCUSSION

This chapter presents the          result from the analysis of the author which revealed the different theme statements. This chapter presents the results including the discussions about the themes and concluding statements.

This study aimed to determine the coping strategies of USM-KCC students in learning mathematics through online learning. All the participants during in-depth interview were BSE-Math students of USM-KCC.

During the conduct of the study, a one-on-one in-depth interview was administered by the researcher. The data was carefully transcribed and analyzed by the researcher.

The researcher identify the themes through the repeating statements emerged during the transcribed of the gathered data. These were listed and grouped accordingly and determine patterns and connections between themes. Regrouping was done to reduce the themes into fewer items.

In this study, a theme is notified when a particular experience was highlighted by at least three participants in a group. This section presents the results as follows.

**Struggles of USM-KCC Students in Learning Mathematics**

There were several essential themes drawn from the analysis of the data in-depth interview for research question number one. The essential themes are: Poor internet connection, Self-learning difficulty, Financial problem, Poor time management, and Learning materials problem.

***Poor Internet Connection*** is the first essential theme. Among the struggles that students' faced, internet connection is one of the toughest in online learning. According to Jarvis (2012) and Misfeldt & Sane (2012), the pressure in learning online can be due to technological divides and restrictions in mathematics education which include computer shortage on high-speed internet connections.

This finding is consonance with the statements of the informants who were struggling with poor internet connection.

Zilong shared that:

*"I need to travel to another village just to have a stable internet connection because our community's "peso-net" connection is often poor, especially when our village experience black out. Sometimes, I cannot travel to another village when we have a task and/or activity to do since we don't have a vehicle at home"*
***(Archive##001)***

Similarly, Eudora stated that:

*"The problem I encountered was signal or internet connectivity because many people use internet during exams, which why I have delayed submission…" **(Archive##006)***

Moreover, Alucard shared that:

*" I submit late on activities and quizzes because of the internet problem. It's hard to find an area with reliable internet connection…" **(Archive##005)***

***Self-learning Difficulty*.** The next essential theme which emerged to research question number 1 is Self-learning Difficulty. Students who are new to online learning are more likely to have difficulties about understanding the topic. The informants also revealed that electronic learning is a challenge for them as audio-visual learners. Orlando and Attard (2015) went on to say that "it is not a one-size-fits strategy all teaching with technology because it matters on the sorts of technology administered at the moment as well as the curricular being taught." Kirkwood & Price (2014) added that, it is frequently assumed that technology may 'enhance learning. Thus, students find it difficult to learn mathematics without teacher's assistance because tasks given online were given less emphasis on delivery and more emphasis on tasks/content (Graham & Misanchuk, 2004).

This is parallel to the statements of the informants saying that lesson is tough to comprehend utilizing self-learning.

According to Nana:

*"I find it hard understanding the content of the pdf versions, and there are times that the lesson is often tough to comprehend utilizing self-learning study. For me, I need someone to guide or teach" **(Archive##002)***

**Table 1.** Struggles of USM-KCC Students in Learning Mathematics through Electronic Learning Sytem

| Essential Themes | Thematic Statements |
|---|---|
| Poor Internet Connection | • I need to travel to another village just to have a stable internet connection… **##001.idi**<br>• During quizzes or exams, the URL reloads and thus make me do again the process… **##001.idi ##009.idi**<br>• Unstable internet connection… **##003.idi ##004.idi ##005.idi ##008.idi ##009.idi ##010.idi**<br>• Many students are using internet during exam, so the system lags… **##006.idi** |
| Self-learning Difficulty | • I can learn more in the classroom… **##001.idi ##002.idi**<br>• Lesson is tough to comprehend utilizing self-learning… **##002.idi ##008.idi**<br>• I need someone to teach or guide …**##002.idi**<br>• I am not that smart… **##003.idi ##006.idi ##010.idi**<br>• Online tutorials are insufficient for me… **##002.idi ##003.idi ##008.idi**<br>• I am an audio-visual learner… **##007.idi** |
| Financial Problem | • Since the WiFi connection is occasionally bad, and using data incurs additional cost… **##003.idi**<br>• Load allowance is scarce… **##004.idi ##009.idi**<br>• Its' not easy to borrow money from family, friends and neighbors… **##004.idi** |
| Poor Time Management | • I have problem meeting deadlines because I have hard time managing my time… **##001.idi**<br>• It's difficult to balance my time as full-time student working part-time to meet my necessities… **##004.idi**<br>• I felt anxious because I have no idea what to do first with my queued activities… **##005.idi** |
| Learning Materials Problem | • Learning resources provided are lacking… **##002.idi ##004.idi ##006.idi**<br>• Submitting late activities due to technical problems with my device… **##004.idi ##005.idi**<br>• I don't have laptop to use… **##005.idi**<br>• Hand-outs are insufficient to comprehend the topic… **##005.idi#009.idi** |

