THE OPPOSITE POLES OF UTILIZING EDUCATIONAL TECHNOLOGY MOBILE APPLICATION: THE ACCOUNT OF MATHEMATICS STUDENTS
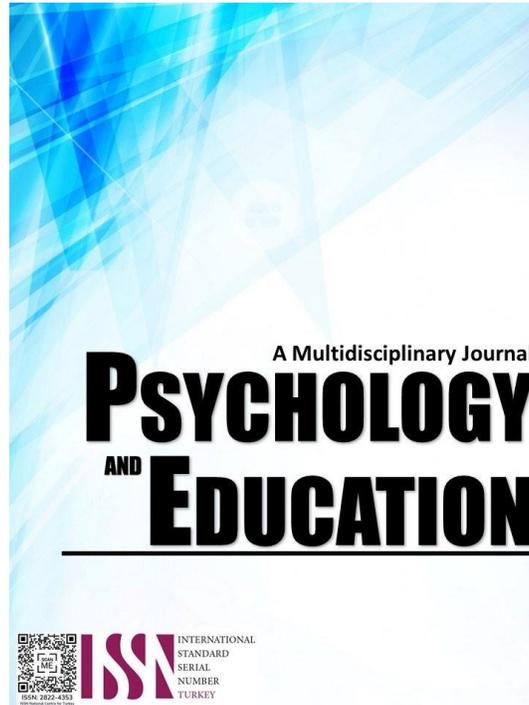
The Opposite Poles of Utilizing Educational Technology Mobile Application: The Account of Mathematics Students

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Abstract

This phenomenology study aimed to explore and understand the opposite poles of utilizing educational technology mobile application. Using purposive sampling, the participating 14 mathematics students utilizing educational technology mobile application. All of them participated in the in-depth interviews. Results revealed the experiences of the participants got frustrated with internet connectivity; had encountered technological malfunctions; had limited technological capacity and resources; had too much reliance and dependence with technology; found ICT integration meaningful and engaging; and aid understanding and provide convenience. In response to the challenges they have encountered, they deemed the following coping strategies essential: being open for learning; being persistent on the endeavor; engaging oneself to technology utilization; preparing sources and oneself; and getting screen time breaks, they arrived at the following insights: be independent from technology; have positive mindset; improve digital skills and awareness; no harm in asking for help; utilize technology to supplement in learning; and take responsibility of your learning. The results of this study were anticipated to be meaningful and important to the participants, teachers, students, and researchers.

Keywords: *students in learning mathematics utilizing educational technology mobile application, mathematics, phenomenology approach, qualitative, Philippines*

Introduction

The general problem evolves mathematics education students faces significant challenges in many countries, particularly at the primary and secondary levels. This issue has resulted in a decreased pool of students with the potential to pursue mathematics majors at the university level, as highlighted by the International Mathematical Union (IMU) in 2020. Globally, there is a pervasive concern regarding learners' performance in mathematics, with a noticeable trend of suboptimal outcomes. Students' poor performance in mathematics is a prevalent issue among learners, adversely impacting their academic progression to subsequent grades. Technology facilitates access to a wide range of resources that support deeper understanding and mastery of mathematical concepts, ultimately helping to mitigate performance gaps and increase the number of students interested in pursuing mathematics-related fields at higher levels of education. (Mabena, N., Mokgosi, P. T., & Rampela, S. 2018).

In New Zealand, the enrollment of mathematically underprepared students in undergraduate courses has risen, leading to reduced admissions and lower success rates in higher education (HE) institutions. Three prominent higher education institutions—The University of the South Pacific, The Fiji National University, and The University of Fiji—are grappling with a shared challenge: a decline in both the quantity and quality of applicants for Science, Technology, Engineering, and Mathematics (STEM) courses. This decline is attributed to poor performance in mathematics at the national examinations in years 12 and 13. A considerable number of Fijian students are unable to meet the essential entry criteria for STEM courses in HE institutions, where a pass or a higher cutoff mark in mathematics is required. This prolonged issue has compelled HE institutes to eliminate stringent cutoff marks for specific disciplines over time to prevent a loss of prospective students (Sharma, B., et al 2018).

In the Philippines, Filipino students were among the lowest performing groups of students among all the participating countries in the 2018 Programmed for International Student Assessment (PISA). In mathematics, less than 20% of students demonstrated the minimum proficiency level (Level 2), while more than 50% showed very low proficiency (below Level 1). Scoring below the lowest level of proficiency in the PISA, these Filipino students have been clearly left behind in terms of mathematics education; more than half of this age group of Filipino students have inadequate mathematical skill compared to their peers in other parts of the world. The poor performance in mathematics also varied in degree between the students in public and private schools, where the means were 343 and 395, respectively (Department of Education 2019).

Based on the readings above, it is evident and observable that mathematical proficiency is really a problem in global, national, and even in the local setting. Hence, there is a need to conduct this study since the problem is an emergent and ongoing phenomenon. Mathematics education is facing a crisis as a growing number of students struggle to grasp mathematical concepts, leading to poor academic outcomes and limited future opportunities. In this digital age, where technology plays an integral role in our daily lives, harnessing its potential for education is not just a matter of choice but a necessity. Educational Technology Mobile Application, as a mathematics learning app, represents a promising solution that bridges the gap between technology and education. It holds the promise of making mathematics more accessible and inclusive, leveling the playing field for students of diverse backgrounds and abilities.

As we grapple with the challenges of an evolving educational landscape, this study offers the opportunity to uncover how Educational Technology Mobile Application can transform mathematics learning, engage students, and enhance problem-solving strategies,

addressing critical educational needs in our society. Its findings could have a profound impact on the way we approach mathematics education, offering a path towards a brighter and more equitable future for all students.

In connection, numerous studies have been conducted to examine the effects of mobile technology on student attitudes and achievement in mathematics. For example, Fabian, Topping, and Barron (2018) investigated the impact of using mobile technologies in teaching mathematics, focusing on how these tools influence student attitudes and achievement. Their research highlighted the positive effects of mobile technology in enhancing students' engagement and performance in mathematics. However, these studies did not focus on the broader implications of utilizing educational technology in the form of mobile applications for mathematics students. Instead, they primarily addressed the direct impact on student attitudes and achievement. Therefore, this study aims to fill the research gap by exploring the comprehensive effects of mobile applications on mathematics learning, considering not only student attitudes and achievement but also the pedagogical strategies and long-term educational outcomes associated with mobile technology use in mathematics instruction. This aspect represents a critical area for further investigation, as it seeks to understand the full potential and challenges of integrating mobile technology into mathematics education.

The dissemination of this work will be strategically executed through various channels, including high-impact research conferences such as the International Conference on Education and Development and the Global Summit on Educational Technology. These platforms will foster dynamic scholarly interaction, enabling researchers, educators, and governmental authorities to exchange knowledge and share research-based discoveries. Additionally, collaboration with agencies like the Commission on Higher Education (CHED) and relevant international bodies will ensure that findings reach key policymakers and stakeholders. To broaden the reach, the study will be published in peer-reviewed journals and shared through online academic platforms, webinars, and workshops. This multifaceted dissemination plan aims not only to encourage informed deliberation and inspire collaborative projects but also to facilitate the practical application of research findings in improving public service, educational policy, and instructional methods. By engaging diverse audiences and promoting open dialogue, the research will contribute to meaningful, evidence-based reforms in education.

Research Questions

This study determined the live experiences of the mathematics students in Kapalong College of Agriculture, Sciences and Technology, Davao del Norte. Specifically, it seeks to answer the following questions:

1. What are the experiences of mathematics students in utilizing educational technology mobile application?
2. How do these mathematics students cope with the challenges in utilizing educational technology mobile application?
3. What insights can be obtained from the experiences of mathematics students in utilizing educational technology mobile application that can be shared to other mathematics students and to the academe in general?

Methodology

Research Design

This study utilized a qualitative research design using phenomenological approach in exploring the lived experiences of BSED Math students. According to Crossman (2020) qualitative research is a type of social science research that collects and works with non-numerical data in order to extract meaning from it in order to better understand social life through the study of specific populations or locations. People frequently frame it in opposition to quantitative research, which employs statistical operations to determine causal and correlative relationships between variables and uses numerical data to identify large-scale trends.

In this study, qualitative research utilized since this aims to uncover the underlying meanings and interpretations behind the actions or outcomes typically measured by quantitative research. Unlike quantitative research, which focuses on numerical data and statistical analysis, qualitative research delves into the symbolic, interpretive, and relational aspects of social life. Therefore, the researchers in this study examined the experiences, perspectives, and coping mechanisms of BSED Mathematics students in their quest to understand complex mathematical concepts.

Meanwhile, phenomenological approach is utilized in order to gain understanding and pinpoint the phenomenon through the perspectives of the cast members embedded in the given situation. This research used a phenomenological approach to explore the behavior of students who took BSED Mathematics. Phenomenology is the study of consciousness structures as experienced in the first person. The basic structure of an experience is its purpose, or the fact that it is directed towards anything, as it is an experience of or about something. An experience is directed toward an object by virtue of its content or significance, which represents the object in conjunction with the necessary enabling conditions (Smith, 2017).

In this study, phenomenological approach was used because it is highly appropriate in this context. Given that the study sought to account the lived experiences of the BSED Mathematics students who participated in this study, it is understood that a phenomenological examination is required in the research context. Initially, phenomenology might be described as the study of experience structures or awareness. Furthermore, phenomenology is the study of conscious experience as it is viewed from the subjective or first-person point of view.

Participants

The participants of the study were the student enrolled in BSED Mathematics of Kapalong College of Agriculture, Sciences and Technology at Maniki, Kapalong Davao del Norte. In this research project, 14 students were purposely selected. The fourteen (14) participants were from BSED Mathematics in accordance with the criterion of the study were subjected to in-depth interviews (IDI), with the researcher interviewing each of them individually.

This is in accordance with the recommendation of Creswell (2013) who determined that the ideal number of participants in a qualitative study is between 3 and 15. By including this group of participants in a qualitative research study, data saturation was achieved during the data collection process.

Following the selection of participants, purposive sampling was used to ensure that only those who can provide the necessary data can take part in the study. Purposive sampling was used, and it is heavily reliant on a set of inclusion criteria. In qualitative research, purposeful sampling is commonly used to identify and select information-rich cases related to the phenomenon of interest. Although there are numerous purposeful sampling strategies, criterion sampling appears to be the most commonly used in implementation research. Combining sampling strategies, on the other hand, may be more appropriate to the goals of implementation research and more consistent with recent advances in quantitative methods (Palinkas et al., 2017). The participants of this study were selected based on the following criteria (1) must be a mathematics major student; (2) male or female; (3) a student in Kapalong College of Agriculture, Sciences and Technology. (4) and, all participants are treated equally, regardless of their gender preference or identity.

Procedure

The researcher underwent a meticulous manuscript review by the research technical panel. Subsequently, after gaining approval from all panel members, the researcher crafted a permission letter addressed to the relevant institution to seek permission to conduct the study. The researcher sent a letter to the college president of KCAST, requesting permission to conduct the study on the selected BSED Mathematics students. Upon approval of the request letter, copies of the letters were provided to the Registrar of the College to keep them updated on the progress of the study. To inform the selected participants, the researcher notified them through messages, such as email or any other mutually acceptable means, inviting them to participate in an interview based on their willingness and convenience.

To gather data for this research, the researcher was conducted in-depth interviews with participants who were given the freedom to express themselves in Filipino, Bisaya, English, or a combination of these three languages. Prior to the interviews, the researcher sought the participants' consent regarding recording their responses using recording devices such as smartphones or tape recorders. This was done to ensure that the conversation is accurately captured and no essential details are missed.

The researchers aimed to obtain valuable and precise information by formulating targeted questions and considering a range of possible responses during the interview. To prevent digressions, questionnaires were prepared to guide the participants. The questions in the interview guide were scrutinized by a panel of experts to ensure that they were aligned with the study's themes.

Additionally, the researcher carefully documented all the participants' choices and feedback to provide pertinent information to the study. The researcher prioritized the confidentiality of the participants by storing the data in password-protected files. Maintaining confidentiality was a crucial step for the researcher in this study to guarantee the safeguarding of the participants' personal information.

Data Analysis

The data gathered in this research was presented and analyzed in this study based on the needs and objectives of this research endeavor. This implies that sufficient analysis of the content of the participants' responses were performed in order to generate the study's findings. Therefore, data analysis aims the process of inspecting, cleansing, transforming, and modeling data in order to discover useful information, propose conclusions, and support decision-making. In addition, data analysis goal is to generate knowledge about common patterns and themes in human experience, this process is repeated with each new interview or account until all have been compared.

