MATH APPS UTILIZATION: ITS PERCEIVED EFFECTS TO THE ACADEMIC PERFORMANCE OF MATHEMATICS MAJOR STUDENTS

Obina, Jeremias E.[i],
Gabe, Joseph B.,
Angcon, Shery Mae D.,
Diaz, Bhlyzyr Thryz R.,
Largo, Vaneza Joy Y.,
Chiva, Marvin C.,
Bolaňos, Jolai G.
Notre Dame of Midsayap College,
Philippines

Abstract:

This study aimed to determine the perceived effects of apps utilization to study habits and academic performance. Further, it also sought to determine the views of the participants and respondents on their engagement in math apps and their relationship with study habits and academic performance. This study made use of explanatory-sequential design. The purposive sampling design was used to determine the respondents in quantitative data while the quota sampling design was also used to determine the participants in qualitative data. The study revealed that the mathematical application that is mostly used by the students is the calculator app as it garnered the highest percentage value of 80.85.%. The participants agreed that math applications serve as an aid for math problems, aid for lack of teaching by the teacher, promote learning of specific lessons and increase, and help in improving their academic performance. Respondents' perception of their utilization of math apps is due to technical problems. The respondents also agreed that math application also affected their study habits in which they become dependent on it which led to laziness and tiredness. In addition, this study also found that there is a significant relationship between respondents' utilization of math applications and their study habits. Lastly, there is also a significant relationship between the study habits and academic performance of selected math students of Notre Dame of Midsayap College.

Keywords: apps utilization, study habits, academic performance

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[i] Correspondence: email je.obina@ndmc.edu.ph, jeriobina.1978@gmail.com

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1. Introduction

Mathematics is one of the most difficult and challenging subjects to learn. Adding the fact that traditional face-to-face learning was altered to Blended Learning, approaching Mathematics would become more difficult. In this new normal education, independent learning might improve the difficulties in studying (Sari & Zamroni, 2019). He also added that in the year (Mishra, Gupta, & Shree, 2020), due to the unavoidable changes brought on by the COVID 19 epidemic, there were significant worries over the education of young people. This issue has to receive careful consideration, especially in light of the new changes appearing in education. It's possible that taking online courses or receiving modules won't be as rewarding as doing traditional face-to-face classes. There will be moments when using technology as a medium to exercise autonomous learning is necessary. By incorporating its benefits and addressing its drawbacks, technology has the potential to lessen the pandemic-related educational problem (Savery, 2015).

According to the reports from the International Mathematics Union (2020), the African countries have a weaker academic performance in basic and secondary Mathematics education which affects the number of students who pursued Mathematics as a University major (Schappacher, 2022). This problem is consistent with the study of the National Council of Teachers of Mathematics in the United States in which they found out that students in the 12th grade do not display mathematical proficiency which implies that students transitioning from high school to college Mathematics are unprepared (Galabo, Abellanosa & Gempes, 2018).

Also, here in the Philippines, students' Mathematics performance also needed to be improved because we are placed 79th out of 138 nations in terms of education quality according to the 2016-2017 Global Competitiveness Report (Capuno et al., 2019). In the province of Cotabato, students in both public and private schools got a poor rating on the 2010 Regional Achievement Test with a mean percentage score of 45.16% in Mathematics. As a result, the alarming performance of Filipino students in Mathematics at local, national and international levels needs immediate decisions and measures from all educational sectors (Imam et al., 2013).

The method of independent learning takes learners to discover their capabilities on their ways. They could have control over their learning stage and process. As learners had individual styles to cultivate their skills and knowledge, a chance to explore would lead to the discovery of learning styles individually befitting to them (Rahimi, van den Berg, & Veen, 2015). Therefore, the researcher thought of using the benefits of Math applications in students' learning. The researchers would like to see if Math Apps were indeed effective and able to give positive results in the Mathematics performance of the learners. At Notre Dame of Midsayap College, some of the Mathematics major students make use of the availability of Mathematics solving applications found online. It is for this reason that the researchers are interested to know the perceived effects of using

Mathematics solving applications on NDMC BSEd-Math students in their academic studies.