Meanwhile, Saber shared his thoughts about self-learning. He directly stated that:

*"It is difficult to learn mathematics utilizing an online platform nowadays since not all teachers can demonstrate you step-by-step solution how to arrive at a specific answer; instead, it is entirely self-learning. And I don't have a lot of patience, so if I'm doing self-learning like watching video on YouTube or searching on Google for even a short time, I easily get bored and tend to stop." **(Archive##003)**

Further, Esmeralda also shared her struggles on electronic learning, and stated this way:

*"… It's hard to understand the material on my own because it's complicated and, having an instructor present to assist and teach is better. The internet tutorials are insufficient for me to comprehend the topics…"* **(Archive##004)**

***Financial Problem.*** The third essential theme that emerged focuses on financial capability. Students disclosed that they are financially struggling in this online learning. They say that they have hard times budgeting allowance for online class and extra money to cover their internet load expenses. This problem is parallel to Nelz (2020) statement that students expressed their problems in attending online classes due to lack of funds and load due to poverty.

From the students experienced, these are their statements when asked about their struggles in online learning.

According to Esmeralda, she shared that:

*"In this time of pandemic crisis, load allowance is scarce, and I can't constantly have load…*

*… I've had those moments when there's a quiz or an exam and I do not have any money. It is not easy to find money and borrow from family, friends, and neighbors…"* **(Archive##004)**

Saber added that:

*"... The Wi-Fi connection speed is occasionally bad, and using data incurs an additional cost…" (Archive##003)*

***Poor Time Management.*** Another struggle that students faced with electronic learning was time management. They had problem with managing time making lots of activities on their specific subjects. They also find hard managing time between school works and extra jobs because they were preoccupied with a lot of things to do both school at home and at work. Sellers (n.d.) believes that another serious problem that students' face in online learning is the poor time management which may include lack of timetable, too many distractions, and multi-tasking.

According to Esmeralda, she shared that:

*"... It's difficult to manage my time between sideline jobs and online classes and it's quite challenging when we'll be undertaking online studying for so long." (Archive##004)*

Alucard also shared that:

*"... I felt anxious because I had no idea what to do first with all of the queued activities…" (Archive##005)*

***Learning Materials Problem.*** Relative to self-learning struggles of students, the learning materials added problems to them. Students revealed that they had out-dated and malfunctioning gadget which result to their late submissions of activities. Also, they have problems with the learning materials provided to them.

According to Alucard that learning with the hand-outs provide to them is not enough to learn effectively. He stated this way:

*"I'm having hard times understanding the topics because learning the pdf's provided isn't enough; there should be someone to explain. Modules and handouts are insufficient to comprehend the course topics. The use of online platform in learning mathematics does not guarantee that we will be able to meet our learning needs as students." (Archive##005)*

In the same situation, Esmeralda went on to say that:

*"Due to lack of resources, learning mathematics online is difficult, and the handouts provided by the teachers were insufficient for me understand. It's hard to understand the material on my own because it's complicated but having an instructor present to assist and teach is better…" (Archive##004)*

From the perspective of the informants who feel uneasy using those malfunctioning gadgets they used in learning. Salmon (2014) stated that, despite the students' recognition of using technology to help their learning, a problem develops because of the software's technological limitations, especially the gadgets' functions.

**Coping Strategies of USM-KCC Students in Learning Mathematics through online learning**

Several sub-questions were asked to elicit their concepts as regard to the strategies used of USM-KCC students in learning mathematics through online learning. How they deal and cope with struggles. The informants were also asked how those strategies they utilized help them. Questions about the benefits of the strategies utilized by the students (How are those coping strategies help you?) are excluded from the theme and were descriptively discussed below.

***Looking for a good Location and Time.*** It is the first essential themes generated in research question number 2. This theme was manifested because internet access is essential for online learning yet is unreliable; most students manage by trying to search a good location and covenient time.

In the interview, the informants were asked about the strategies that they utilized to cope with internet problems.

According to Esmeralda, coping with internet problem is never been easy for her because internet connection is also affected by the passage of time.