Qualitative data analysis is a systematic process of examining and organizing various forms of data, such as interview transcripts and observation notes, to gain a deeper understanding of a particular phenomenon. This process can be challenging and time-consuming, as the researcher aims to uncover the underlying meanings behind participants' actions and reactions. Despite the availability of advanced analysis technologies, the researcher is still the primary instrument in extracting these meanings through deep engagement with the data and participants. Although different qualitative methodologies may have different approaches, the basic phases of content analysis remain consistent, including data preparation, reading and reflection, coding, categorizing, and developing themes. Through this analytic process, the researcher progresses from describing the phenomenon to conceptualizing and abstracting themes while maintaining the voice of the participants who shared their stories. Maintaining participants' confidentiality is crucial during the data analysis phase (Ravidran, 2019).

Firstly, purposive sampling strategy was used to begin data collection procedure. Participants in this process were identified through direct observation; fourteen (14) BSEd mathematics students take part in the research. They signed a consent form, indicating their agreement to the conditions and that their participation in the study indicates that they are willing to share their knowledge and experience, which be extremely useful for the study.

The key participants were individually briefed on the project prior to the interview, which aims to gather data for the study. The

interview commenced with an introduction, followed by an overview of the meeting's objectives and scope, including confidentiality and duration. The participants were also informed in detail about the recording process and the technical aspects involved, as well as the reasons why the meeting was recorded.

Aside from that, thematic analysis was used in this study because it is a versatile approach to qualitative analysis that allows researchers to derive new insights and concepts from data. One of the many advantages of thematic analysis is that novice researchers who are just learning how to analyze qualitative data found it easy to use (Braun, 2006).

After obtaining the data, I thoroughly review it multiple times before transcribing it into a Word document. Subsequently, I read the transcript multiple times to comprehend the data more comprehensively. The next step was to identify and label ideas in the data, which is known as coding. After that, I grouped similar ideas into categories or themes. Finally, I established the relationship between various ideas and themes.

Ethical Considerations

The ethical codes are in place to ensure a pleasant scientific practice in research the importance of this study was placed on how it was observed and applied to the informants, as well as the setting that concerns both the participants and the researchers' agreement. Furthermore, the key concerns of this study were persons with whom the researcher had no relationship. As a result, the researcher secured their safety and provides them with complete protection so that they do not lose interest.

As a result, it is the researcher's primary responsibility to safeguard their safety and provide them with complete protection so that they do not lose trust. The researcher followed the following ethical guidelines for conducting the study: respect for persons, beneficence, justice, confidentiality and concent (Boyatzis, 1998; Mack et al., 2005).

Respect for Person necessitates a researcher's commitment not to take advantage of the research participants' flaws in order to maintain friendship, trust, and confidence among the participants and the researcher, self-sufficiency should be avoided. A letter was written to informed consent form for the participants ahead of time. The letter was designed to tell anyone who was interested, namely the administrators of the participants' schools, universities, and colleges, on the study's progress. This was done out of respect for the people involved in the study (Creswell, 2012).

During the process of this research, I developed courtesy and connection with my participants. I obtain their permission before documenting the IDI sessions. I previously give them permission to ask inquiries at any moment, before, during, and after the interviews. Moreover, I persist and really want to emphasize to them that all of the impending IDI sessions to be highly classified are concealed from the general public.

Beneficence needs a commitment to reducing the members' risks rather than increasing the income owed to them. To avoid putting any participant at risk, the interviewee's identity was kept anonymous. Participants were always protected, and no file of information was left unattended or unsecured (Bricki & Green, 2007).

During the conduct of this research, I the researcher employed pseudonyms to protect the participants' identities, so that the sources of statements and responses are not revealed. In addition, the interview guide questions avoided any sensitive or unimportant topics that would made the participants feel anxious. I the researcher assure that no participants expressed any discomfort while answering interview or group discussion questions during the course of the study.

Justice as part of the process, required a sensible allocation of risks and benefits based on the study's findings. It was important to acknowledge the contributions of all participants, as they played a crucial role in the success of the research. They were given appropriate credit for their involvement. During the interviews, participants did not incur any costs, and as a gesture of appreciation for their efforts, they were given practical gifts (Crabtree and Bloom, 2006).

During the conduct of this research, I gladly treat my participants with legitimacy and equality. As result, the benefits were distributed equitably to all participants as well as the risks that this research may demand. I made sure that all the participants were comfortable in dealing with and participating in this research. Furthermore, as compensation to the participants effort and presence I would give them a practical gifts and token.

Confidentiality is the direction of the outcomes and conclusions, as well as the protection, a coding system was utilized to keep track of the participants. The participants' identities were concealed. After the data has been evaluated, all materials, including audiotapes, encoded transcripts, notes, and others, should be destroyed. Some of the informants were initially hesitant to be questioned because they were unsure what to say, but after the researcher assured them that their replies would be kept confidential, they eventually agreed to be interviewed and appear at ease when addressing interview questions (Maree and Van Der Westhuizen, 2007).

During the interview, some of the participants are apprehensive to answer the questions, but I the researcher reassure them that their responses would be kept confidential. I, the researcher, kept in mind that the research participants would not be forced to disclose information; rather, they would do so voluntarily.

Consent is another crucial approach to show people you care over the conduct of research. This is done to make participants aware of

the goals and objectives of the research study in which they will be participating. They were granted written permission to obtain their approval. They must participate in in-depth interviews and focus group discussions after receiving their affirmation. They will, of course, be notified of the study's findings and results (Creswell, 2012).

As a result, I created, and I make it a point to respect my participants by asking if they actually want to join in this research. In addition, an informed letter was disseminated to the participants for them to know the flow on how the data where collect and also to informed them that the information gathered in the study were protected thoroughly. And lastly, all the participants who chosen not to participate in the study were given the option to withdraw with the promise that their information would be kept private even after the study was completed.

Results and Discussion

This section is divided into four parts. Part, one focuses on the participants' data, from which qualitative data were collected. Part two covers the data analysis procedures and the steps involved in categorizing the emergent themes from the results of the in-depth interviews. Part three focuses on the responses to the interview questions pertaining to each research problem. Lastly, part four provides a summary of the responses.

Participants

The participants of this study were the student enrolled in BSED Mathematics of Kapalong College of Agriculture, Sciences and Technology at Maniki, Kapalong Davao del Norte. As shown in Table 1, a total of 14 individuals took part in this study, comprising 14 participants for the in-depth interview.

In-depth Interview. There were fourteen key participants in this study. All of these participants were students enrolled in BSED Mathematics in Kapalong College of Agriculture, Sciences, and Technology located at Maniki, Kapalong, Davao del Norte. To uphold the principle of confidentiality, each participant was assigned a pseudonym during the in-depth interview, following the approach employed by Bernal (2014). These pseudonyms were chosen by the participants themselves based on their preferences and the unique characteristics that emerged during the interview sessions.

The selected pseudonyms provided insight into the characteristics and qualities of the participants. For instance, Fluent, acquired his nickname due to his adeptness in responding, Active was named due to his agility in responding during the interview. Dynamic was chosen for the participant who skillfully juggled busy schedules while learning. Effortful received her nickname due to her relentless efforts in learning. Caring earned her nickname because of her genuine concern for his academic progress and consistent support. Passionate was bestowed upon him in recognition of his unwavering dedication and fervor towards his pursuits. Resourceful epitomizes her adept problem-solving skills and innovative resource utilization.

Furthermore, Cool Composure was selected for the participant who consistently maintained a calm and relaxed demeanor while learning and solving math problems. Vocabulary is her nickname due to her proficiency in using words and understanding problem-solving concepts. Smart Joker is his nickname because he excels in entertaining while also being proficient in solving mathematical problems. Knowledgeable is her nickname as she exhibits brightness and possesses a wealth of knowledge in mathematics and other subjects. Fast Learner is her nickname due to his rapid acquisition and comprehension of mathematical concepts. Tenacious earned his nickname for his determination to grasp essential concepts, particularly in understanding mathematics. Lastly, Optimistic was the pseudonym for another participant because of her resilient attitude, and proactive approach towards challenges and opportunities.

All participants answered the same set of questions. The selection of participants was based on their involvement and experiences as students in learning mathematics using the educational technology mobile applications, which were identified by the researcher and verified through personal declarations provided by the participants.

The in-depth interview was conducted face-to-face for it to be more personal and engaging, allowing for deeper insights and better interpretation of non-verbal cues. Additionally, immediate clarification and follow-up questions can be addressed, fostering a more comprehensive understanding of the participant's experiences. Most of the participants did ask for a hardcopy which was distributed to their schools as per request. The researcher respected the participant's decision when asked to adjust and reschedule the interview due to their important reasons related to their classes. The researcher did consider face-to-face as an important factor to consider in achieving and ensuring the validity and credibility of the study.

Categorization of Data

After conducting in-depth interviews, the interview responses were transcribed, translated, and analyzed. The analysis commenced with the coding process, which involved organizing the materials into segments of texts to derive meaningful information. Through coding, descriptions of the participants' settings and thematic categories were generated to shape an overall depiction of the phenomenon under study. Data results were presented in the form of a table. This data gathered was handed to the data analyst for analysis of data and emerging themes.

The data was categorized into central themes based on the research questions, and these themes were presented. Thorough discussions

were conducted to vividly describe the emerged themes from the study, while the core ideas of the participants' responses were also included in the table alongside the major themes.

In the data analysis, we followed the second step by categorizing the data and presenting it in Table 2. The themes were organized according to the research questions and referred to as central themes, while the opposing significant themes were represented as co-ideas from the participants' responses. Additionally, the table included a column indicating the frequency of the responses, which served as the basis for classifying them into general, typical, and variant categories, as discussed above.

Table 1. *Participants of the Study*

In-depth Interview (Pseudonym)	Age	Sex	Code
Fluent	20	M	IDI-01
Active	21	M	IDI-02
Dynamic	23	F	IDI-03
Effortful	20	F	IDI-04
Caring	19	M	IDI-05
Passionate	21	M	IDI-06
Resourceful	21	M	IDI-07
Cool Composure	21	F	IDI-08
Vocabulary	21	F	IDI-09
Smart Joker	21	M	IDI-10
Knowledgeable	22	F	IDI-11
Fast Learner	19	M	IDI-12
Tenacious	20	M	IDI-13
Optimistic	21	F	IDI-14
Total = 14			

Research Question No. 1: What are the experiences of students in utilizing educational technology mobile application?

To answer this research question, in-depth interviews were conducted with the participants, respectively. Hence, several sub-questions were asked to understand their experiences in learning mathematics using educational technology mobile application.

The major themes and core ideas for research question number 1 were presented in Table 2. From the answers of the participants, six major themes had emerged: Got Frustrated with Internet Connectivity, Had Encountered Technological Malfunctions, Had Limited Technological Capacity and Resources, Had Too Much Reliance and Dependence with Technology, Found ICT Integration Meaningful and Engaging, and Aid Understanding and Provide Convenience.

Frustrated with Internet Connectivity

The theme focuses on frustration with internet connectivity significantly impacts mathematics students utilizing educational technology mobile applications. These applications rely heavily on stable internet access for seamless functionality, but inconsistent connectivity disrupts learning, hindering access to resources, quizzes, and interactive features. As a result, students may face challenges in completing assignments, accessing learning materials, and engaging with online lessons, ultimately impeding their academic progress and proficiency in mathematics.

Based on the experience of Fluent (pseudonym) emphasized that a major challenge with educational technology apps is the requirement for a stable internet connection, crucial for online access and app downloads. She noted that in their country, the signal is often unreliable, hindering smooth usage of such apps, he mentioned:

"Isa jud sa challenge sa pag gamit sa mga educational technology na mga apps is ang signal or ang internet kay basta online or mag download ka'g app kay need man jud na sya ug internet. Especially sa atoang country is di jud ing-ana ka kusog ang signal." (IDI 01)

(One of the challenges in using educational technology apps is the signal or internet connection because whether you're online or downloading an app, you really need internet access. Especially in our country, the signal isn't always strong like that.)