2. Statement of the Problem

Specifically, it sought to determine the answer to the following questions:
1) What are the Math Apps utilized by the students in Math subjects?
2) What is the perception of the respondents on the utilization of Math Apps?
3) What are the reasons of the respondents for utilizing Math Apps in terms of (a) Personal Concern, (b) Technical Concern, and (c) Emotional Concern?
4) What is the extent of study habits of the respondents in terms of (a) learning style, (b) time, place, and environment, and (c) attitudes?
5) What is the perceived academic performance in Mathematics of the respondents who utilized Math Apps?
6) Is there a significant relationship between the study habits and the academic performance of the respondents?
7) How do the math apps help the respondents in their studies?

3. Review of Related Literature

3.1 Cellular Math Apps
Mobile and online learning applications become more known year after year and are used today by millions of students and educators all over the world. Math applications are included in the category of mobile and learning applications. Applications in math could help children learn and provide a successful child-centered scaffolding approach (Drigas and Pappas, 2015). Gulliford & Miller (2015) added that math applications provide a chance for specialized arithmetic exercises catered to children's needs. Furthermore, Johnson et al., (2016) state that students' engagement with math apps provides them with an opportunity for improvement of self-analysis, enhances math solving skills, and critical thinking as well as for sharing information with peers.

Due to the advent of technology, there are apps to solve math problems for smartphones and tablets. These math solver apps will help you track formulae and learn algebra that let you solve equations by simply pointing to the camera. The software has been a crucial resource for students who require extra guidance and those who are learning remotely (The Learning Council, 2020). According to the study by Botzer et al., (2011), learners can use mathematical applications anytime and anywhere, encouraging the performance of mathematical operations and enhancing experiential learning.

3.2 Reasons for Utilizing Math Apps
There were several factors that influence the learners to utilize math applications. One of them is that mathematical computation and problem-solving often involve complex rules

and procedures, which can be challenging to many (Zhang et al., 2015). However, in the Philippines, Pena-Bandalaria (2012) reported that personal concerns (e.g., difficulty to interact and contact teachers, difficulty to seek help, difficulty in understanding the topics), technical concerns (e.g., problems accessing the course site), and the digital divide were barriers to online learning and had greatly affected the academic performance of the students, especially in Mathematics. Gledhill et al., (2017) also revealed that limited or poor access to the Internet, technology, and networks were also the factors why students utilize math apps.

In order to increase students' learning of mathematics and close the achievement gap between struggling students and average students, Zhang et al. (2015) propose that learners use math applications. Furthermore, Bitter and Corral (2015) added that the other factor is that students with emotional disturbances have difficulty with self-control and staying engaged long enough to complete school assignments (Blood, 2010). Math applications can offer a customized and focused method of mathematical exercise and help the mastering of mathematical concepts (Gulliford et al., 2015). In addition to teaching math concepts, math applications can also serve as a review and reinforcement tool for students.

3.3 Study Habits

The sudden shift from face-to-face to online learning platforms posed challenges to students. Shifting to an online learning platform requires access to a device, Internet, and physical learning space, and a strong habit of learner autonomy. Teachers and students should upgrade their study habits so that they are compatible with the new learning modality in order to adapt to the circumstances and maintain strong academic performances (Ulfa et al., 2021). According to certain research findings, reading and taking notes, focusing, cramming, comprehending, choosing the main points, completing classwork and assignments, and speculating on exam questions are all components or patterns of study habits.

It is important to note that not one habit of study works for every student as habits differ from student to student, it depends on the habit a student knows suits him or her (Olatunji, 2019).

As a result, students who lack time management skills frequently struggle to finish tasks within the allotted time. Students that have good time management skills are able to work more effectively, finish projects on time, and accomplish more in their available time. Undergraduates live tremendously stressful lives, as noted by Macan, Shahani, Dipboye, and Phillips (1990). To combat this, university and college counseling facilities routinely advise time management.

3.4 Academic Performance

The academic performance of students is a major concern of all education stakeholders all over the world. Capuno et al. (2018) stated that student achievement in mathematics

is regularly monitored throughout nations because it is seen as the primary topic that is crucial for the expansion and advancement of the country. There is more emphasis on the lessons that should be taught in mathematics than any other subject in schools at various levels around the world since students' knowledge and skills in mathematics are crucial in their everyday lives and in overcoming the challenges that one may face (Orton & Frobisher, 2014).