She stressed that:

*"... To make myself more comfortable, I study in a calm environment, such as outside the house where there is no noise. I used to do things after midnight because there was silence and signal at those times..."*
*(Archive##004)*

**Table 2.** Coping Strategies of USM-KCC Students in Learning Mathematics

| Essential Themes | Thematic Statements |
|---|---|
| Looking for a good location and time | • I travel to find place with stable internet connection… **##001.idi**<br>• I walk to the nearest "peso-net"… **##004.idi ##005.idi**<br>• I study in a calm environment… **##004.idi**<br>• I answer activities during midnight… **##004.idi**<br>• I use data even the signal is weak… **##010.idi** |
| Seeking help from classmates and peers | • I constantly ask my classmates and peers for assistance… **##001.idi ##002.idi ##003.idi ##004.idi ##006.idi**<br>• We discuss together online… **##003.idi**<br>• I compare my answers to my classmates… **##006.idi**<br>• We work together… **##007.idi**<br>• I ask my classmates for clarifications**… ##009.idi** |
| Borrowing Learning Materials and Browsing the Internet | • I watch video tutorials… **##002.idi ##003.idi ##005.idi ##006.idi**<br>• I visit websites that have mathematics problem solving… **##002.idi**<br>• I borrow gadgets to my friends and relatives… **##003.idi ##004.idi**<br>• I borrow books to my seniors… **##006.idi**<br>• I study math problems with solutions from book…    **##007.idi**<br>• I browse problems to the internet… **##010.idi** |
| *Table 2 continued…*<br><br>Regulating the self | • I always pray… **##001.idi ##004.idi ##006.idi ##007.idi ##008.idi**<br>• I remind myself to stay positive… **##001.idi ##004.idi ##005.idi ##008.idi ##009.idi**<br>• I bare in my that there's no difficult subject if I am eager to learn… **##001.idi**<br>• I never put myself to any kind of stress… **##002.idi**<br>• I don't let myself to be carried away with all my struggles… **##003.idi**<br>• I cry to relieve stress and anxiety in my mind… **##004.idi**<br>• I look on my good grades… **##009.idi**<br>• When I received both bad and good grades, I deal it happily with contentment… **##010.idi** |
| Showing Interest with the Lesson | • I practice solving… **##003.idi ##005.idi ##009.idi**<br>• I keep on studying until I internalized the topic… **##006.idi**<br>• I go over the examples in the hand-outs… **##007.idi**<br>• I use calculator efficiently… **##007.idi**<br>• I devote myself to study… **##008.idi**<br>• I ask my subject-teacher about the topic… **##008.idi ##009.idi** |
| Practicing Time Management | • I keep tract of deadlines on my notebook… **##003.idi ##009.idi**<br>• Time Management… **##003.idi ##005.idi**<br>• I answer activities in advanced… **##004.idi ##010.idi**<br>• I never procrastinate… **##006.idi ##007.idi** |
| Diverting Attention | • Whenever I'm tired, I take time to rest**… ##003.idi ##005.idi**<br>• I always give family time to relieve stress**… ##005.idi**<br>• Whenever I'm stress, I plant flowers… **##005.idi**<br>• Whenever I'm stress, I watch movies… **##005.idi ##007.idi**<br>• Whenever I'm stress, I eat food… **##007.idi** |

In the same situation, Zilong shared that:

*"My problem is internet connection, for example, I have to take risk traveling to another village to find a signal and be able to submit the activities…" (Archive##001)*

Moreover, Helcurt also shared that:

*"… I have no control over internet connection, especially when there is none; all I can do is to consume data, even if the signal is weak…" (Archive##010)*

In line with this experience, a strong relevance to the findings of Cook (2019) states that, searching a good location for the wireless router will help users get a better internet connection access. Also, using WiFi can help avoid traffic because there less people using. It was also found out that, students who do not have access to internet find for other alternatives to meet their requirements (Matswetu et al., 2020).

***Seeking Help from Classmates and Peers*** is the next essential theme emerged in research question number 2. This theme focused the students' support system they get from their peers to handle with struggles. Students also cope with their struggles in electronic learning by seeking help from classmates and peers. Researchers found that pro-social activities like these can effectively aid to battle the negatives effects of stress (Raposa, et al., 2015). Chao (2012) added that there are two types of stress management. First, social support, this is where people naturally seek social support, such as from their family and friends, to help them win against their stress. When asked how they cope with struggles, these are one of their answers;

Zilong said during the interview that:

*"... When I'm having difficulty in class, I constantly ask my classmates for assistance so that I can keep up with the activities because I'm not always online which leaves me behind when there are announcements." **(Archive##001)***

Likewise, Nana shared that she also asked help about the topic to her classmates. She stated that:

*"... In order to better understand the topic, I also seek assistance from my classmates on how to solve a specific problem in Mathematics" **(Archive##002)***

Meanwhile, Layla revealed that they work together. She stated that:

*"I'm asking for help from my classmates since we're all struggling, thus we work together..."**(Archive##007)***

***Borrowing Learning Resources and Browsing the Internet.*** Another essential theme that emerged from research question number 2 is through borrowing learning materials and students' reliance on internet. The students disclosed that they borrow learning resources to complete the tasks easy and faster. This finding relates to Osafo (2017) statements, students ask help from their family and relatives who can help them. Farlinger and Owens (2009) maintain that, technology and the internet play a significant role in students' social and educational lives. From the interview, the informants honestly shared that browsing the internet helps him to learn such as watching tutorials.