In addition, Smart Joker (pseudonym) emphasized the difficulty of using certain educational mobile apps due to their reliance on internet connection, which is often unreliable. He acknowledged that while internet access is available, its inconsistency poses challenges, though she noted that the broader issue lies in the varying advantages and disadvantages of educational technologies, he mentioned:

"...kanang ang internet pud usually, there are other educational mobile applications that are very difficult to utilize because it requires internet connection which also very difficult in my situation right now. Although, yes, naa mi internet pero naay times nga if walay internet, wala, dili nimo sya magamit. But for the most part is that really the challenging, I mean the challenges are not really that critical it is just that all of these educational technologies have their own pros and cons." (IDI 10)

(…moreover, the internet, usually, there are other educational mobile applications that are very difficult to utilize because they require an internet connection, which is also very difficult in my current situation. Although, yes, we have internet, but there are times when if there's no internet, you can't use it. But for the most part, the real challenge is not really that critical; it's just that all these educational technologies have their own pros and cons.)

Lastly, Knowledgeable (pseudonym) highlighted the challenge of internet connectivity as a significant issue. She pointed out that in areas with poor signal or no internet access, utilizing apps becomes difficult or impossible, impacting the overall user experience, she mentioned:

"So, among the different experiences I perceived, undesirable is the internet that is because on my part dili tanang areas man gud applicable or kaya mag detect ug internet or naay areas nga wala syay internet gyud. So, kung ma tungnan ka nga dira ka nga area nya wala kay internet so, lisod sya, dili nimo ma gamit ang apps." (IDI 11)

(So, among the various experiences I have perceived, one undesirable aspect is the internet connectivity issue. This is because not all areas are applicable or capable of detecting internet signals, and there are areas where there is no internet at all. So, if you find yourself in an area without internet, it's difficult because you can't use the apps.)

Table 2. *Themes and Supporting Statements on the Experiences of Mathematics Students Utilizing Educational Technology Mobile Application*

Emerging Themes	Supporting Statements
Got Frustrated with Internet Connectivity	"One of the challenges in using educational technology apps is the signal or internet connection because whether you're online or downloading an app, you really need internet access. Especially in our country, the signal isn't always strong like that." – IDI 01
	"…moreover, the internet, usually, there are other educational mobile applications that are very difficult to utilize because they require an internet connection, which is also very difficult in my current situation. Although, yes, we have internet, but there are times when if there's no internet, you can't use it. But for the most part, the real challenge is not really that critical; it's just that all these educational technologies have their own pros and cons." – IDI 10
	"So, among the various experiences I have perceived, one undesirable aspect is the internet connectivity issue. This is because not all areas are applicable or capable of detecting internet signals, and there are areas where there is no internet at all. So, if you find yourself in an area without internet, it's difficult because you can't use the apps." - IDI 11
Had Encountered Technological Malfunctions	"I think the only undesirable experience that I've had is the first one, when my phone malfunctions. So, it's more of a hardware and software issue. Also, there was a time when these mobile applications usually crashed, so I had to reinstall everything and search for the contents all over again." – IDI 02
	"And another one of my challenges is that my storage or device isn't even compatible with some applications. For example, this app isn't compatible with my device, I can't download it because my device has limited storage or lacks the required compatibility." – IDI 05
	"Among the experiences with undesirable aspects in educational technology include technical glitches, such as app crashes or slow performance, which can disrupt the learning process." - IDI 09
	"When using educational technology mobile applications, one of the technical issues is that the app may suffer from bugs, crashes, or compatibility issues, disrupting the learning process and frustrating users. Additionally, not all students have access to reliable internet connections or compatible devices." - IDI 09
Had Limited Technological Capacity and Resources	"And another thing is that my skills in manipulating the apps are not that advanced, I'm not adept at using mobile devices extensively, and it's also different when you're not using a cellphone because the features or functionalities you can use or utilize in the app are limited." – IDI 01
	"The storage on my device, especially as a student, is limited, with many other files that need to be saved on my device, and its storage capacity isn't that large. So, there are good applications out there, but I can't download them because they're too big due to ads. Most of the applications are filled with ads, which distract me from my tasks." – IDI 03
	"…one of the challenges we face is the limited resources we have, for example, gadgets like cellphones. As a student coming from a poor family, I don't have one yet." – IDI 04
	"Another additional challenge for me is the storage on my cellphone and these sudden pop-ups on the gadget I use, like my cellphone, because there are sudden pop-ups of messages or ads. Instead of concentrating on using technology for educational purposes, the focus shifts because of such indoor systems." – IDI 04
	"My experience involves not yet acquiring skills in using technology or technological tools, as I haven't fully grasped how to use them or utilize them." – IDI 05
	"Another challenge is when your cellphone lags because it's already full of storage or gets infected with viruses from clicking on suspicious links." – IDI 11
Had Too Much Reliance and Dependence with Technology	"There are times when I noticed myself relying too much on applications, where I let them solve problems for me instead of doing it myself, which prevents me from learning. I realized it's different, and there are times when the ideas and solutions from mobile applications aren't accurate, which could lead to crucial misconceptions about the topic I'm learning." - IDI 03
	"So, the undesirable experience for me is when I rely too much on technology without even trying to solve the problem on my own. Instead, I just rely on whatever answer comes out from the technological tool or mobile app, and that becomes my answer without critically evaluating whether it's correct or not." - IDI 05
	"So, among the experiences that I perceived, the most undesirable one is when I rely too much on educational

	technology applications. It's like I don't want to learn on my own because I know there are educational technology tools that can help me—they can generate answers directly." - IDI 06 "My undesirable experience while using this mobile app is probably becoming too dependent on it, to the point where I can't explore my learning on my own anymore because I just rely on this app to answer all the problems." - IDI 14 "Another experience I had is becoming dependent on these technological tools or mobile applications." – IDI 05 "In defining my character and my experiences as a mathematics student, one aspect is when I became dependent on the apps I used. I relied on the application because it already provided all the answers I needed, making it seem like I no longer had to figure out solutions on my own. It's like I placed my trust in it, as if it were my constant companion." – IDI 10
Found ICT Integration Meaningful and Engaging	"So, one specific experience I had in using educational technology that I really enjoyed was during my first year of college, particularly with Khan Academy. Because, you know, the teacher gives us practice sets to work on, like answering questions. It's also enjoyable because it feels like you're practicing solving problems, and once you get the right answer, it's a different feeling." – IDI 01 "When I was solving problems at Khan Academy, I found it to be the most enjoyable part. The thrill came from the challenge itself and the adrenaline rush, especially since the quizzes on Khan Academy have time limits. So, there's always the awareness that time is ticking away." – IDI 02 "The part where I check my solutions through the apps, and my answer perfectly matches the app's, gives me reassurance that my answer is likely correct." – IDI 03 "So, the term "enjoyable," I also found it enjoyable because aside from being easy to solve, it's also enjoyable because sometimes when you're challenged, especially in applications like mathematics games, it's fun, and I sometimes laugh." – IDI 04 "So, one thing I really enjoy about using these mobile applications is when, for example, my answer is correct and when I check my answer, it matches the one in the app I'm using. It's enjoyable for me because my answer is correct." – IDI 05 "So, the part that I enjoyed the most about educational technology is when I feel satisfied with my learning because of them." – IDI 07 "For me, one of the enjoyable aspects of using educational technology applications is the interactive learning experience they provide. Quizzes, games, and simulations make learning fun and engaging for us." – IDI 09
Aid Understanding and Provide Convenience	"The experience I had in using educational technology that I found enjoyable is with the Photomath application. It's amazing because you just input the question and the answer comes out immediately. Then, of course, we shouldn't just rely on it, but when you solve it yourself and get the correct answer, it's also amazing." – IDI 08 "The part that I enjoyed the most is the feature in the apps where you can scan photos. It's easy because sometimes I have bad handwriting, and if I write it myself, the app may not detect it properly due to the difference in scanning. So, when there is time to scan a photo, it's easier. You just need to scan it, and then the answer appears right away." – IDI 12 "The part of utilizing mobile applications that I enjoy is when I can provide a problem and solve it immediately. It not only helps me avoid laziness but also aids in my understanding of specific topics we are studying." – IDI 14

Had Encountered Technological Malfunctions

The theme focuses on encountering technological malfunctions can pose significant challenges for mathematics students using educational technology mobile applications. Technical glitches such as app crashes, slow performance, or compatibility issues can disrupt the learning process, leading to frustration and hindering students' ability to access study materials, solve problems, and engage with course content effectively. As a result, students may experience delays in completing assignments, difficulty in accessing resources, and a decrease in overall productivity, impacting their academic performance and confidence in using technology for learning.

Based on the experience of Active (pseudonym) highlighted his frustration with phone malfunctions, citing hardware and software issues. Additionally, he noted the inconvenience of mobile app crashes, which necessitated reinstalling them and redoing tasks, he mentioned:

"I think the only undesirable experience that I had is the first one is when my phone is malfunctioning. So, it's more of like a hardware issue and software issue. And also, there was a time when this mobile application, usually they crashed, so, I had to like reinstall everything and to search for the contents all over again." (IDI 02)

In addition, Caring (pseudonym) highlighted compatibility issues with her device, preventing her from downloading certain applications due to limited storage or lacking compatibility. This challenge hindered her access to specific apps required for her educational needs, he shared:

Ug usa pud sa akoang challenges, kanang ang akoang storage or device is dili compatible gani sa akoang device, for example kani na app is dili sya kuan compatible sa akoang device, dili sya ma downlod ana kay gamay ra ug storage or gamay ra ug kanang compatibility ang akoang device." (IDI 05)

(And another one of my challenges is that my storage or device isn't even compatible with some applications. For example, this app

isn't compatible with my device, I can't download it because my device has limited storage or lacks the required compatibility.)

Moreover, Vocabulary (pseudonym) highlighted undesirable experiences in educational technology, including technical glitches like app crashes or slow performance, which disrupt the learning process. These issues can impede students' progress and comprehension, she shared:

Among of the experiences with the undesirable experience in technology educational include technical glitches, such as app crashes or slow performance, which can disrupt the learning process. – IDI 09

Lastly, Vocabulary (pseudonym) emphasized technical issues with educational technology mobile applications, such as bugs, crashes, and compatibility problems, which disrupt learning and frustrate users. Moreover, not all students have access to reliable internet connections or compatible devices, further hindering their learning experience., she shared:

"Using education technology mobile application, one of the technical issues is using the app maybe is suffer from bugs or crashes, or compatibility issues disrupting the earning process and frustration users. And also, not all students have access to reliable internet connections or compatible devices." (IDI 09)

Had Limited Technological Capacity and Resources

The theme focuses on limited technological capacity and resources often restrict the effective use of educational technology mobile applications among mathematics students. This limitation can manifest in various forms, such as outdated devices with insufficient storage or incompatible software, hindering students' ability to download and utilize educational apps. Additionally, a lack of access to stable internet connections further compounds the challenge, limiting students' ability to engage with online resources and collaborate effectively on mathematical tasks. Overall, these limitations significantly impede students' access to educational opportunities and their ability to fully benefit from technology-enhanced learning experiences in mathematics.

Based on the experience of Fluent (pseudonym) highlighted his limited proficiency in navigating apps, expressing that he's not skilled at extensive mobile device usage and feels restricted by the limited features available when not using a cellphone, he mentioned:

"Ug isa pa kay kanang akong skills in manipulating the apps kay di pud gyud ko ing-ana ka hawd mag gamit ug mga mobiles ug dili kayo sya ing-ana ka wide ang mga magamit nimo or ma utilize nimo sa app, kay lahi ra jud pag kanang dili bitaw sa cellphone." (IDI 01)

(And another thing is that my skills in manipulating the apps are not that advanced, I'm not adept at using mobile devices extensively, and it's also different when you're not using a cellphone because the features or functionalities you can use or utilize in the app are limited.)

Based on the experience of Dynamic (pseudonym) pointed out the limited storage capacity on her device as a student, hindered by the need to save numerous files. This restricts her ability to download applications, particularly those with large file sizes due to ads that often distract her from tasks, she mentioned:

"Storage sakong device, especially as student daghan other files nga need naka save sakong device and dili ingun ana ka dako storage niya, mao naa nindut unta nga applications pero dili ko ka download kay bug at na sya ads, mostly jud applications that kay daghan ads which makawala ug focus saakong ginahimo." (IDI 03)

(The storage on my device, especially as a student, is limited, with many other files that need to be saved on my device, and its storage capacity isn't that large. So, there are good applications out there, but I can't download them because they're too big due to ads. Most of the applications are filled with ads, which distract me from my tasks.)