4. Methodology

This study uses an explanatory-sequential design. Subedi (2016) defined an explanatory-sequential as "*first collecting qualitative data to assist, explain or elaborate on the quantitative result.*" It is explanatory-sequential design because the quantitative data is supported by qualitative information. The quantitative phase (numbers) is followed by the qualitative phase (personal experience), with the qualitative findings used to contextualize the quantitative data. Qualitative data can also be used to supplement and enrich findings, as well as to generate new knowledge. A purposive sampling design was used to determine the respondents of the study in collecting quantitative data. Complete enumeration is used in selecting our respondents as a sampling procedure to have 100% of accuracy. This study was conducted at Notre Dame of Midsayap College with forty-seven selected (47) students for quantitative while eight (8) mathematics major students were the participants during the conduct of the interview. This study made use of researchers-made questionnaire. The last part of the statement of the problem is a qualitative type of question. In this part, the researchers conducted an interview with the 8 selected participants. Focused group discussions are used to gather the data. The researcher stops the interview when the respondents have the same responses to the following questions.

For the qualitative part of the study, the researchers were encoder, transcriber, interpreter, and analyzer of data. Data were dug deep out of the conversational partners' answers to get insights and relevant life lessons, particularly concerning the student's experiences in utilizing math apps and how math apps primarily help them in their studies.

To elaborate, the researchers transcribed the data and then translated it a bit for more detailed interpretation and analysis. It provided a thorough discussion of the data with relevant information and accurate answers out of the data gathered from the conversational partners.

4.1 Ethical Consideration
Since there are many ethical challenges because of the new and unpredictable nature that have repercussions in doing qualitative research (Houghton, et al., 2010), the researchers prepared a particular consent form to inform the selected students that they are the

participants of the study, the study, the methods and how participants are identified and protected.

5. Results and Discussion

This chapter presents and discusses the results of the statistical treatment of data gathered. The data were discussed systematically based on the research problems.

5.1 Math Apps Utilized by the Students in Math Subjects
The table presents the Math Apps utilized by the respondents in Math Subjects.

Table 1: Math Apps Utilized by the Respondents (N= 47)

Cellular Apps	F	%	Rank
Automath	5	10.64	6th
Calculator	38	80.85	1st
Cameramath	3	6.38	7.5th
Chegg	1	2.13	11.5th
Cymath	1	2.13	11.5th
Differential Calcuator	1	2.13	11.5th
Geometry Solver	1	2.13	11.5th
Gauthmath	9	19.15	5th
Math Solver	3	6.38	7.5th
Mathway	19	40.43	2.5th
Photomath	19	40.43	2.5th
QANDA	1	2.13	11.5th
Symbolab	18	38.30	4th
Wolfram Alpha	1	2.13	11.5th

The Math Apps utilized by the students in math subjects are determined by what math apps they integrate into their studies particularly in math subjects during pandemic. The respondent's most utilized math apps are the calculator app which has 80.85% or 38 out of 47 respondents who utilizes a calculator. Followed by the Mathway and Photomath which has a percentage of 40.43, 19 out 47 respondents utilize the said Math Apps. Followed by the Symbolab which has 38.80% or 18 out of 47 respondents who utilize Symbolab. On the other hand, Chegg, Cymath, differential calculator, geometry solver, QANDA, and wolfram alpha are the least utilized cellular math apps which have 2.13% or 1 out of 47 respondents using the said apps.

5.2 Perception of the Respondents on the Utilization of Math Apps
The table below presents the respondents' perception of their utilization of math apps and their feedback upon using the apps.
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Table 2: Perception of the Utilization of Math Apps

Perception towards the apps	Mean	SD	Description
1. The apps are accessible.	4.43	0.827	Agree
2. The apps are effective.	4.36	0.845	Agree
3. The apps are easy to use.	4.32	0.862	Agree
4. The apps are quick to use.	4.28	0.852	Agree
5. The apps are free.	3.96	1.020	Agree
6. The apps provide step by step process.	4.02	1.132	Agree
7. The apps provide doubtful results.	3.09	1.176	Moderately Agree
8. The apps need subscription.	3.60	1.170	Agree
Overall Mean/SD	4.01	0.991	Agree

Scale: 4.50-5.00 – Strongly agree, 3.50 -4.49 Agree, 2.50-3.49 Moderately agree, 1.50-2.49 Disagree, 1.00-1.49 Strongly Disagree

Data in Table 2 show that the overall mean is 4.01, described as *Agree* with an SD of 0991. Almost of the items were described as *Agree.* Item 1 yielded the highest mean value of 4.43, described as *Agree* with an SD of 0.827 which state that *The apps are accessible.* While item 7, *The apps provide doubtful results* obtained the lowest mean of 3.09 which is described as *Moderately Agree* with an SD of 1.176.