According to Helcurt, he stated that:

*"The first thing I did to deal with such problems was searching in the internet; if I don't understand something, I browse up videos on YouTube about the topic to help me comprehend it better because I find it difficult to learn without tutorials..." **(Archive##010)***

Eudora added that:

*"... Further research is conducted, followed by deeper dive into the topic with the help of YouTube tutorial... As a student, I borrow books to my seniors." **(Archive##006)***

Moreover, Nana shared the same strategy and stated that:

*"I watch video tutorial and practice solving. In solving mathematics problem activities, I compare my answers to the solution key to know if I got it correctly..." **(Archive##002)***

***Regulating the Self.*** It is important that we have control on our actions and even our emotion to stay away from stresses and anxieties. Self-regulation is another essential theme that emerged in research question number 2 which was utilized by the students to cope with e-learning struggles. The informants' ability to control themselves is developing an identity management. This way keep them away from giving up and help them survive with the struggles of online learning. Identity management, according to Brekhus (2003) is a critical method for individuals to adapt, redefine, or reconfigure themselves or surroundings. In other words, they can regulate themselves more easily and are less prone to feel burdened.

This is parallel to the informants' response to all the burdens of online learning. According to Zilong, he keeps reminding himself to be optimistic. *He stated emphasized that:

*"I definitely concentrate then pray. When I'm feeling down, I always remind myself to stay positive and remember that there's no such thing as a tough subject when you're motivated to study." **(Archive##001)***

Similarly, Bruno stressed that:

*"When struggles come I always have this prayer as my ultimate refuge then positive thoughts because I believe that being positive will kill negativity in life and when you're optimistic it's easy to fight back from all struggles." **(Archive##008)***

Further, Esmeralda also shared that in every struggle she faced she's not scared to resort to crying, and asked everything to the Almighty. She stated that:

*"To be honest, I had cried to relieve stress and anxiety in my mind. Above all, prayer is finest as it is my last hope in combating or dealing with hardships"* **(Archive##004)**

**Showing Interest with the Lesson.** It is the fifth essential theme surfaced from research question number 2. Education is very important we need to secure first our own learning before doing anything that we might regret in the future. This theme focused on students' strategies to successfully understand the lesson. Students disclosed that when they approach their teachers they learn more and are more motivated.

According to Layla, we should never stop when we're confused when we can refer it. She said:

*"…When I'm uncertain about a topic, I go over the examples in the handouts and scan to the copies. I use calculator efficiently in our major subjects, and I study math problems with solutions from books and YouTube tutorials."* **(Archive##007)**

Further, Bruno shared that asking the teacher or even someone who knows about the topic is a good way of showing interest about the lesson. He stated that:

*"I never hesitate to ask my teachers about our topic as well as anyone else I believe knows something about it. Self-review is also the most effective, followed by solving math*
*problems from books and YouTube. Then I diligently give effort towards my*
*study."* **(Archive##008)**

**Practicing Time Management.** It is important that we know how to handle stress in this trying times. Being able to manage our time is maximizing the things we can do in a period of time. Also, this will help us lessen those things that we think every day. The students disclosed that even they are busy maximizing their time with class and their personal issues, they have their specific time management techniques.

According to Saber managing his time is through organizing everything. He stated that:

*"The first is time management; because I am prone from forgetting things, I keep tract of deadlines in my notebook or calendar. I occasionally inquire my classmates about deadlines of activities*
*topics, and quizzes…"* **(Archive##003)**

Eudora also said that:

*"Never procrastinate. Because there is no signal, I make sure that if there is internet, I downloaded all of the handouts so that I could read them offline…"* **(Archive##006)**

Esmeralda also shared her coping mechanism to her queued activities. She similarly said that:

*"… Never procrastinate. If there are activities needed to be complied, I do them even if the deadline is a long way off…"* **(Archive##004)**

When it comes to completing class exercises, students overcome struggles by exercising *time management* and planning ahead of time. These strategies of the students are linked because time management frees up time for other activities. Students revealed that managing their time such as having a list of activities or timetable make their work easier, organize and faster. This finding is in line with Joubert (2020), proposed that students should establish a timetable of the chores they need to complete, including conducting lesson activities prior to deadline and making much of the time for learning assignments.

**Diverting Attention.** The last essential theme that emerged in research question number 2 is "Diverting Attention". It is important that we know how to change the focus of our attention to rest our mind and cope with struggles. Diverting our attention gives us the opportunity to relax and refocus ones we regain our strength of doing back the things that we used to do.