Based on the experience of Effortful (pseudonym) highlighted the challenge of limited resources, such as cellphones, particularly for students from low-income families. She mentioned not having one herself as an example, she mentioned:

"...one of the challenges we face is the limited resources we have, for example, gadgets like cellphones. As a student coming from a poor family, I don't have one yet." (IDI 04)

In addition, of Effortful (pseudonym) pointed out the challenge of limited storage on her cellphone and frequent interruptions from pop-up messages or ads, which divert attention away from educational purposes. These distractions hinder the focus needed for utilizing technology effectively in education, she mentioned:

"Isa pud dugang na challenges nako ani is kaning storage sa akoang cellphone ug kining mokalit ra og pop-up sa akoang gamiton nga gadget like cellphone kay naa man goy mokalit ug pop-up na something na mga messages or mga ads. So, imbis nga mag concentrate ug gamit sa technology alang sa educational purposes. So, mabalhin na noon ang focus noon kay tungod sa mga ingon ana na indoor system." (IDI 04)

(Another additional challenge for me is the storage on my cellphone and these sudden pop-ups on the gadget I use, like my cellphone, because there are sudden pop-ups of messages or ads. Instead of concentrating on using technology for educational purposes, the focus shifts because of such indoor systems.)

Moreover, of Caring (pseudonym) highlighted his lack of proficiency in using technology or tools, indicating he hasn't fully mastered their utilization, he mentioned:

"My experiences is katong wala pa kaayo ko ka acquire ug skills in using technology or kato nga technological tool kay wala pa kaayo ko ka acquire kung unsaon ni sya pag gamit, unsaon na sya pag utilize." (IDI 05)

(My experience involves not yet acquiring skills in using technology or technological tools, as I haven't fully grasped how to use them or utilize them.)

Lastly, Knowledgeable (pseudonym) emphasized the challenge of cellphone lag due to storage limitations or virus infections from suspicious links, she mentioned:

"Another challenges pud kay kanang mag lag imong cellphone kay puno na ug storage, na virusan sa taka-taka ra man ug click ug link." (IDI 11)

(Another challenge is when your cellphone lags because it's already full of storage or gets infected with viruses from clicking on suspicious links.)

Had Too Much Reliance and Dependence with Technology

This theme focuses on excessive reliance and dependence on technology among mathematics students can hinder independent problem-solving skills. Over- reliance may lead to a lack of critical thinking and understanding, as students may prioritize quick answers from technology over deeper comprehension of mathematical concepts.

Based on the experience of Dynamic (pseudonym) highlighted instances where she overly depended on applications to solve problems, hindering her learning process. She also noted discrepancies in the accuracy of ideas and solutions provided by mobile applications, potentially leading to misconceptions about the topics being learned. she mentioned:

"Naay times where napansin nako sako sarili nga gasalig na depedently jud sa applications like sila na akong ginapasolve jud unya dina ako which is diko ka learn. Mao narealize nako na lain pud sya, tapos naay times nga dili jud ingun accurate and ideas from mobile application which could a crucial misconception towards the topic ng ako gina learn." (IDI 03)

(There are times when I noticed myself relying too much on applications, where I let them solve problems for me instead of doing it myself, which prevents me from learning. I realized it's different, and there are times when the ideas and solutions from mobile applications aren't accurate, which could lead to crucial misconceptions about the topic I'm learning.)

Based on the experience of Caring (pseudonym) highlighted the negative outcome of excessively relying on technology without attempting to solve problems independently. He highlighted how this approach led him to accept answers from technological tools without critically evaluating their accuracy, he mentioned:

"So, the experiences or kanang undesirable sa akoa is kanang mag rely nalang ka sa technology without naga solve gani ka sa imohang kaugalingon, bali nag rely nalang ka sa kung unsa toy ni gawas na answer sa technological tool or mobile app is mao nalang pud to imohang ge answer without kanang gina critic nimo kung tama ba ni." (IDI 05)

(So, the undesirable experience for me is when I rely too much on technology without even trying to solve the problem on my own. Instead, I just rely on whatever answer comes out from the technological tool or mobile app, and that becomes my answer without critically evaluating whether it's correct or not.)

Based on the experience of Passionate (pseudonym) highlighted his hesitation towards excessive reliance on educational technology apps, expressing concern that they hinder her inclination to learn independently. She emphasized how depending solely on these tools for direct answers undermines her motivation to engage in personal learning efforts. he mentioned:

"So, among the experiences that I perceived, ang the most undesirable jud nga kanang murag lain gyud kaayu dili dapat buhaton is nag-salig nako, tungod sa mga educational technology nga application kumbaga dili nako ganahan mutoon on my own kay kabalo ko naay educational technology nga mutabang sa ako, maka generate na sila diretso ug answer." (IDI 06)

(So, among the experiences that I perceived, the most undesirable one is when I rely too much on educational technology applications. It's like I don't want to learn on my own because I know there are educational technology tools that can help me—they can generate answers directly.)

In addition, Optimistic (pseudonym) highlighted her adverse experience with overreliance on a particular mobile app, hindering her ability to independently explore and understand learning materials. She expressed concern about becoming overly dependent on the app to provide answers, limiting her personal engagement with the learning process, she mentioned:

"Ang mga undesirable experience nako while using this mobile app is kana sigurong dependent nako ani to the point nga dili nako maka explore my learning on my own kay ginasalig nalang nako pag answer ang tanang problem sa kani nga app." (IDI 14)

Actuel & Basilio

(My undesirable experience while using this mobile app is probably becoming too dependent on it, to the point where I can't explore my learning on my own anymore because I just rely on this app to answer all the problems.)

Moreover, Caring (pseudonym) emphasized his reliance on technological tools or mobile applications, indicating a significant aspect of his experience. He highlighted the dependence she developed on these tools, suggesting it as another notable point of concern, he mentioned:

"And na experiences nako is dependent, naging dependent nako sa kaning mga technological tool or mobile applications." (IDI 05)

(Another experience I had is becoming dependent on these technological tools or mobile applications.)

Lastly, Smart Joker (pseudonym) emphasized his reliance on apps as a defining aspect of his character and experiences as a math student. Depending on these applications for answers, he felt as though he didn't need to solve problems independently, likening the reliance to trusting a constant companion, he mentioned:

"Sa nag define sa akoang character ug akong experience as a mathematics student, sa part na naging dependent ko sa apps na akong gi gamit kay mag salig nalang man ko sa application kay naa na gud tanan ang answer ing generate nako. So, murag wala nakoy answer-answer na ako lang kay murag gina saligan na gyud nako or murag kanang kamay na gyud nako permente." (IDI 10)

(In defining my character and my experiences as a mathematics student, one aspect is when I became dependent on the apps I used. I relied on the application because it already provided all the answers I needed, making it seem like I no longer had to figure out solutions on my own. It's like I placed my trust in it, as if it were my constant companion.)

Found ICT Integration Meaningful and Engaging

This theme focuses on finding ICT integration meaningful and engaging refers to the incorporation of Information and Communication Technology (ICT) tools into the learning process. This integration enhances students' learning experiences by making mathematical concepts more interactive, accessible, and engaging. Using educational apps, students can explore mathematical concepts in dynamic ways, solve problems interactively, and engage with visualizations and simulations that deepen their understanding of mathematical concepts. Overall, ICT integration in educational technology mobile applications empowers mathematics students to learn more effectively, fostering their interest and engagement in the subject.

Based on the experience of Fluent (pseudonym) highlighted his positive experience using educational technology during his first year of college, particularly with Khan Academy. Working on practice sets provided by the teacher felt engaging and rewarding, as it allowed him to practice problem-solving and experience the satisfaction of finding the correct answers, he mentioned:

"So, ang specific jud na experience nako sa pag gamit nako ug educational technology, nalingaw jud ko is katong during sa first-year college nata, katong Khan Academy. Kay diba naa toy gina hatag ang maestra kay naay gina set na practice set like answeran answeran nato. So, maka lingaw sad sya kay kanang mura syag kanang kumbaga mag practice ka'g solve ba nya once na maka tama ka ug answer kay lahi ra sa feeling." (IDI 01)

(So, one specific experience I had in using educational technology that I really enjoyed was during my first year of college, particularly with Khan Academy. Because, you know, the teacher gives us practice sets to work on, like answering questions. It's also enjoyable because it feels like you're practicing solving problems, and once you get the right answer, it's a different feeling.)

Based on the experience of Active (pseudonym) highlighted the thrill of solving problems on Khan Academy, finding it the most enjoyable part of her learning experience. The challenge and time pressure of the quizzes added to the excitement, creating an adrenaline rush during problem-solving, he mentioned:

"When I was solving in Khan Academy, I think that's the most enjoyable part. It's because of the problem, because of the adrenaline rush, because this quizzes in Khan Academy have a time limit. So, keep in mind as well that time is running out." (IDI 02)

Based on the experience of Dynamic (pseudonym) emphasized that when her answer matches the app's, it reassures her of its correctness. This confirmation boosts her confidence in her solutions, she mentioned:

"Tung part nga ga check kos akong solusyon through the apps, like fulfilling kaayu nga pareha akong answer ug ang app. Maka siguro pud ko somehow nga tama akong answer." (IDI 03)

(The part where I check my solutions through the apps, and my answer perfectly matches the app's, gives me reassurance that my answer is likely correct.)

Based on the experience of Effortful (pseudonym) highlighted her enjoyment of the educational technology app due to its quick answer provision, saving time amidst her multiple student responsibilities, she mentioned:

"So, na enjoy gyud ko sa pag gamit aning educational technology mobile application is kining ma come up dayun ang answer nga dili na bitaw nga kinahanglan na mo konsumo pa kaayug oras kay kanang as a student, daghan man tag gina prioritize." (IDI 04)

(I really enjoyed using this educational technology mobile application because it quickly provides the answer without needing to consume too much time, especially since as a student, we have many priorities to consider.)

Based on the experience of Effortful (pseudonym) found the term "enjoyable" fitting because, besides being easy, solving challenges, especially in mathematics games, brought amusement, often leading to laughter, she mentioned:

"So, kana pong term nga lingaw, dira pud ko nalingaw pog maayu ba kay aside nga dali lang pud sya ma solve. So, lingaw pud sya kay usahay kay kung ma challenge man ka ba inag abot na sa mga application bitaw labi nag kanang mga mathematics games nga application. So, ma enjoy, mag katawa nalang ko usahay." (IDI 04)

(So, the term "enjoyable," I also found it enjoyable because aside from being easy to solve, it's also enjoyable because sometimes when you're challenged, especially in applications like mathematics games, it's fun, and I sometimes laugh.)

In addition, Caring (pseudonym) highlighted his enjoyment when his answer matches the one in the app after checking it, finding satisfaction in knowing his answer is correct, he mentioned:

"So, isa jud sa akoang na enjoy-yan sa pag utilize aning mga mobile application is that for example, tama ang akoang answer or kanang pag check sa akoang answer is tama ang akoang answer nya tama pud sa kani na app na akoang gi gamit, kuan ma enjoy ko kay tama ang akoang answer." (IDI 05)

(So, one thing I really enjoy about using these mobile applications is when, for example, my answer is correct and when I check my answer, it matches the one in the app I'm using. It's enjoyable for me because my answer is correct.)

Moreover, Resourceful (pseudonym) highlighted his satisfaction with learning through educational technology, highlighting it as the most enjoyable aspect for him, he mentioned:

So, the part nga mas na enjoy nako most ang educational technology kay, kanang ma satisfy ko sa akong learning tungod sa ila." (IDI 07)

(So, the part that I enjoyed the most about educational technology is when I feel satisfied with my learning because of them.)

Lastly, Vocabulary (pseudonym) highlighted the interactive learning experience provided by educational technology apps, emphasizing the enjoyment derived from quizzes, games, and simulations, she mentioned:

"I think for me one the enjoyable aspects using the educational technology applications is the interactive learning experience they provide. Like quizzes, games, and simulations make learning fun and engaging for us." (IDI 09)

Aid Understanding and Provide Convenience

This theme focuses on educational technology mobile applications aid understanding by providing interactive tools, simulations, and visualizations that facilitate comprehension of mathematical concepts. Additionally, theyoffer convenience by allowing students to access learning materials anytime, anywhere, and at their own pace, enhancing flexibility and accessibility to educational resources. Based on the experience of Fluent (pseudonym) highlighted the enjoyable experience she had with the Photomath application, where inputting a question yields an immediate answer. However, she also emphasized the importance of not solely relying on it, finding satisfaction in solving problems independently and obtaining correct answers, he mentioned:

"Ang naexperience naku sa paggamit ug educational technology nga kanang nakapa enjoy sa akoa is katong Photomath nga applicaition kay maka amaze lang kay I input lang nimo ang question din mo gawas dayon ang answer. Then pag syempre dili man ta diha mo salig peru pag once ikaw ang mag solve tama pod biya ang answer mao to maka amaze." (IDI 08)

(The experience I had in using educational technology that I found enjoyable is with the Photomath application. It's amazing because you just input the question and the answer comes out immediately. Then, of course, we shouldn't just rely on it, but when you solve it yourself and get the correct answer, it's also amazing.)