5.3 Reasons of the Respondents for Utilizing Math Apps in Terms of Personal Concern
The table below presents the reasons of the respondents for utilizing math apps specifically in relation to personal concerns.

Table 3a: Personal Concerns of the Respondents in Utilizing Math Apps

Personal Concerns	Mean	SD	Description
1. Difficulty to interact and contact teachers.	3.91	1.039	Agree
2. Difficulty to seek help.	3.79	1.020	Agree
3. Difficulty in understanding the topic.	3.85	1.021	Agee
4. Working student.	2.55	1.364	Moderately Agree
5. Family responsibilities.	3.21	1.102	Moderately Agree
Overall Mean/SD	3.46	1.109	Moderately Agree

Scale: 4.50-5.00 – Strongly agree, 3.50-4.49 Agree, 2.50-3.49 Moderately agree, 1.50-2.49 Disagree, 1.00-1.49 Strongly Disagree.

Data in Table 3a show that the overall mean is 3.46, described as *Moderately Agree* with an SD of 1.109. Item 1 yielded the highest mean value of 3.91, described as *Agree* with an SD of 1.039 which state that *Difficulty to interact and contact teachers.* While item 4 *Working student* garnered the lowest mean of 2.55, described as *Moderately Agree* with an SD of 1.102.

5.4 Reasons of the Respondents for Utilizing Math Apps in Terms of Technical Concern

The table below presents the reasons of the respondents for utilizing math apps specifically in relation to technical concerns.

Table 3b: Technical Concern of the Respondents in Utilizing Math Apps

Technical Concerns	Mean	SD	Description
1. Problems in accessing the course site.	3.81	1.035	Agree
2. Power interruption.	3.96	0.931	Agree
3. Poor internet connection.	4.34	0.939	Agree
4. System under maintenance.	4.66	0.962	Strongly Agree
5. Unavailability of sample problems online.	3.87	1.035	Agree
Overall Mean/SD	4.13	0.980	Agree

Scale: 4.50-5.00 – Strongly agree, 3.50-4.49 Agree, 2.50-3.49 Moderately agree, 1.50-2.49 Disagree, 1.00-1.49 Strongly Disagree.

Table 3b shows that the overall mean is 4.13, described as *Agree* with an SD of 0.980. Item 4 *System under maintenance* garnered the highest mean value of 4.66, described as *Strongly Agree* with an SD of 0.962. While item 1 *Problems in accessing the course site* garnered the lowest mean of 3.81, describes as *Agree* with an SD of 1.035.

5.5 Reasons of the Respondents in Utilizing Math Apps in Terms of Emotional Concern

The table below presents the reasons of the respondents for utilizing math apps specifically in relation to emotional concerns.

Table 3c: Emotional Concern of the Respondents in Utilizing Math Apps

Emotional Concerns	Mean	SD	Description
1. Difficulty in self-control and staying engaged in completing tasks.	3.68	1.105	Agree
2. Stress from other subjects.	3.79	0.931	Agree
3. Pressure to attain good grades.	3.72	1.015	Agree
4. Pressure to meet others expectation.	3.79	1.082	Agree
5. Time pressure.	3.89	0.866	Agree
Overall Mean/SD	3.77	1.000	Agree

Scale: 4.50-5.00 – Strongly agree, 3.50-4.49 Agree, 2.50-3.49 Moderately agree, 1.50-2.49 Disagree, 1.00-1.49 Strongly Disagree.

Table 3c shows that the overall mean is 3.77, described as *Agree* with an SD of 1.000. Item 5 *Time pressure* garnered the highest mean value of 3.89, described as *Agree* with an SD of 0.866. While item 1 *Difficulty in self-control and staying engage in completing tasks* garnered the lowest man value of 3.68, described as *Agree* with an SD of 1.105.