According to Alucard that spending time with people close to him is ideal to lie low with stress. He stated that:

*"… I have family time to relieve stress and keep me away from becoming depressed as a result of the difficulties I've faced. In addition, as a hobby, I solve struggles by planting flowers. I also divert my attention to activities I enjoy, such as watching movies. If I'm tired, I take a break to*
*keep away my mind and body from stress."* **(Archive##005)**

Also, Layla stated that:

*"I'll watch a K-drama for a while before returning to answering or scanning. And, if I'm stressed again, I'll watch movies or eat food. Then, never procrastinate, and always pray since prayer is the most effective."*
**(Archive##007)**

Students mentioned of diverting their time to their family, watching movies, planting flowers and more. This finding was consonance with Shamsuddin et al. (2013) study, which revealed that students who feel stressed divert their attention into things they love; meditations and paying attention to music (Feld & Shusterman, 2015). Similarly, Baloran (2020) adopted a mixture of personal coping mechanisms. To avoid the stress caused by COVID-19, students used to interact with their friends and their family to lessen stress, connecting and motivating oneself, and amusing attention to other things at home.

Further, the informants disclosed the benefits they get when they utilized the above mentioned strategies in learning mathematics through online learning. Those strategies help them maximize their time in answering quizzes and submit outputs on time. They also revealed that those strategies help them understand the topics and get higher grades at the end of the semester. However, the effectiveness of any given coping strategy may be influenced by a variety of other factors, such as the stressor's perceived controllability and the availability of sufficient resources and nature of outcomes.

According to Eudora:

*"Those strategies worked since I was able to answer questions in quizzes and exam because I had already learned about the topics through tutorials. I can finish tests on time because I already know what to do and how to do when it comes to solving mathematics problem." (**Archive##006**)*

Also, Zilong shared that:

**"**Yes, the things I did were quite beneficial, as I was able to pass the quizzes, exam, and complete this online course." (**Archive##001**)

Moreover, according to Miya:

"Those strategies help me in a way of inspiring me because when applying it it's effective because I received high ratings/grades." (**Archive##009**)

**Concerns of USM-KCC Students to their Teachers and Classmates**

Students in online learning have faced a variety of challenges, but they have never given up; instead, they have learned to manage with them. Students want to extend their concerns to their teachers and classmates as they prepare for another year of online learning. In learning online, internet access students are concerned with the following; *Setting of deadlines, Instructional Materials, and Entertaining Queries.*

**Setting of Deadlines.**One of the concerns that emerged in research question number 3 is "Setting of deadlines". Students are hoping that teachers will provide time extensions during submissions and understand their lapses because of the internet.

According to Zilong:

*"Hopefully, they will no longer be too strict in setting deadlines for quizzes or exams, because not everyone has a strong internet connection. I experienced that when I was taking a quiz/exam, the URL reloaded just as the time limit was about to expire and had to start over…" (**Archive##001**)*

Similarly, Esmeralda added that:

*"For me, I'm hoping that teachers would understand why we are unable to submit on time due to unforeseen circumstances…*

*…Nonetheless, I am grateful to all professors for sharing their knowledge because I am aware that they, too, have had challenges" (**Archive##004**)*

**Table 3.** Concerns of USM-KCC Students to their Teachers and Classmates

| Essential Themes | Thematic Statements |
|---|---|
| Setting of Deadlines | • Teachers will never be strict in setting deadlines… **##001.idi ##004.idi**<br>• They will allow sufficient time to administer the quizzes… **##003.idi**<br>• Understand students' concerns… **##004.idi ##010.idi**<br>• Give extra time to prepare… **##006.idi** |
| Instructional Materials | • Teachers will provide video discussion… **##001.idi ##003.idi ##005.idi ##007.idi ##008.idi ##009.idi**<br>• There are only minimum number of activities… **##002.idi**<br>• Copies provided must highlights most important information… **##003.idi**<br>• Not all students comprehend similarly… **##006.idi** |
| Entertaining Queries | • Classmates would not ignore my messages… **##001.idi ##003.idi**<br>• They would not be self-centered… **##003.idi**<br>• If someone needs assistance, if they can help, they will… **##009.idi**<br>• Understand that our teachers are struggling too… **##008.idi** |

| • Thank you… **##001.idi ##002.idi ##007.idi ##010.idi** |
|---|

Moreover, Eudora said that insufficient time is not enough to finish the activities. She said that:
*"Hopefully Ma'am/Sir, if you'll give activities today don't make the deadlines too short, like tomorrow. One week would be enough because the topics are difficult to understand.. Not all students can easily access the activities the teachers' sent. I would be grateful if there will be extra time to prepare." (Archive##006)*

Vicki Zakrzewski (2012) states that, students who have a caring relationship with their teachers are more academically successful and exhibit more "pro-social" (or helpful) behavior. A caring teacher may make a huge difference in a student's life, especially if they are facing significant challenges at home, such as dropping out or having a dysfunctional family. One student who had to deal with such difficulties told a researcher that the most important thing a teacher can do is to care and understand.