Moreover, Fluent (pseudonym) highlighted his enjoyment of the photo scanning feature in apps, citing its convenience over handwriting, which can sometimes lead to detection issues. He finds it easier to scan photos, instantly generating correct answers without the hassle of manual input, he mentioned:

"The part that made me enjoy the most is the scan photos na part sa apps, that is because sayun sya kay usahay man gud I have bad writing so kung akoa pud syang isulat sometimes dili sya ma detect ug tarong sa app kay malahi iyang pag scan. So, pag abot atong times nga naa nay scan photo. So, mas dali sya, igo ra nimo e scan then naan a dayun ang answer." (IDI 12)

(The part that I enjoyed the most is the feature in the apps where you can scan photos. It's easy because sometimes I have bad handwriting, and if I write it myself, the app may not detect it properly due to the difference in scanning. So, when there is time to scan a photo, it's easier. You just need to scan it, and then the answer appears right away.)

Lastly, Optimistic (pseudonym) expressed her enjoyment in promptly solving problems through mobile applications, highlighting its

role in combating laziness and enhancing her understanding of studied topics. She finds immediate problem-solving not only motivating but also beneficial for grasping specific subjects, she mentioned:

"The part of mobile application utilization nga na enjoy nako is kanang maghatag kog problem unya ma solve dayon. Makatabang pud siya dili sa pagtinapulan kondili it helps me understand more about specified topics we had." (IDI 14)

(The part of utilizing mobile applications that I enjoy is when I can provide a problem and solve it immediately. It not only helps me avoid laziness but also aids in my understanding of specific topics we are studying.)

Research Question No. 2: How do these students cope with the challenges in utilizing educational technology mobile application?

To answer this research question, in-depth interviews were conducted with the participants, respectively. Hence, several sub-questions were asked about their strategies for coping with the challenges they faced in learning using educational technology mobile application. It was revealed that they employ a range of strategies and techniques to overcome these difficulties.

The major themes and core ideas for research question number 2 were presented in Table 3. From the answers of the participants, 5 major themes emerged: Being Open for Learning, Being Persistent on the Endeavour, Engaging Oneself to Technology Utilization, Preparing Sources and Oneself, and Getting Screen time Breaks.

Being Open for Learning

This theme focuses on being open for learning in the context of educational technology mobile applications for mathematics students refers to maintaining a receptive mindset towards acquiring knowledge and skills through digital tools. It involves embracing new learning opportunities facilitated by technology, actively engaging with educational content, and being willing to explore innovative methods of studying mathematics.

During the interview, Fluent (pseudonym) emphasized his intrinsic motivation to study mathematics independently of technology, highlighting his reliance on available resources. He further underscored his drive by citing his high scores on quizzes and problem sets achieved without technological aids, he mentioned:

"Ang nakapa motivate jud sa akoa kay kanang ang mathematics man gud kay ma tun-an lang sya baski pag walay internet. So, mas ma motivate ko na mag tuon maski pag kanang walay technology kay tungod naa man tay mga resources. Tapos ma motivate pud jud ka kay tungod sa base sa result sa imong mga quizzes, mga problem set na dagkog score na kanang wala gud kayka nag rely sa technology." (IDI 01)

(What really motivates me is that mathematics can be learned even without the internet. So, I am more motivated to study even without technology because we still have resources. Additionally, I am motivated by the results of my quizzes and problem sets where I achieve high scores even without relying on technology.)

As with the other participant, Active (pseudonym) emphasized his resilience and determination in overcoming inadequacies by leveraging her intellectual strengths to learn and adapt, citing past experiences of growth and enthusiasm in various aspects of his life. He expressed optimism in continually replicating such experiences in the future, he mentioned:

"I think what motivates me is the fact that despite being inadequate is that I am aware of these weaknesses, but at the same time I'm also aware of the fact that I am capable of growing and I am the type of person who persist. If I do not know the answer of the particular thing, if I do not know how to operate this particular machine or software, I used every strength that I have particularly intellectual strength to figure out how to use this particular technology, how to solve problems that I encounter. And eventually, I grow and learn something new. And I have these experiences back then when I was able to learn something new and to actually improve my skills and I am fully enthusiastic and optimistic that I make that happen again, again and again. Not only mathematics but in every aspect of my life." (IDI 02)

As with the other participant, Caring (pseudonym) emphasized the importance of recognizing learning as a gradual process, highlighting the inevitability of not knowing all the steps at once, he mentioned:

"So, isa jud sa akoang reminder sa akoang sarili kay understand yourself nga kanang learning is a step-by-step process. Dili man jud sa tanang panahon nga kanang makabalo ka ani na steps." (IDI 05)

(So, one of my reminders to myself is to understand that learning is a step-by-step process. You won't always know all the steps.)

As with the other participant, Smart Joker (pseudonym) emphasized his goal-oriented nature, expressing his belief in the necessity of daily productivity and her aversion to disappointment in failure to achieve, he mentioned:

"Isa nakong reminder sa akong kaugalingon kay ma disappoint akong ko kung ma fail ko kay as a person kay murag goal oriented gud ko nga dapat sa isa ka adlaw nga dapat naa koy mabuhat, dapat productive ko every day." (IDI 10)

(One reminder for myself is that I will disappoint myself if I fail because as a person, I am goal oriented and I believe that I should

accomplish something each day, I should be productive every day.)

Table 3. *Themes and Supporting Statements on the Mathematics Students Cope with The Challenges in Utilizing Educational Technology Mobile Application*

Emerging Themes	Supporting Statements
Being Open for Learning	"What really motivates me is that mathematics can be learned even without the internet. So, I am more motivated to study even without technology because we still have resources. Additionally, I am motivated by the results of my quizzes and problem sets where I achieve high scores even without relying on technology." – IDI 01 "I think what motivates me is the fact that despite being inadequate is that I am aware of these weaknesses, but at the same time I'm also aware of the fact that I can grow, and I am the type of person who persists. If I do not know the answer to the thing, if I do not know how to operate this machine or software, I used every strength that I have particularly intellectual strength to figure out how to use this technology, how to solve problems that I encounter. And eventually, I grow and learn something new. And I have these experiences back then when I was able to learn something new and to improve my skills and I am fully enthusiastic and optimistic that I make that happen again, again and again. Not only mathematics but in every aspect of my life." – IDI 02 "So, one of my reminders to myself is to understand that learning is a step-by- step process. You won't always know all the steps." – IDI 05 "One reminder for myself is that I will disappoint myself if I fail because as a person, I am goal oriented and I believe that I should accomplish something each day, I should be productive every day." – IDI 10
Being Persistent on the Endeavour	"So, my constant reminder to myself every time I feel like I can't handle it anymore is because I tell myself that if others can do it, how about me who is also trying my best." – IDI 06 "So, my constant reminder to myself is, no matter how many problems come, there is a solution. So, if there's a problem in mathematics that you don't understand, we have mobile applications that can help and provide a way to solve your problem." – IDI 07 "For me, perhaps it's always a reminder to myself that I'm not rich. So, I can't give up even though I struggle if I don't rely on technology, maybe I can manage if you take your studies seriously." – IDI 08 "I motivate myself that these are just challenges, you'll get through them in life, or everything will pass. And I remind myself that this is for my future." – IDI 11 "The one thing that motivates me to keep going is my goal to learn, to pass, or to understand the specific topic or subject given by the instructors. That's my goal to achieve more or to reach a certain point through it because the experiences or challenges I've faced while utilizing educational technology are just part of my journey to keep going despite the challenges. I can say that I have learned a lot because of it." – IDI 06 "For me, if I feel like giving up, I remind myself of my goals and aspirations. I reflect on the progress I've made so far and the reasons why I started using educational technology mobile applications in the first place. I tell myself that challenges are part of the learning process." – IDI 09 "… the personalized nature of many educational apps, which adapt to the user's pace and level of understanding, makes the learning process more effective and enjoyable." – IDI 09 "... my internet connection, because sometimes it can be frustrating when it goes out, and there are times when I look for easier ways to access resources so I can compare my process to my solutions." IDI 07
Engaging Oneself to Technology Utilization	"For me, I prepare myself to engage with technology mobile applications because of the interactive learning experience they provide." – IDI 06 "I prepare a strong internet connection that can provide fast and uninterrupted access, ensuring that there is no lag, and it can generate answers quickly." – IDI 05 "So, I adapted by using YouTube to watch video tutorials." – IDI 07 "I embrace new features or updates by exploring them gradually and seeking help or guidance if needed." – IDI 09 "I can adapt more effectively to changes in educational technology mobile applications and enhance my overall learning experience. And although we are already in the 21st century, it will continue to be further enhanced for the next generation." – IDI 09
Preparing Sources and Oneself	"Another thing I prepare is myself, so that I'm ready for any possible issues that may arise when using the application, as technical errors cannot always be avoided." – IDI 04 "And mentally prepare yourself on how to use such applications because there are applications that are difficult to use." – IDI 05 "So, the first thing I prepare while utilizing this educational technology is the internet, especially if it's an online educational tool. Additionally, I prepare my mindset not to just directly copy the answers but rather to understand and solve them myself." – IDI 06 "The time should also be ample; there should be a specific time of day dedicated to using the app, where I can focus on solving my problems." – IDI 11 "…the place should be free from distractions, no disturbances or noise around, just peace and quiet." – IDI 11 "It's more on the physical aspect. So, in managing stress, I usually take a break from too much screen time. Usually, I just walk outside or maybe get some fresh air outside, as well as try to do mental exercises like meditation." – IDI 02
Getting Screen	"So, in my case, I had to pick my eyes to screen and to have to look outside because it's physically deteriorating as well if

time Breaks	you just in your chair for hours and looking at the screen. You need to put yourself in a position where you do not feel stress. So, in my case, I take a break from screen time." – IDI 03
	"... it's important to take a rest even if it's just for a short while, as long as your mental state remains intact so that you can combat stress and continue your engagement in using educational technology through mobile applications." – IDI 04
	"I divert myself to find entertainment for myself so that I won't be stressed out." –IDI 05

Being Persistent on the Endeavour

This theme focuses on being persistent in the endeavor refers to the commitment and determination to continue despite challenges or setbacks encountered while using educational technology mobile applications. This persistence enables mathematics students to overcome difficulties, learn from mistakes, and ultimately achieve their academic goals.

During the interview, Passionate (pseudonym) feels overwhelmed, he reminds himself that if others can succeed, so can he, bolstering his determination to keep trying his best. This mindset helps his navigate challenges and stay motivated in his academic journey, he mentioned:

"So, my constant reminder to myself everytime nga murag feel nako di na nako kaya, kay muingon jud ko sa akong kaugalingon nga kaya man gani nila, how about me nga naningkamut pud." (IDI 06)

(So, my constant reminder to myself every time I feel like I can't handle it anymore is because I tell myself that if others can do it, how about me who is also trying my best.)

As with the other participant, Resourceful (pseudonym) constant reminder is that every problem has a solution, and if he encounters a challenge in mathematics, there are mobile applications available to assist and guide him through problem- solving. This mindset empowers him to tackle difficulties with confidence and utilize technology as a valuable resource in his learning journey, he mentioned:

"So, my constant reminder from myself is, how many problem to come gani is there is a solution. So, if naay problem sa mathematics na dika kasabut jud so, naa tay mobile application na maka tabang and muhatag og way to give the solution of your problem." (IDI 07)

(So, my constant reminder to myself is, no matter how many problems come, there is a solution. So, if there's a problem in mathematics that you don't understand, we have mobile applications that can help and provide a way to solve your problem.)

As with the other participant, Cool Composure (pseudonym) constant reminder that despite financial constraints, giving up isn't an option. She acknowledges that while technology might not always be accessible, dedication to serious studies can help overcome challenges, she mentioned:

"For me siguro always jud nakapa remind sa akoa dili jud ko datu. So, dili pwede nga mo give up ko though naglisod ko kung dili mag rely sa technology basin makaya raman Siguro ba basta seryosuhon lang jud nimo ang imong studies." (IDI 08)

(For me, perhaps it's always a reminder to myself that I'm not rich. So, I can't give up even though I struggle if I don't rely on technology, maybe I can manage if you take your studies seriously.)