5.6 The Extent of Study habits of the Respondents in Terms of Learning Style

The table below presents the extent of engagement of the respondents in their study habits specifically in terms of learning style.

Table 4a: Extent of Study Habits of the Respondents Particularly Learning Style

Learning Style I prefer to:	Mean	SD	Description
1. Read and take down notes.	4.17	0.816	Often
2. Comprehend mathematical concepts.	4.11	0.634	Often
3. Guess class works and assignments.	3.36	1.112	Sometimes
4. Ask questions for clarification.	4.11	0.840	Often
5. Have peer discussions or form study groups.	3.74	0.920	Often
6. Scan my notes quickly.	3.74	0.896	Often
7. Read my notes in advance.	3.81	0.992	Often
8. Rely on my stock knowledge.	3.40	0.948	Sometimes
9. Procrastinate.	3.36	0.965	Sometimes
10. Ask for answers from my classmates.	3.19	0.947	Sometimes
Overall Mean/SD	3.70	0.907	Often

Scale: 4.50-5.00 Always, 3.50-4.49 Often, 2.50-3.49 Sometimes, 1.50-2.49 Rarely 1.00 -1.49 Never

Table 4a shows that the overall mean is 3.70, described as *Often* with an SD of 0.907. Item 1 *I prefer to read and take down notes* garnered the highest mean of 4.17 which is rated as *Most of the time* with an SD of 0.816. On the other hand, item 10, *I prefer to ask for answers from my classmates* garnered the lowest mean of 3.19 described as *Sometimes* with an SD of 0.907.

5.7 The Extent of Study habits of the Respondents in Terms of Time, Place, and Environment

The table below presents the extent of engagement of the respondents in their study habits specifically in terms of the learning environment.

Table 4b: Extent of Study Habits of the Respondents Particularly Time, Place, and Environment

Time, Place & Environment I prefer studying:	Mean	SD	Description
1. While eating.	3.11	1.220	Sometimes
2. Before eating.	3.11	1.026	Sometimes
3. After eating.	3.87	0.924	Often
4. During daytime.	3.64	0.919	Often
5. During night time.	4.17	0.842	Often
6. During dawn.	3.38	0.990	Sometimes
7. While listening to music.	3.23	1.289	Sometimes
8. Being alone.	4.43	0.801	Often
9. While moving around.	2.60	1.280	Sometimes
10. In a quiet place.	4.55	0.829	Always
Overall Mean/SD	3.61	1.012	Often

Scale: 4.50-5.00 Always, 3.50-4.49 Often, 2.50-3.49 Sometimes, 1.50-2.49 Rarely, 1.00 -1.49 Never.

Table 4b shows that the overall mean is 3.61, described as *Often* with an SD of 1.012. The item 10 *I prefer studying in a quiet place* garnered the highest mean of 4.55, described as *Always* with an SD of 0.829. On the other hand, item 9 *I prefer studying while moving around* garnered the lowest mean of 2.60 which was rated as *Sometimes* with an SD of 1.280.

5.8 The Extent of Study Habits of the Respondents in Terms of Attitude
The table below presents the extent of engagement of the respondents in their study habits specifically in terms of attitudes towards their studies.

Table 4c: Extent of Study Habits of the Respondents Particularly in Terms of Attitudes

Attitudes	Mean	SD	Description
1. I take charge of my own learning.	4.34	0.731	Often
2. I make my daily to-do-list.	3.74	0.820	Often
3. I manage my time diligently.	4.00	0.780	Often
4. I diligently do my task.	4.15	0.722	Often
5. I create positive learning.	4.34	0.635	Often
Overall Mean/SD	4.11	0.738	Often

Scale: 4.50-5.00 Always, 3.50-4.49 Often, 2.50-3.49 Sometimes, 1.50-2.49 Rarely, 1.00 -1.49 Never.

Table 4c shows that the overall mean is 4.11, described as *Often* with an SD of 0.738. The item 1, *I take charge of my own learning* and item 5 *I create positive learning* garnered the highest mean of 4.34 which was described as *Most of the time* with an SD of 0.731 and 0.635, respectively. The item 2, *I make my daily to-do-list* garnered the lowest mean of 3.74 which was described as *Often* with an SD of 0.820.