*Instructional Materials.* Another essential theme that emerged in research question number 2 is the "Instructional Materials." The students disclosed their concerns about the instructional materials that they prefer learning. They turn to this concern because they were overwhelmed by reading materials.
According to Bruno, a video clip would give him more comprehensive learning. He said that:
*"Hopefully, in major subjects, teachers will record a short video discussing the lesson so that I can learn something from them rather than relying solely on self-learning from modules" (Archive##008)*

Similarly, Nana extended her concern and said that:
*"Please give your students simply the bare minimum of activities, and only those that are not too tough, because not everyone has complete learning tools. As a student, we borrow materials in order to comply" (Archive##002)*

In the teaching and learning process, instructional materials have the ability to assist the teacher in clearly explaining new concepts, resulting in enhanced student knowledge of the concepts being taught. However, they are not ends in themselves but they are means to an end (Kadzera, 2006).
*Entertaining Queries.* The third essential theme that emerged in research question number 2 is "Entertaining queries". It is important that we'll practice answering back the concerns address to us. In this way we will be able to help each other rather than being self-centered.

Zilong extend their emotions to their classmates and directly said that:
*"Hopefully, they would not only ignore but also respond to my mails. Though I understand that they are busy, what is a minute or two to address the concerns of their classmates, particularly those who are rarely online. Some people will respond in the evening when you message them in the morning..." (Archive##001)*

Similarly, Saber convincingly stated that:
*"We should not be self-centered, and if we have knowledge of something, we should share it with our classmates so that we can all graduate together. Another point to consider is that, because technology is our primary source of learning, we must address our classmates' concerns especially those who messaged us privately." (Archive##003)*

On the contrary, amidst every struggle they experienced, Helcurt is still grateful to his classmates. He motivates his classmates and said that:
*"To my classmates, Thank you. Hold on and don't give up because I believe that we're all struggling right now especially the class is on-going. Some of us unexpectedly received unexpected grades but it's okay, we should continue, what's important is to pass. That would be all. God bless to all of us." (Archive##010)*

Also, Esmeralda extend her gratitude towards her teachers. She said that:

*"... I am grateful to all professors for sharing their knowledge because I am aware that they, too, have had challenges." (Archive##004)*

# IV.    IMPLICATION AND CONCLUDING REMARKS

With the help of the result of this study, we can now help students in different ways. Professors are given the ideas on how to impose learning depending on the types students they are handling. Students will know how they can help to their classmates who are struggling the most.

Based on the result of the study, the researcher implies the following:

1.    To the teachers, regular monitoring of the students should be done while having the online learning approach as it is a big help because they will know and understand their students; and

**2.**    Also, this study has the greater implication to students especially to those who are struggling in learning. This will help them learn the possible coping strategies they could apply too in learning mathematics online.

Teachers are great facilitator for students' learning in terms of understanding a certain topic. They are the ones who help students learn more effectively by facilitating lessons. Students, on the other hand, are both active receivers and sharers of knowledge. They are in charge of their own learning with the assistance of the teachers.

To the Future Researcher, compare and contrast online learning approach and face to face learning approach. Also, conduct a quantitative research/study through surveys, employing a bigger sample population of the university. This research approach will provide a deeper yet essential perspective on the students' coping mechanisms in learning mathematics through online learning during this tough time.

My journey to conduct this research began when new normal learning emerged as a result of the pandemic. As student, I saw my peers and acquaintances struggling to learn through electronic means. Since I've had learning difficulties also, it made me confused how students like me are surviving in this challenging time.

Out of curiosity, I decided to make a research about students' coping strategies in learning mathematics through online learning. I started to asked students about their strategies and listen to them as they sincerely shared their struggles and coping strategies. During the conduct, I am thankful because I have a friend who sets her interview the same to mine which gave us the opportunity to interview together.

The experience was challenging for me, but it was also rewarding, and I had a good time conducting the interview. Though it was difficult to acquire data due to their location and the fact that we couldn't see each other altogether because of the pandemic, still I find ways to get their opinions by individually visiting their home. To get there, together with my friend we have to take various rides like multi-cab, tricycle and a "habal-habal" but that was paid off because my respondents took the time to answer my questions. They readily offered their experiences, struggles, and ideas, which I appreciate.

From that experienced, I could say that it's hard to gather data. Doing research is a tough task that needs patience and perseverance. I also realized that along the way there are lots of altered experiences     h is normal for a study. You really have to extend your effort and time for you to reach the finished line.