In addition, Knowledgeable (pseudonym) motivates herself by viewing challenges as temporary hurdles in life and reminds herself that her efforts are for her future success, she mentioned:

"Gina motivate nako akong kaugalingon nga challenges lang ni, nimo agi ra ni sa life or maagian ra jud tanan. Ug gina remind nako sa akoang self na para ni sa akoang future." (IDI 11)

(I motivate myself that these are just challenges, you'll get through them in life, or everything will pass. And I remind myself that this is for my future.)

Moreover, Passionate (pseudonym) motivation originates from his desire to learn, pass, and understand the topics provided by instructors, which drives him to achieve more despite the challenges encountered while using educational technology. He views these experiences as integral to his journey of learning and growth, he mentioned:

"The one thing that motivates me to keep going is my goal to learn, to pass or to learn the specific topic or subject na ihatag sa mga instructor. Mao to akoang goal to achieve more or to kaning makab-ot ang usa ka butang through kay ang experience man gud or challenges nga akong na experience while utilizing educational technology just part of my journey para mag keep going despite of the challenges maka ingon ko na daghan pud kog na learn tungod niya." (IDI 06)

(The one thing that motivates me to keep going is my goal to learn, to pass, or to understand the specific topic or subject given by the instructors. That's my goal to achieve more or to reach a certain point through it because the experiences or challenges I've faced while utilizing educational technology are just part of my journey to keep going despite the challenges. I can say that I have learned a lot because of it.)

Lastly, Vocabulary (pseudonym) focuses on her goals and past progress, reminding herself of the purpose behind using educational

technology apps. She acknowledges that challenges are inherent in the learning journey and are essential for growth, she mentioned:

"For me, if I feel like giving up, I remind myself of my goals and aspirations. I reflect on the progress I've made so far and the reasons why I started utilizing educational technology mobile applications in the first place. I tell myself that challenges are part of the learning process." (IDI 09)

Engaging Oneself to Technology Utilization

This theme focuses on engaging oneself in technology utilization refers to actively involving oneself in the use of educational technology mobile applications, particularly in the context of mathematics learning. This includes actively participating in tasks, exercises, and interactive features offered by these apps to enhance understanding and proficiency in mathematical concepts.

During the interview, Vocabulary (pseudonym) emphasized that educational apps personalize learning, adapting to the user's pace and understanding level, thereby enhancing effectiveness and enjoyment, she mentioned:

"... the personalized nature of many educational apps, which adapt to the user's pace and level of understanding, makes the learning process more effective and enjoyable." (IDI 09)

As with the other participant, Resourceful (pseudonym) highlighted the frustration caused by intermittent internet connectivity and his search for alternative resources to cross-check his solutions efficiently, he mentioned:

"... akoa internet kay usahay jud makalagot kay mawala-wala ang net and there are sometimes na mangita nalang kog mas dali na ma access na resources para ma compare nako ang akoang process sa akoang solutions." (IDI 07)

(... my internet connection, because sometimes it can be frustrating when it goes out, and there are times when I look for easier ways to access resources so I can compare my process to my solutions.)

As with the other participant, Passionate (pseudonym) emphasized his readiness to engage with mobile applications for their interactive learning experiences, he mentioned:

"For me I prepared myself to engaging technology mobile applications is the interactive learning experience they provide." (IDI 06)

As with the other participant, Caring (pseudonym) emphasized the importance of a strong, uninterrupted internet connection for fast access to educational resources, he mentioned:

"Gina prepare nako ang kusog na internet connection na maka hatag ug paspas na connection nga kanang dili lag tapos maka generate jud ug answer." (IDI 05)

(I prepare a strong internet connection that can provide fast and uninterrupted access, ensuring that there is no lag, and it can generate answers quickly.)

In addition, Resourceful (pseudonym) adapted by using YouTube for video tutorials, enhancing her learning experience, he mentioned:

"So, na adapt nako by guiding YouTube to see video tutorial." (IDI 07)

(So, I adapted by using YouTube to watch video tutorials.)

Moreover, Vocabulary (pseudonym) gradually explores new features or updates and seeks help if needed, enhancing her understanding and utilization of the applications, she mentioned:

"I embrace new features or updates by exploring them gradually and seeking help or guidance if needed." (IDI 09)

Lastly, Vocabulary (pseudonym) can adapt effectively to changes in educational technology applications, enhancing her learning experience. She believes that advancements will continue to improve educational technology for future generations, she mentioned:

"I can adapt more effectively to changes in educational technology mobile applications and enhance my overall learning experience. And not although naa na naman ta sa 21st century so mas ma enhanced pa jud siya sa next generation." (IDI 09)

(I can adapt more effectively to changes in educational technology mobile applications and enhance my overall learning experience. And although we are already in the 21st century, it will continue to be further enhanced for the next generation.)

Preparing Sources and Oneself

This theme focuses on preparing sources and oneself in the context of educational technology mobile applications for mathematics students involves two key aspects. Firstly, it includes ensuring access to reliable and relevant digital resources such as online textbooks, video tutorials, and educational apps. Secondly, it involves preparing oneself mentally and technically to engage with these resources effectively, which may include familiarizing oneself with the features of the applications and optimizing one's study environment for uninterrupted learning.

During the interview, Effortful (pseudonym) highlighted the importance of preparing oneself to address potential application issues, as

technical errors can be unpredictable and require readiness. This proactive approach ensures smoother navigation through any challenges encountered during app usage, she mentioned:

"... isa pud sa akong gina prepare is ang ako pong self kay para kana bitawng andam daan sa mga possible na mahitabo sa paggamit sa application kay, dili man jud nato malikayan, naa man juy mga technical errors gyud." (IDI 04)

(Another thing I prepare is myself, so that I'm ready for any possible issues that may arise when using the application, as technical errors cannot always be avoided.)

As with the other participant, Caring (pseudonym) emphasized the need to mentally prepare for using challenging applications, acknowledging that some may pose usability difficulties. This preparation facilitates better navigation and utilization of complex app features, he mentioned:

"And also, mentally prepared pud ka on how to use such application kay there are applications nga lisod gamiton." (IDI 05)

(And mentally prepare yourself on how to use such applications because there are applications that are difficult to use.)

As with the other participant, Passionate (pseudonym) highlighted the importance of ensuring a reliable internet connection as the first step in utilizing educational technology, particularly for online tools. Additionally, he emphasized the need to cultivate a mindset focused on understanding and solving problems independently rather than solely relying on preexisting answers, he mentioned:

"So, the first one nga akong gina ready while utilizing this educational technology. Kay first, is the internet labi nag online educational technology siya or tools and also ang akong sense of mind nga dili, akong ingnon akong kaugalingon nga dili dapat mag diritso ug copy sa answer no dapat sabton pa." (IDI 06)

(So, the first thing I prepare while utilizing this educational technology is the internet, especially if it's an online educational tool. Additionally, I prepare my mindset not to just directly copy the answers but rather to understand and solve them myself.)

As with the other participant, Knowledgeable (pseudonym) highlighted the importance of allocating dedicated time for using the app each day to focus on problem-solving effectively. She emphasized the need for ample time to ensure focused engagement with the application, she mentioned:

"Ang time pud kailangan taas-taas pud, dapat naa koy adlaw na dapat mao jud na akong time mo gamit ko ug app kay mag solve ko sa mga answeranan nako." (IDI 11)

(The time should also be ample; there should be a specific time of day dedicated to using the app, where I can focus on solving my problems.)

In addition, Active (pseudonym) emphasized managing stress by taking breaks from excessive screen time, opting for outdoor walks or meditation to refresh mentally and physically. He finds relief in activities that provide fresh air and mental relaxation away from digital screens, he mentioned:

"It's more on the physical aspect, so in managing stress, I usually take a break, too much screen time. Usually I just walk outside, or maybe just get some fresh air outside, as well as try to do mental exercises like meditation." (IDI 02)

Moreover, Dynamic (pseudonym) emphasized the importance of minimizing prolonged screen exposure to avoid physical strain and mental fatigue. She advocates for taking regular breaks from screen time to alleviate stress and maintain overall well- being, she mentioned:

"So, in my case, I had to pick my eyes to screen and to have to look outside because it's pretty physically deteriorating as well if you just in your chair for hours and looking at the screen. You need to put yourself in a position where you did not feel stress. So, in my case, I take a break from screen time." (IDI 03)

Lastly, Effortful (pseudonym) emphasized the necessity of brief breaks to preserve mental well-being, ensuring sustained focus and effectiveness in utilizing educational technology via mobile applications, she mentioned:

"... importante jud na kanang mag rest ka bahalag kadali lang basta importante kanang imohang mental state ba intact permi bitaw aron nga malabanan ang stress then mapadayun nimo imong pag engage diha sa pag utilize sa educational technology sa mobile applications." – IDI 04

(... it's important to take a rest even if it's just for a short while, as long as your mental state remains intact so that you can combat stress and continue your engagement in using educational technology through mobile applications.)

Getting Screen time Breaks

These theme focuses on Screen time breaks in a math app mean reminding students to take pauses from staring at their screens for too long. These breaks could include short activities like stretching or doing a quick math problem without looking at the phone. By doing this, the app helps students avoid getting tired or unfocused from too much screen time, making learning math more enjoyable and

healthier for them.

During the interview, Active (pseudonym) During the interview, emphasized the importance of managing stress through physical activities like walking and taking breaks from screen time. Additionally, he highlighted the benefits of mental exercises such as meditation for stress relief, he mentioned:

"It's more on the physical aspect, so in managing stress, I usually take a break, too much screen time. Usually I just walk outside, or maybe just get some fresh air outside, as well as try to do mental exercises like meditation." – IDI 02

As with the other participant, Dynamic (pseudonym) emphasized the importance of avoiding prolonged screen time to prevent physical deterioration and stress. She mentioned taking breaks and looking outside as strategies to alleviate these issues, she mentioned:

"So, in my case, I had to pick my eyes to screen and to have to look outside because it's pretty physically deteriorating as well if you just in your chair for hours and looking at the screen. You need to put yourself in a position where you did not feel stress. So, in my case, I take a break from screen time." – IDI 03

As with the other participant, Effortful (pseudonym) emphasized the necessity of regular short breaks to maintain mental well-being while engaging with educational technology via mobile applications, enabling effective stress management and sustained involvement, she mentioned:

"... importante jud na kanang mag rest ka bahalag kadali lang basta importante kanang imohang mental state ba intact permi bitaw aron nga malabanan ang stress then mapadayun nimo imong pag engage diha sa pag utilize sa educational technology sa mobile applications." – IDI 04

(... it's important to take a rest even if it's just for a short while, as long as your mental state remains intact so that you can combat stress and continue your engagement in using educational technology through mobile applications.)

As with the other participant, Caring (pseudonym) emphasized the importance of finding personal entertainment as a means to avoid stress, he mentioned:

"Gina divert nako akoang sarili na mangita ko ug kalingawan sa akoang sarili nga dili ko ma stress ato." – IDI 05

(I divert myself to find entertainment for myself so that I won't be stressed out.)

Research Question No. 3: What insights can be obtained from the experiences of mathematics students in utilizing educational technology mobile application that can be shared to other mathematics students and to the academe in general?

To answer this research question, in-depth interviews were conducted with the participants, respectively. Hence, several sub-questions were asked to share their insights about the students in learning mathematics using educational technology mobile application.

The major themes and core ideas for research question number 3 were presented in Table 3. From the answers of the participants, six major themes emerged: Be Independent from Technology, Have Positive Mindset, Improve Digital Skills and Awareness, No Harm in Asking for Help, Utilize Technology to Supplement in Learning, and Take Responsibility of Your Learning.

Be Independent from Technology

This theme focuses on being independent from technology in the context of educational technology mobile applications for mathematics students refers to the ability of students to not overly rely on these apps for problem-solving but rather to cultivate their own critical thinking and problem-solving skills. It involves striking a balance between using technology as a tool to aid learning and ensuring that students can independently tackle mathematical challenges without solely depending on digital resources.

During the interview, Caring (pseudonym) emphasized that excessive reliance on educational technology mobile applications hindered his ability to study effectively, particularly during exams when cellphones were prohibited. He found himself lacking in problem-solving skills for challenging topics due to this dependency, he mentioned:

"Na realize nako nga sa akong pag salig sa mga educational technology mobile application kay wala kaayo ko ka tuon ug maayo sa mga lesson. Kay pag abot sa mga lisod na mga topic labi na inig exam kay dili baya ta pwede mag cellphone, so inig mag solve na kay dili kaayo ko hanas." (IDI 05)

(I realized that by relying too much on educational technology mobile applications, I couldn't study the lessons well. Because when it comes to difficult topics, especially during exams when cellphones are not allowed, I wasn't skilled at solving them.)