5.9 Perceived Academic Performance in Mathematics of the Respondents
The table above presents the perceived academic performance of the respondents who engaged math applications in their studies.

Table 5: Perception of the Respondents to Their
Academic Performance in Mathematics Subjects

Perceived academic performance of the respondents in utilizing math apps	Mean	SD	Description
In utilizing mathematical applications:			
1. My grades have improved.	4.02	0.707	Agree
2. My grade increases.	3.98	0.737	Agree
3. My grade is stable.	3.94	0.734	Agree
4. I excel in class.	3.47	0.687	Moderately Agree
5. It helps me to remember mathematical concepts.	3.85	0.751	Agree
6. It guides me in doing my tasks.	4.19	0.680	Agree
7. It gives me confidence in participating in the class.	3.81	0.798	Agree
8. It enhances my mathematical solving skills.	3.92	0.704	Agree
9. I became dependent to it.	3.43	1.037	Moderately Agree
10. There is no challenge tolerance in doing my tasks.	3.31	1.065	Moderately Agree
11. It weakens my ability in critical thinking skills.	3.34	1.221	Moderately Agree

12. I don't exert effort in understanding the teachers' topic.	3.00	1.319	Moderately Agree
Overall Mean and SD	3.69	0.870	Agree

Scale: 4.50-5.00 – Strongly agree, 3.50-4.49 Agree, 2.50-3.49 Moderately agree, 1.50-2.49 Disagree, 1.00-1.49 Strongly Disagree.

Data in Table 5 shows that the overall mean is 3.69, described as *Agree* with an SD of 0.870. Item 6 *In utilizing mathematical applications, I can say that it guides me in doing my tasks* garnered the highest mean value of 4.19, described as *Agree* with an SD of 0.680. On the other hand, item 12 *In utilizing mathematical applications, I can say that don't exert effort in understanding the teacher's topic* obtained the lowest mean of 3.00, described as *Moderately Agree* with an SD of 1.319.

5.10 Significant Relationship between the Study Habits and Academic Performance of the Respondents

The table below presents the significant relationship between the study habits and the academic performance of the respondents.

Table 6: Relationship between the Study Habits and Academic Performance of the Respondents

	N	Correlation Coefficient	p-value	r-value	Decision
Academic performance	47	0.821	3.70E-06	0.618	Very strong positive relationship

Note: NS = Not significant at .05 level (2 – tailed); S = Significant at .05 level (2– tailed)

Table 6 shows the correlation coefficient, p-value, r-value and the decision on the relationship between the study habits and academic performance of the respondents. The relationship is determined by how study habits affected the academic performance of the respondents. Results show that the correlation between the study habits and academic performance yielded a correlation coefficient of 0.821, p-value of 3.70E-06 or 0.00000370 and r-value of 0.618. Based on the result, the decision is that there is a significant relationship between the two variables.

5.11 The Help of Math Apps to the Respondents in Their Studies

The table below presents the three benefits of integrating Math Apps in learning Mathematics.

Table 7: Benefits of Integrating Math Apps in Learning Mathematics

Common Themes	Interpretation
Aid for lack of teaching	Gives assistance to the unfavorable teaching method or to the lack of teaching instruction.
Promote the learning of specific lessons	Instructional aid or support in learning general or specific lessons.
Increase academic performance	Helps improve academic standing.

These common themes depict the help of Math Apps in learning Mathematics. These common themes are an aid for lack of teaching, promote learning of specific lessons, and increase academic performance. To comprehend the help of utilizing Math Apps in learning Mathematics, a focus group discussion was used in gathering the data. The researchers asked the respondents a question which led to the clarity of how the Math Apps helped the respondents in their study. Below are the answers of the eight (8) mathematics major students. The question states:

A. Aid for Lack of Teaching
In this theme, the respondents answered that the Math Apps give assistance to the unfavorable teaching method or to the lack of teaching instruction of the instructors.

B. Promote Learning of Specific Lessons
In this theme, the respondents answered that Math Apps serve as an instructional aid or support in learning general or specific lessons.

C. Increase Academic Performance
In this theme, the respondents answered that the Math Apps help them improve academic standing and performance.