## LITERATURE CITED

[1].    Baloran, E. (2020). Knowledge, attitudes, anxiety, and coping strategies of students during COVID-19 pandemic. Journal of Loss and Trauma, 25(8),     1-8.doi:10.1080/15325024.2020.1769300

[2].    Berjot, S., & Gillet, N. (2011). Stress and coping with discrimination and stigmatization. Frontiers in Psychology,2, 33.doi: 10.3389/fpsyg.2011.00033

[3].    Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qual Res Psychol. 3(2):77-101.doi: 10.1080/0142159X.2020.1755030

[4].    Brekhus, W. (2003). Peacocks, chameleons, cetaurs: Gay suburdia and the grammar of social identity. Chicago, IL; University of Chicago Press.

[5].    Bryan, A. & Bell, E. (2007). Business Resea0rch Methods, 2nd edition. Oxford University Press. Retrieved         May                 29,                 2021                     from https://reserach-methodology.net/research-methodology/ethical-considerations/

[6].    Chao, R.C., (2012). Research Managing Perceived Stress Among College Students: The Roles of Social Support and Dysfunctional Coping. Journal of College Counselling (Vol.15, pp.5-22).

[7].    Chowdhury, M. R. (2020). What is coping theory? Positive Psychology. Retrieved March 8, 2021 from https://positivepsychology.com/coping-theory

[8].    Creswell, J. W. (2013). Qualitative inquiry & research design choosing among five approaches (3rd ed.). Thousand         Oaks,         CA:         SAGE.         Retrieved         March         5,         2021         from http://www.ijern.com/journal/2014/December-2014/34.pdf

[9].    Creswell, J.W., (1998). Qualitative Inquiry and Research Design: Choosing among     five     traditions. Thousabd Oaks, CA: Sage Publications,Inc. Retrieved April 29,   2021                         from https://psycnet.apa.org.record/1997-36445-000

[10]. Farlinger, B. & Owens, R. (2009). YouTube as learning tool. Journal of College Teaching and Learning (Vol.6, pp.1-15).

[11]. Feld, L. D., & Shusterman, A. (2015). Into the pressure cooker: Student stress in college preparatory high schools. Journal of Adolescence, 41, 31-42.doi: 10.1016/j.adolescence.2015.02.003

[12]. Gasco, J., Dominggo, K.D., Goni, A. (2014), "Differences in the use of learning strategies in mathematics in 8th and 9th grade," Procedia Social and Behavioral Sciences (pp. 1040-1043). Retrieved March 5, 2021 from http://www.noveltyjournals.com/upload/paper/COPING%20STRATEGIES-1644.pdf

[13]. Gasson, S. (2004). Rigor in Grounded theory research: An interpretative perspective on generating theory from qualitative research studies. In M.E. Whitman & A. B. Woszczynski (Eds.). The handbook of information system research (pp.79-102). Hershey, PA: Idea Group.

[14]. Graham, C. R., & Misanchuk, M (2004). Computer mediated learning group: Benefits and challenges to using groupwork in online learning environments. In T. S. Roberts (Ed.), Online Collaborative Learning Theory: Theory and Practice (pp. 181-202). Hershey, PA: Idea Group.

[15]. Guba, E.G., (1998). Criteria for assessing the trustworthiness of naturalistic inquiries. Educational Communication and Inquiry Journal (Vol.29, pp.75-91).

[16]. Jarvis, D. H (2012). Teaching mathematics teachers online: Strategies for navigating the interaction of andragogy technology and reform-based mathematics education. https://files.eric.ed.gov/fulltext/EJ1075789.pdf

[17]. Joubert, S. (2020, March 24). How to be a successful online learner. Northeastern University. Retrieved August 20, 2021 from https://www.northeastern.edu/bachelors-completion/news/successful-online-learning-strategies/

[18]. Kadzera, C.M., (2006). Use of instructional technologies in teacher training colleges in Malawi [Doctoral dissertation, Virginia Polytechnic Institute and State University]. Retrieved September 08, 2021 from https://eric.ed.gov/?id=€D5606760

[19]. Kirkwood, A., & Price, L. (2014). Technology-enhanced learning and teaching in higher education: What is 'enhanced' and how do we know? A critical literature review. Learning Media and Technology, 39(1), 6-36. doi:10.1080/17439884.2013.770404

[20]. Lazaruz, R.S., & Folkman, S. (1984). Stress, Appraisal, and Coping. New York: Springer. Retrieved March 5, 2021 from https/doi.org/10.1080/10413201003760968

[21]. Lincoln, Y. S., & Guba, E. G. (1985). Naturalistic Inquiry. Beverly Hills, CA: Sage. Retrieved March 5, 2021 from https://www.researchgate.net/publication/232446190_Quality_and_Trustworthiness_in_Qualitative_Research_in_Counseling_Psychology

[22]. Lincoln, Y. S., & Guba, E. G. (2000). Paradigmatic controversies, contradictions, and emerging influences. In N.K. Denzin & Y.S. Lincoln (Eds.). The handbook of qualitative research (2$^{nd}$ ed., pp. 163-188). Beverly Hills, CA: Sage.