As with the other participant, Tenacious (pseudonym) highlighted the importance of not becoming overly reliant on educational applications, as they are not always accessible or permitted in all situations. He emphasized the need to develop independent problem-solving skills for situations when such applications are unavailable or prohibited, he mentioned:

"... realization pud na dapat dili jud mag anad nga naa tong mga educazional application kay dili man permi nga mo gamit ta ana kay naa man gyuy mga instance nakita mismo ang mangita sa mga solution." (IDI 13)

(...another realization is that we shouldn't get used to having those educational applications because we don't always use them since there are instances when we need to find solutions on our own.)

As with the other participant, Fluent (pseudonym) emphasized that while technology plays a significant role in education, it's essential to recognize that not all aspects of learning rely solely on it. He highlighted that educational technology, such as mobile apps, serves as an aid to the learning process rather than being the sole reliance, he mentioned:

"Ug pagiging over dependent pud sa technology is dili pud kayta ingun na tanan nalang jud sa atong pag eskwela kay isalig nato sa sa technology, mag serve lang mani sya as aid lang ang mga mobile apps or mga educational technology." (IDI 01)

(And being overly dependent on technology doesn't mean that everything in our school relies solely on technology. It just serves as an aid, mobile apps, or educational technology, to our learning process.)

Table 4. *Insights From the Experiences of Mathematics Students in Utilizing Educational Technology Mobile Application That Can Be Shared to Other Mathematics Students and To the Academe in General*

Emerging Themes	Supporting Statements
Be Independent from Technology	"I realized that by relying too much on educational technology mobile applications, I couldn't study the lessons well. Because when it comes to difficult topics, especially during exams when cellphones are not allowed, I wasn't skilled at solving them." – IDI 05
	"...another realization is that we shouldn't get used to having those educational applications because we don't always use them since there are instances when we need to find solutions on our own." – IDI 13
	"And being overly dependent on technology doesn't mean that everything in our school relies solely on technology. It just serves as an aid, mobile apps, or educational technology, to our learning process." – IDI 01
	"I have learned that we should not rely solely on educational technology mobile applications because there are many ways for us to learn, such as exploring and studying in our own way, and we should not become dependent or rely solely on educational technology mobile applications." – IDI 13
	"We should utilize our mobile applications, but we must always remember not to rely solely on what they provide. Instead, as users, we should evaluate the information to determine its accuracy. We should learn from them rather than simply relying on what they provide." – IDI 14
	"...we shouldn't always rely on technology because sometimes we tend to have a mindset that as students, we primarily use technology, but it's not always necessary to utilize it in learning. With technology, we should not only rely on it; we should also have our own discernment regarding what it offers. When using mobile applications or any technology, we should also be able to discern what is being provided and utilize it accordingly." – IDI 09
	"So, we should acquire or have a growth mindset because these experiences are just trials. We can overcome them through effort because even if we don't have the right gadget or if the signal is weak, there are still many ways." – IDI 01
Have Positive Mindset	"So, one thing I learned is that I should be flexible because there are various ways technology applications are applied." – IDI 04
	"And look for ways to improve problem-solving skills by utilizing mobile applications. So, we should seek ways to enhance our problem-solving skills using these mobile applications because there are usually online applications that provide steps on how to arrive at the answer to your problem." – IDI 05
	"I think one of the experiences that changed my perspective on life is through educational technology mobile applications. They have taught me the value of adaptability and resilience. I've learned to embrace change and view challenges as opportunities for growth." – IDI 09
Improve Digital Skills and Awareness	"So, what I realized is that as a student, I should be responsible when it comes to using mobile applications for learning mathematics." – IDI 03
	"... you should use technology, especially when it's online, so you should have a strong internet connection to ensure that you don't get left behind and you stay updated all the time." – IDI 04
	"And one thing I realized is that we must learn digital skills to adapt to teaching, especially since we are in the 21st century. So, as we embark on this 21st century education, as students, we must adapt to the changes, especially since our generation now relies more on technological tools." – IDI 02
	"My realization in using mobile applications is that one should be sensitive in their usage because as mathematics students, not all mobile applications provide comprehensive information." – IDI 07
	"I think it's important to learn about these new technologies. This suggestion has already been implemented by teachers through seminars aimed at teaching them how to utilize these technologies. – IDI02"
	might run out of time, and because of our embarrassment, we might not learn or be able to answer because we're too shy to ask our classmates or friends." – IDI 08
	"My suggestion, if ever there's a problem that needs to be addressed, is that we should seek help from others so that we can come up with a correct and effective solution." – IDI 14
	"...if you haven't understood or caught up with the topics with your instructor, there are mobile applications that provide different video tutorials and give step-by-step solutions to verify if your solution is correct." – IDI 07
	"Like asking for help from a classmate who has a proper gadget or a good signal." – IDI 01
Utilize Technology to Supplement in	"So, we should always have an interest in learning. Regarding the use of educational technologies, although they can help us, it doesn't mean that technology should replace schooling. What I mean is we should only use technology to

Learning	support our education." – IDI 01
	"So, one of my encouraging words for mathematics students who use educational technology mobile applications is not to be afraid to use them if our usage is responsible as well." – IDI 04
	"Perhaps we shouldn't rely solely on technology, even though our technology has advanced significantly. It's also not good to depend solely on it because we should still maintain a balance between traditional tools and the tools we use now." – IDI 08
	"So, first, the positive impact is that technology is a great help for us to learn, it serves as an aid, like an additional aid that helps us learn, not just from the teacher. Because there is a lot of information available. Technology aids us in learning more effectively." – IDI 01
	"Learning mathematics is a bit difficult because math is one of the hardest subjects. And you can use them for your activities like Kahoot or online apps that can be used for engagement." – IDI 12
	"I realize that technological tools can aid and support my learning in mathematics." – IDI 05
Take Responsibility of Your Learning	"And one realization I had is that you should really take responsibility for your learning." – IDI 10
	"So, it's still important that you have knowledge about the part you're scanning, the part you're using in the apps. Because again, at the end of the day, you only ask for help because if we're too embarrassed, we have yourself. So, you should know the process, you should know what was done." – IDI 12
	"... also, practicing hands-on with its usage, so that one can become more proficient and not feel unfamiliar when using technology." – IDI 04
	"For me, internet connectivity, for example, if you are in a far-flung area or in the mountains, you should really look for an alternative way." – IDI 10
	"So, to acquire the desirable results, you need to learn and master the basic steps in solving problems." – IDI 05

In addition, Fluent (pseudonym) emphasized the importance of not relying solely on educational technology mobile applications for learning. He emphasized the need to explore various learning methods independently and not become overly dependent

"Na learn nako nga dapat diay dili nato isalig sa mga educational technology mobile application kay daghan mag way para maka tuon ta like mag explore, mag tuon in our own way, tapos dili lang jud ka maging dependent or mag rely sa mga educational technology mobile application." (IDI 13)

(I have learned that we should not rely solely on educational technology mobile applications because there are many ways for us to learn, such as exploring and studying in our own way, and we should not become dependent or rely solely on educational technology mobile applications.)

Moreover, Optimistic (pseudonym) emphasized the need to use mobile applications while cautioning against relying solely on their content. She stressed the importance of evaluating information and learning from it rather than passively accepting it, she mentioned:

"We should utilize sa atong mga mobile application but always nato hinomduman nga dili ta mag rely kung unsay ilang gihatag but instead kita as user dapat atong e evaluate ang information kung tama ba, dapat kita as a user makatuon sa ila dili kay mag salig kung unsa ilang ginahatag." (IDI 14)

(We should utilize our mobile applications, but we must always remember not to rely solely on what they provide. Instead, as users, we should evaluate the information to determine its accuracy. We should learn from them rather than simply relying on what they provide.)

Lastly, Vocabulary (pseudonym) emphasized the importance of not over-reliance on technology, highlighting the need for discernment in its usage. She emphasized the necessity of balancing technology with independent thinking in the learning process, she mentioned:

"... not all the time nga magsalig sa technology maybe kay atong sagaran pod sa those people maggamit sa student pod naka mindset nato sagaran naa bitaw technology but not all the time nga dapat pod ma utilized nato in learning in sa technology dapat dili lang pod ta magsalig didto dapat naa pod tay sariling ano nga dapat kung unsa ang gihatag sa technology or using mobile application dapat kana pod nga gihatag pod dapat ma utilized pod nato." (IDI 09)

(...we shouldn't always rely on technology because sometimes we tend to have a mindset that as students, we primarily use technology, but it's not always necessary to utilize it in learning. With technology, we should not only rely on it; we should also have our own discernment regarding what it offers. When using mobile applications or any technology, we should also be able to discern what is being provided and utilize it accordingly.)

Have Positive Mindset

This theme focuses on having a positive mindset in the context of educational technology mobile applications for mathematics students involves maintaining an optimistic outlook towards learning and problem-solving. It entails believing in one's ability to overcome challenges, embracing mistakes as opportunities for growth, and staying motivated to engage with the material despite any difficulties encountered. This mindset fosters resilience, persistence, and a willingness to explore different learning methods provided by technology, ultimately leading to enhanced learning outcomes.

During the interview, Fluent (pseudonym) emphasized the importance of adopting a growth mindset, viewing challenges as

opportunities for growth. Despite technological limitations, he highlighted the importance of perseverance and exploring alternative solutions to overcome obstacles, he mentioned:

"So, dapat i-acquire nato or be having a growth mindset kay kaning experience nato is pagsulay lang sya. Like malagpasan lang nato sya sa pag paningkamot kay baski pag wala tay tarung na gadget, maski pag hinay ang signal, kay daghan jud ug paraan." (IDI 01)

(So, we should acquire or have a growth mindset because these experiences are just trials. We can overcome them through effort because even if we don't have the right gadget or if the signal is weak, there are still many ways.)

In addition, Effortful (pseudonym) emphasized the importance of flexibility in adapting to the diverse applications of technology. She acknowledged the need to be versatile in utilizing technology to its fullest potential, she mentioned:

"So, isa jud sa akoang na learn is dapat maging flexible kay lahi-lahi man ang mga paagi by application sa technology." (IDI 04)

So, one thing I learned is that I should be flexible because there are various ways technology applications are applied.

Moreover, Caring (pseudonym) emphasized the importance of using mobile applications to improve problem-solving skills. He suggested seeking out online applications that offer step-by-step solutions to enhance problem-solving abilities, he mentioned:

"And also, look for ways to improve problem solving skills by utilizing mobile applications. So, mangita gyud tag paagi nga ma improve ang atoang problem solving skills through sa pag gamit aning mga mobile application kay usually naay mga applications man gyud online nga ga hatag jud syag steps on how to come up with the answer sa imohang problem." (IDI 05)

(And look for ways to improve problem-solving skills by utilizing mobile applications. So, we should seek ways to enhance our problem-solving skills using these mobile applications because there are usually online applications that provide steps on how to arrive at the answer to your problem.)

Lastly, Vocabulary (pseudonym) highlighted how educational technology mobile applications changed her perspective on life, emphasizing adaptability and resilience. Through them, she learned to embrace change and see challenges as opportunities for growth, she mentioned:

"I think one of the experiences changed perspective in life is through educational technology mobile applications have taught me the value of adaptability and resilience. I've learned to embrace change and view challenges as opportunities for growth." (IDI 09)

Improve Digital Skills and Awareness

This theme focuses on improving digital skills and awareness among mathematics students involves utilizing educational technology mobile applications. These apps offer interactive learning experiences, enhancing students' understanding of mathematical concepts while also fostering proficiency in digital tools and technologies.

During the interview, Dynamic (pseudonym) emphasized the importance of responsibility in utilizing mobile applications for learning mathematics, recognizing the need for self-accountability as a student, she mentioned:

"So, mao gyud to akoang na realize nga dapat ko as a student is a responsible one in terms of utilizing a mobile application in learning mathematics." (IDI 03)

(So, what I realized is that as a student, I should be responsible when it comes to using mobile applications for learning mathematics.)

As with the other participant, Effortful (pseudonym) emphasized the necessity of a robust internet connection for staying updated and avoiding falling behind in online activities reliant on technology, she mentioned:

"... dapat maggamit ka og technology kung online man so dapat jud naay strong ang internet connection aron nga dili ka mabiyaan ug permi kang updated." (IDI 04)

(... you should use technology, especially when it's online, so you should have a strong internet connection to ensure that you don't get left behind and you stay updated all the time.)

