

American Journal of Humanities and Social Sciences Research (AJHSSR)

e-ISSN : 2378-703X

Volume-10, Issue-09, pp-81-91

www.ajhssr.com

Research Paper

Open Access

TECHNOLOGY INTEGRATION AND ACADEMIC PERFORMANCE IN MATHEMATICS IN THE NEW NORMAL EDUCATION

¹Nicefora G. Rosario, MAEd; ²Letecia R. Guerra, PhD¹(Elementary Department, Samar Colleges, Inc., Catbalogan City, Samar, Philippines)²(Samar Colleges, Inc., Catbalogan City, Samar, Philippines)

ABSTRACT : Technology integration in education involves the meaningful use of technological tools and resources to support teaching and learning. However, access to and knowledge of technology do not necessarily ensure its effective integration into the learning process. This study examined students' perceptions of technology integration in learning Mathematics during the New Normal Education, particularly in terms of confidence in learning Mathematics, confidence in using technology, and the use of computers and graphic calculators in learning Mathematics. The study employed appropriate descriptive and inferential statistical tools to analyze the data and determine the relationship between perceived technology integration and students' academic performance. The findings revealed that the student-respondents were "undecided" in their overall perception of technology integration in learning Mathematics across the three dimensions. Despite this, the students demonstrated exemplary academic performance. Furthermore, the results showed a significant relationship between students' perceived technology integration and their academic performance in terms of confidence in learning Mathematics and confidence in using technology. However, no significant relationship was found between the use of computers and graphic calculators in learning Mathematics and students' academic performance. These findings suggest that while students generally recognized the potential of technology in Mathematics learning, their perceptions were not consistently associated with academic performance across all dimensions of technology integration.

KEYWORDS: *Technology Integration, Mathematics Learning, New Normal Education, Student Confidence, Academic Performance*

I. INTRODUCTION

Mathematics is a fundamental discipline that contributes to the development of logical reasoning, critical thinking, problem-solving, and decision-making skills. It is essential not only in academic settings but also in everyday life and in various fields such as science, technology, engineering, business, and other professional endeavors. Mathematics competencies enable learners to understand quantitative information, solve problems, recognize relationships and patterns, and make informed decisions. In the Philippine basic education curriculum, Mathematics is regarded as a discipline that extends beyond the classroom, with its twin goals focused on critical thinking and problem-solving. The curriculum also recognizes the use of appropriate technological tools, including calculators, computers, smartphones, tablet computers, and the Internet, in developing these competencies.

Despite its importance, Mathematics is often perceived by learners as a difficult and challenging subject because of its abstract concepts, symbols, procedures, and problem-solving requirements. These characteristics may affect learners' confidence, engagement, and willingness to participate in Mathematics learning. Recent research on technology-enhanced Mathematics learning similarly notes that Mathematics is frequently perceived by students as abstract and difficult and that technology has increasingly been explored as a means of making mathematical concepts more accessible through visualization, exploration, and interactive learning experiences. [1], [6] Technology-supported learning can provide learners with opportunities to interact with mathematical representations, explore concepts, and receive immediate feedback, potentially making learning more meaningful and engaging.

The challenges in Mathematics learning became more pronounced during the New Normal Education brought about by the COVID-19 pandemic. The shift from conventional face-to-face instruction to alternative learning modalities required both teachers and learners to adapt to unfamiliar teaching and learning environments. In Mathematics, this transition was particularly challenging because many mathematical concepts require demonstrations, visual representations, guided practice, immediate feedback, and interaction between teachers and learners. Studies conducted during the New Normal identified challenges in public-school Mathematics teaching and emphasized the need for instructional approaches responsive to the changing educational environment. [5], [8] At the same time, teachers' competencies in educational technology integration became increasingly important in delivering instruction through alternative modalities. [7]

In this context, technology integration emerged as an important component of Mathematics education. Technology integration refers to the purposeful use of technological tools, digital resources, applications, and platforms to support teaching and learning. It goes beyond merely providing learners with access to technological devices because effective integration requires technology to be aligned with instructional objectives, learning activities, and learners' needs. A systematic review of research on technology integration in Mathematics education found that technology has the potential to influence students' engagement and academic achievement when appropriately incorporated into the learning process. [1]

Technology is particularly relevant to Mathematics because digital tools can provide learners with opportunities to visualize mathematical relationships, manipulate representations, explore concepts interactively, practice mathematical skills, and receive feedback. E-learning and technology-supported approaches can provide alternative means of delivering Mathematics instruction and facilitating learning. [6] Similarly, ICT integration in elementary Mathematics has been explored as a means of supporting instruction and providing learners with additional resources for understanding mathematical concepts. [9] These developments suggest that technology can function not merely as a substitute for traditional instructional materials but also as a tool for creating more interactive, flexible, and learner-centered Mathematics learning experiences.

Evidence from studies conducted during the New Normal further demonstrates the potential contribution of technology to Mathematics learning. Barrientos [3] examined the use of Mathematics applications and the Mathematics performance of Grade 8 students during the New Normal Education, reflecting the growing use of digital applications as instructional resources. Similarly, Capacio [5] investigated the use of Genyo e-learning to improve Mathematics achievement during the New Normal Education. These studies demonstrate how digital applications and e-learning platforms were utilized to support Mathematics instruction when conventional classroom arrangements were disrupted.

Recent research has continued to provide evidence regarding the role of technology in Mathematics learning. Mamolo and Sugano [10] examined the use of a digital interactive application in relation to students' Mathematics self-efficacy, anxiety, and achievement during the New Normal. Their study highlights the importance of considering not only students' academic outcomes but also affective factors associated with Mathematics learning when technology is integrated into instruction. Similarly, Maryani et al. [11] examined technology readiness and learning outcomes among elementary school students during online learning in the New Normal era, emphasizing the importance of learners' preparedness to use technology for educational purposes.