[23]. Lossi, L. (n.d) "Strategies for reducing math anxiety in post-secondary students," Florida International University (pp.30-35). Retrieved March 8, 2021from http://www.noveltyjournals.com/upload/paper/COPING%20strategies-1644.pdf

[24]. Matswetu, V. S., Munakandafa, W., Munodawafa, V. & Mandoga, E. (2020). Science student teachers' challenges and coping strategies in an open and distance learning environment in Zimbabwe. Makarere Journal of Higher Education, 4(2), 125-137. https://doi.org/10.4314/majohe.v4i2.l

[25]. Mertler, C. A. (2009). Action research: Teachers as researchers in the classroom. SAGE. Retrieved March 5, 2021 from http://ww.j-ps.com/download/from-stress-to-success-exploring-how-filipino-students-cope-with-remote-learning-amid-covid-19-1376.pdf

[26]. Misfeldt, M., & Sanne, A. (2012). Formula editors and handwriting in mathematical e-learning. Retrieved March 8, 2021 from http://www.igi-global.com/chapter/formula-editors-handwritting-mathematical-learning /57947?camid=4v1

[27]. Misra, R. & McKean, M. (2000) College students' academic stress and its relation to their anxiety, time management, and leisure satisfaction. American Journal of Health Studies, 16(1), 41-51.

[28]. Morse, J.M.(1994). Designing Qualitative research. In N.K. Denzin & Y.S. Lincoln

[29]. (Eds.). Handbook of Qualitative inquiry (pp. 220-235). Thousand Oaks, CA: Sage. Retrieved April 29, 2021 from https://journals.sagepub.com/doi/10.1177/104973200129118183

[30]. Nelz, J. (2020). Poor Student Expresses Difficulties Atending Online Class Due to Poverty. Retrieved August 19, 2021 from https://philnews.ph/2020/08/26/poor-student-expresses-difficulties-attending-online-classes-poverty/

[31]. Orlando, J., & Attard, C. (2015). Digital native come of age: The reality of today's early career teachers using mobile devices to teach mathematics. Mathematics Education Research Journal, 28, 107-121. doi:10.1007/s13394-015-1059-6

[32]. Osafo, A. B. (2017). Challenges and coping strategies of student mothers of UCC College of distance education: The case of the cape coast centre. UCC Library. Retrieved August 20, 2021 from http://erl.ucc.edu.gh/jspui/bitsream/123456789/30321/1/ABIGAIL%10BOATEMAA%20OSAFO.pdf

[33]. Pereyra, L. (2012). Ten Qualities of a good researcher. Journal of Investigative Surgery, 25:4, 201-202.doi: 10.3109/08941939.2012.701543

[34]. Raposa, E. B., Laws, H. B., & Ansell, E. B. (2015). Prosocial behavior mitigates the negative effects of stress in everyday life. Clinical Psychological Science, 4(4), 691-698.doi: 10.1177/2167702615611073

[35]. Salkind, N. (2010). Encyclopedia of research design.Thousand Oaks, Calif, Sage Publications. Retrieved May 31, 2021 from https://dx.doi.org/10.4135/9781412961288.n469

[36]. Salmon, G. (2014). Learning innovation. A framework for transportation. European Journal of Open, Distance and e-Learning, 17(1), 219-235. Retrieved August 19, 2021 from https://files.eric.ed.gov/fulltext/EJ1075789.pdf

[37]. Sellers, (n.d.). Poor Time Management in Online Learning. Retrieved August 19, 2021 from https://education.seattlepi.com/poor/time-management-online-learning-1435.html

[38]. Shanshuddin, K., Fadzil, F., Ismail, W.S. W,., Shah, S.A, Omar, K., Muhammad, N.A., Jaffar, A., Ismael, A.,Mahadevan, R. (2013). Correlates of depression, anxiety an stress among Malaysian university students. Asian Journal of Psychology, 6 (40, 318-323. https://doi.org/10.1016/j.ajp.2013.01.014

[39]. Shenton, A. (2004). Strategies for ensuring trustworthiness in qualitative research projects. Journal for Information, 22(2), 63-75.doi: 10.3233/EFI-2004-22201

[40]. Zarzewski, V. (2012). Four Ways Teachers Can Show Care. Retrieved August 11, 2021 from https://greatergood.berkeley.edu/article/item/caring_teacher_student_relationship