In addition, Active (pseudonym) emphasized the importance of acquiring digital skills to adapt to 21st-century education, highlighting the reliance on technological tools in today's learning environment, he mentioned:

"And also, isa sa akoang na realize is we have to learn digital skills in order to adapt teaching especially we are in 21st century. So, as we embark in this 21st century education, as a student, we have to adapt to the changes especially our generation is more on technological tools naman." (IDI 02)

Moreover, Resourceful (pseudonym) emphasized the need for sensitivity in mobile app usage, especially among mathematics students, as not all apps offer comprehensive information, he mentioned:

"My realizations sa paggamit nako sa mobile applications is dapat jud siya maging sensitive sa paggamit sa mobile applications, because as a mathematics students not all mobile applications is gahatag ug wide information." (IDI 07)

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(My realization in using mobile applications is that one should be sensitive in their usage because as mathematics students, not all mobile applications provide comprehensive information.)

Lastly, Active (pseudonym) emphasized the importance of learning about new technologies, which has been put into practice through teacher seminars focused on teaching their utilization, he mentioned:

"I think, I suggest learning about these new technologies. I think this suggestion has already been utilized by teachers, so we have seminars, teaching teachers how to utilize these technologies." (IDI 02)

No Harm in Asking for Help

This theme focuses on seeking help when needed fosters a supportive learning environment and enhances understanding. It encourages collaboration and ensures students make the most of available resources to overcome challenges effectively. In the context of educational technology mobile applications for mathematics students.

During the interview, Fluent (pseudonym) emphasized the importance of seeking help from classmates without feeling ashamed or labeled as ignorant for not knowing how to use technology. He highlighted the willingness of classmates to assist, encouraging students not to hesitate or feel shy about asking for assistance, he mentioned:

"Tapos dili pud maulaw mangayo og tabang sa imong mga classmate. Dili ma ulaw na basin ma ingnan tag ignorante kay dili ta kabalo mo gamit ug technology kay willing man jud mo tabang ang mga classmate, dapat dili lang jud maulaw." (IDI 01)

(And don't be ashamed to ask for help from your classmates. There's no shame in it, as you might be labeled as ignorant for not knowing how to use technology, because your classmates are willing to help. So, don't be shy.)

As with the other participant, Cool Composure (pseudonym) emphasized the importance of seeking help from classmates or friends who excel in the subject, urging students not to let embarrassment hinder their learning process. She highlighted that reluctance to ask for help could result in missed learning opportunities and emphasized the significance of overcoming shyness to facilitate learning, she mentioned:

"... ug isa pa if maglisod jud ka ug kat-un though naa nay technology you can ask help naman from your friends or sa mga classmate nga hawd ana nga subject dili pod pwedi nga mag ulaw-ulaw ta nga moabot sa time kay tungod sa kaulawon nimo is dili na lang pod ka maka learn dili na pod ka maka answer wala naka answer tungod maulaw man ka ug ask sa imong classmate or sa imong friends." (IDI 08)

(... and one more thing, if you're really having a hard time learning even though there's technology, you can ask for help from your friends or classmates who are good at that subject. We shouldn't be embarrassed to ask for help because if we're too embarrassed, we might run out of time, and because of our embarrassment, we might not learn or be able to answer because we're too shy to ask our classmates or friends.)

In addition, Optimistic (pseudonym) emphasized the importance of seeking help from others to address problems effectively and arrive at correct solutions, she mentioned:

"Ang akong ma suggest if ever nga naay problem nga dapat ma address is dapat manginahanglan jd ta ug makatabang sa atoa para makahimo ta ug solution nga sakto ug epiktibo." (IDI 14)

(My suggestion, if ever there's a problem that needs to be addressed, is that we should seek help from others so that we can come up with a correct and effective solution.)

Moreover, Resourceful (pseudonym) emphasized utilizing mobile applications for access to various video tutorials and step-by-step solutions to verify correctness especially if topics covered by instructors are not fully understood or caught up with, he mentioned:

"... kung wala naka gets or naka catch up sa mga topic with your instructor so naa tay mga mobile applications na gahatag ug different video tutorial and mag hatag ug step-by-step solutions to know if tama ba ang imong gipang solve." (IDI 07)

(...if you haven't understood or caught up with the topics with your instructor, there are mobile applications that provide different video tutorials and give step-by-step solutions to verify if your solution is correct.)

Lastly, Fluent (pseudonym) emphasized seeking help from classmates with suitable gadgets or strong signals when needed, he mentioned:

"Like mangayog tabang sa classmate na naay tarong na gadget or tarong na signal." (IDI 01)

(Like asking for help from a classmate who has a proper gadget or a good signal.)

Utilize Technology to Supplement in Learning

This theme focuses on utilizing technology to supplement learning involves integrating educational mobile applications into

mathematics studies, enhancing understanding and practice. These apps offer additional resources, exercises, and interactive tools to reinforce concepts learned in class.

During the interview, Fluent (pseudonym) emphasized maintaining an interest in learning and highlighted that while educational technologies can be helpful, they shouldn't replace traditional schooling. Instead, technology should serve as a supplementary tool to support education, he mentioned:

"So, dapat naa lang jud tay interest na mo tuon. So, regarding pud sa pag gamit ug mga educational technologies, though maka tabang sya sa atoa ang technology but dili ingun nga dapat si technology na ang mura na syag sya nay nag eskwela. So, pasabot nako ana is dapat mag gamit lang tag technology para support lang jud sa atong pag eskwela." (IDI 01)

(So, we should always have an interest in learning. Regarding the use of educational technologies, although they can help us, it doesn't mean that technology should replace schooling. What I mean is we should only use technology to support our education.)

As with the other participant, Effortful (pseudonym) encouraged mathematics students to embrace educational technology mobile applications responsibly without fear, emphasizing the importance of responsible usage, she mentioned:

"So, isa jud sa akoang maingon nga encouragement word para sa mga mathematics students na mugamit ug educational technology mobile application nga dili mahadlok mugamit, as long as atung paggamit is maging responsible pud ta, sa atung paggamit." (IDI 04)

(So, one of my encouraging words for mathematics students who use educational technology mobile applications is not to be afraid to use them if our usage is responsible as well.)

As with the other participant, Cool Composure (pseudonym) highlighted the need to avoid sole reliance on technology despite its advancements, stressing the importance of maintaining a balance between traditional and modern tools for learning, she mentioned:

"Siguro dili nga dapat mag depend lang sa technology though grabi na kaayo ka advance technology nato dili pod siya maayo nga magdepende lang ta kay dapat balance lang japon traditional tools karon nga tools nga ginagamit." (IDI 08)

(Perhaps we shouldn't rely solely on technology, even though our technology has advanced significantly. It's also not good to depend solely on it because we should still maintain a balance between traditional tools and the tools we use now.)

In addition, Fluent (pseudonym) highlighted the positive impact of technology as an additional aid in learning, providing abundant information beyond the confines of traditional teaching methods, enhancing the learning process, he mentioned:

"So, una ang sa positive impact is ang technology is dako syag tabang para mas makatuon ta, murag mag serve sya as aid ba, kumbaga additional aid na maka tuon ta, dili lang gikan sa maestra. Kay daghan kayg information. Ang technology is mag aid sa ato mas makatuon." (IDI 01)

(So, first, the positive impact is that technology is a great help for us to learn, it serves as an aid, like an additional aid that helps us learn, not just from the teacher. Because there is a lot of information available. Technology aids us in learning more effectively.)

Moreover, Fast Learner (pseudonym) emphasized the difficulty of learning mathematics, considering it one of the hardest subjects, while highlighting the usefulness of engagement tools like Kahoot or online apps for activities, he mentioned:

"Since learning mathematics is medyo lisod because math is one of the hardest subjects. And you can use them for your activities like Kahoot or mga apps online na pwede maggamit for the engagement." (IDI 12)

(Learning mathematics is a bit difficult because math is one of the hardest subjects. And you can use them for your activities like Kahoot or online apps that can be used for engagement.)

Lastly, Caring (pseudonym) emphasized that technological tools can aid and support his learning in mathematics, recognizing their potential value in his studies, he mentioned:

"I realize that technological tools can aid and support to my learning in mathematics." (IDI 05)

Take Responsibility of Your Learning

This theme focuses on taking responsibility for your learning involves actively engaging with educational technology mobile applications to supplement your understanding of mathematical concepts. It requires self-directed learning, utilizing available resources effectively, and taking ownership of your academic progress.

During the interview, Smart Joker (pseudonym) highlighted the importance of taking responsibility for one's learning, emphasizing the need for self-accountability and proactive engagement in the learning process, he mentioned:

"And also, isa nako na realization is dapat jud ikaw nga mag take responsibility of your learning." (IDI 10)

(And one realization I had is that you should really take responsibility for your learning.)

As with the other participant, Fast Learner (pseudonym) highlighted the importance of understanding the content being scanned or used in apps, emphasizing self-reliance and comprehension of the processes involved in learning, he mentioned:

"So, still important nga naa kay knowledge ana nga part sa imong gi-scan, sa imong gigamitan sa apps. Because again at the end of the day you only have yourself. So, dapat kabalo ka sa process, kabalo ka kung ge unsa." (IDI 12)

(So, it's still important that you have knowledge about the part you're scanning, the part you're using in the apps. Because again, at the end of the day, you only have yourself. So, you should know the process, you should know what was done.)

As with the other participant, Effortful (pseudonym) highlighted the importance of hands-on practice to enhance proficiency and familiarity with technology usage, she mentioned:

"... mag practice pud hands on practice sa paggamit ana aron nga mas han-ay bitaw ang paggamit dili na mabag-uhan diha sa paggamit ug technology." (IDI 04)

(... also, practicing hands-on with its usage, so that one can become more proficient and not feel unfamiliar when using technology.)

As with the other participant, Smart Joker (pseudonym) emphasized the importance of internet connectivity, particularly in remote areas where alternative options may be necessary, he mentioned:

"Para sa akoa, internet connectivity example naa ka sa far- flung area or naa ka sa mga bukid kay dapat mangita jud kag alternative way." (IDI 10)

(For me, internet connectivity, for example, if you are in a far- flung area or in the mountains, you should really look for an alternative way.)

As with the other participant, Caring (pseudonym) emphasized the necessity of learning and mastering the fundamental steps in problem-solving to achieve desirable result, he mentioned:

"So, in order to acquire the desirable results, you need to learn and master the basic steps in solving." (IDI 05)

(So, to acquire the desirable results, you need to learn and master the basic steps in solving problems.)

Conclusions

In conclusion, the investigation of the opposites of the utilization of educational technology mobile apps among students of mathematics highlights the intricate relationship that exists between the utilization of technology and the results of students. On the one hand, educational technology has the potential to significantly improve learning experiences, academic achievement, and the development of critical thinking abilities. However, on the other side, an excessive reliance or dependency on technology may lead to negative repercussions such as decreased problem-solving abilities, poorer critical thinking skills, and increased stress. These are just some of the potential outcomes you may experience.

It is abundantly clear that there is a need for a well-rounded strategy for the incorporation of technology in educational settings, one that incorporates the advantages of educational technology while also minimizing the possible downsides of this technology. The development of initiatives that encourage responsible technology usage among kids and build digital well-being requires a collective effort on the part of educators, parents, and legislators.

In addition, this investigation highlights the significance of continuously conducting research to gain a better understanding of the factors that influence the behaviors of students regarding their use of technology, the long-term effects of technology usage on academic and socio-emotional outcomes, and the effective interventions that can be implemented to promote healthy technology habits.

When it comes to navigating the opposing poles of adopting educational technology mobile apps, it is necessary to focus the holistic development of pupils. This includes developing not just academic accomplishment but also well-being and digital literacy abilities. We can develop learning environments that provide students with the tools they need to flourish in the digital era by addressing the problems and possibilities related with the usage of educational technology.

This analysis of the opposing poles of mathematics students using educational technology mobile apps offers rich territory for additional research. Technology usage and student outcomes are interconnected, and future study might examine the psychological, socio-cultural, and pedagogical elements that influence students' technology use. Longitudinal research may reveal how technology use affects academic performance, well-being, and digital literacy. Interdisciplinary cooperation and action research may also help establish comprehensive frameworks and evidence-based solutions to handle the complex difficulties and possibilities of technology integration in mathematics education. Researchers can help build effective interventions to promote responsible and useful technology usage in mathematics students by studying educational technology dynamics.

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