5.12 Joint Implications of Quantitative and Qualitative Data
Based on the findings, *In utilizing math applications, I can say that it guides me in doing my tasks* has the highest mean. This implies that respondents' utilization of math apps also affects their academic performance as it helps and guides them in doing their tasks. The findings of the study affirm the study of Al- Takhyneh (2018) who states that using math apps improves the academic performance of the students for they help understand the graphs, and discover new unfamiliar mathematical concepts.

According to the journal published by Chaves & Veronese, (2014), several benefits of learning apps include knowledge enhancement, personalised learning experiences, improved interaction, accessibility to online study material, and most importantly, provide remote access. It allows learners to learn anything in their comfort, at their own pace. Also, McCain (2019) states that apps provide both systematic and smart learning. It allows students to study materials with a few simple clicks.

In Utilizing Math Apps, my grades have improved garnered the second highest mean. This implies that the Math Apps help them in improving their grades. Math Apps is very effective in improving the performance of the students in Probability and Statistics subjects. It also revealed that it helped them to compute the mathematics problem easier and faster, and clearly understand the concepts (Kaput, Hegedus, & Lesh, 2020). This corresponds to the common theme *Increase Academic Perfomance.* According to Kay, (2020), students learning performance increased significantly after using Mathematics Apps for remembering, understanding, applications, and analysis-based tasks.

In utilizing Math Apps, it helps me to remember mathematical concepts implying that Math Apps help respondents to remember math concepts. It helps them develop and exercise the teachers' lessons. Math Apps are beneficial to respondents who are not satisfied with the teacher's teaching. According to Minero (2020), a number of math apps and online tools can help students develop the necessary foundational understanding of arithmetic operations they'll need as a baseline for more challenging math problems, later on, math teachers told us. This corresponds to the common theme, *Aid for lack of teaching.* These findings affirm the study of (Ablian et al., 2022) that having an unfavorable teaching procedure is one of the challenges in learning Mathematics which causes students to become uncomfortable, restless and have low self-confidence.

6. Conclusions

Based on the findings of the study, the following conclusions were drawn:

The respondents' utilization of math apps helps them in their studies. It was also stated that the apps were effective as they help them in terms of academic performance. With the help of the said apps, their grades became stable and even increased. And, the respondents' study habits are significantly related to their academic performance.

Therefore, math apps create an opportunity to extend the continual learning of the respondents by utilizing math apps.

6.1 Recommendation
Based on the findings and conclusions of the study, the following are the recommendations:
- For possible causes of action:
  1) The teacher should understand the value and benefits of integrating and utilizing math apps in learning mathematics for they help students in terms of academic performance.
  2) The school should not focus on the traditional style of learning Mathematics but rather accept and adapt to the 21st-century technology in teaching.
- For further study:
  1) A similar study covering math apps with additional variables.
  2) A similar study covering math apps in other courses that use apps like Engineering.

Conflict of Interest Statement

The authors declare no conflicts of interest.

About the Author(s)

Jeremias E. Obina, LPT, MAT-PM works as a full-time Instructor of Mathematics for 16 years and a Subject Coordinator in the College of Arts and Sciences of Notre Dame of Midsayap College, Philippines.

Joseph Gabe is a student researcher and is currently enrolled in the program Bachelor of Science in Secondary Education major in Mathematics at Notre Dame of Midsayap College, Philippines.

Shery Mae D. Angcon is a student researcher and is currently enrolled in the program Bachelor of Science in Secondary Education major in Mathematics at Notre Dame of Midsayap College, Philippines.

Bhlyzyr Thryz Diaz is a student researcher and is currently enrolled in the program Bachelor of Science in Secondary Education major in Mathematics at Notre Dame of Midsayap College, Philippines.

Vanesa Joy Y. Largo is a student researcher and is currently enrolled in the program Bachelor of Science in Secondary Education major in Mathematics at Notre Dame of Midsayap College, Philippines.

Marvin C. Chiva is a student researcher and is currently enrolled in the program Bachelor of Science in Secondary Education major in Mathematics at Notre Dame of Midsayap College, Philippines.

Jolai G. Bolaňos, LPT, MATCC works as a full-time Asst. Professor and Assistant Research Director at Notre Dame of Midsayap College, Philippines.

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