Technology integration may also become more effective when combined with appropriate pedagogical approaches. Barcelo et al. [2] examined contextualized instruction integrated with technology and reported its potential to enhance students' Mathematics performance. This suggests that technology should not be viewed as an independent solution to Mathematics learning difficulties but rather as a resource whose effectiveness depends on how it is integrated into teaching and connected to learners' experiences and needs. Likewise, Boadu and Boateng [4] emphasized the interconnected roles of technology integration, collaborative learning, student motivation, and student interest in Mathematics achievement. These findings suggest that technology-supported Mathematics learning is a multifaceted process involving technological, instructional, and learner-related factors.

The successful integration of technology also depends on teachers' competencies and the challenges they encounter in implementing technology-supported instruction. De Vera et al. [7] examined teachers' competencies in educational technology integration during the New Normal and highlighted the importance of

teachers' capacity to incorporate technology into instructional methodologies. Dela Cruz and Hernandez [8] likewise examined the challenges experienced by public-school elementary Mathematics teachers during the New Normal. These studies indicate that technology integration involves more than the availability of technological resources; it also requires teachers and learners to possess the competencies and readiness necessary to use such resources effectively.

Learners' perceptions of technology integration are therefore important in understanding its possible relationship with academic performance. Students may have access to technological tools but may not necessarily feel confident in using them for Mathematics learning. Their confidence in learning Mathematics, confidence in using technology, and experiences with technological resources such as computers and graphic calculators may influence how they perceive and engage with technology-integrated instruction. A learner who feels confident in Mathematics and technology may be more willing to explore digital resources, participate in technology-supported activities, and use technological tools to solve mathematical problems. Conversely, limited confidence may restrict the extent to which learners benefit from technology-supported instruction. This consideration is consistent with research emphasizing the importance of student engagement, motivation, interest, self-efficacy, and technology readiness in technology-supported Mathematics learning. [1], [4], [10], [11]

The importance of improving Mathematics learning is particularly significant in the Philippine educational context, where Mathematics performance continues to be a concern. Results from international assessments have indicated persistent difficulties among Filipino learners in Mathematics. In the 2018 Programme for International Student Assessment (PISA), the Philippines obtained an average Mathematics score of 353 points, substantially lower than the OECD average of 489 points. Only approximately one in five Filipino students reached at least the minimum proficiency level in Mathematics. These results highlight the continuing need for effective and innovative approaches to Mathematics teaching and learning.

The challenges encountered during the New Normal further emphasized the need to examine how technology could support Mathematics learning. The transition to alternative learning modalities required teachers to reconsider instructional strategies and learners to assume greater responsibility for their own learning. Technology provided opportunities for teachers to deliver content and for learners to access instructional resources beyond the traditional classroom. However, the mere availability of technological tools does not necessarily guarantee improved academic outcomes. Effective technology integration requires appropriate instructional design, teacher competence, learner readiness, and meaningful engagement with technological resources. [1], [7], [9], [11]

Although several studies have investigated technology integration, e-learning platforms, Mathematics applications, ICT, and digital interactive tools, there remains a need to examine students' perceptions of technology integration and their relationship with academic performance in Mathematics, particularly in the context of the New Normal Education. Existing studies have often focused on specific technological interventions, applications, e-learning platforms, or instructional strategies [2], [3], [5], [10]. Other studies have examined technology readiness, teacher competencies, or broader technology-integration practices [7], [9], [11]. However, fewer studies have examined students' perceptions across multiple dimensions of technology integration and determined how these perceptions relate to their actual academic performance in Mathematics.

Furthermore, there is a need to examine technology integration from the learners' perspective, particularly in terms of their confidence in learning Mathematics, confidence in using technology, and use of computers and graphic calculators in Mathematics learning. Understanding these dimensions may provide a clearer picture of how learners perceive technology-supported Mathematics instruction and whether such perceptions are associated with their academic outcomes. Such evidence is particularly valuable because the effectiveness of technology integration depends not only on the availability of technological resources but also on how learners perceive, accept, and use these resources in their learning.

Hence, the present study was conducted to examine technology integration and academic performance in Mathematics in the New Normal Education. Specifically, it determined students' perceptions of technology integration in terms of confidence in learning Mathematics, confidence in using technology, and computers and graphic calculators in learning Mathematics, and determined whether these dimensions are significantly related to their academic performance. By examining these variables, the study provided empirical evidence on how

students perceive technology-integrated Mathematics learning and how such perceptions relate to their academic outcomes. The findings provided useful information for Mathematics teachers, school administrators, and other education stakeholders in designing and implementing technology-integrated instructional practices that are responsive to learners' needs and supportive of improved Mathematics learning and academic performance.

II. RESEARCH QUESTIONS

This study determined the academic performance in Mathematics of Elementary Students in the New Normal Education at Samar Colleges, Inc., City of Catbalogan. Specifically, this study sought answers to the following questions:

1. What is the demographic profile of student-respondents in terms of the following:
 - 1.1 age and sex;
 - 1.2 mean grade during the previous grade in Mathematics;
 - 1.3 parents' highest educational attainment;
 - 1.4 parents' occupation;
 - 1.5 gross monthly family income;
 - 1.6 attitude toward schooling during the new normal; and
 - 1.7 attitude toward the use of technology during the new normal learning?
2. What is the perception of student-respondents toward technology integration in learning Mathematics during the New Normal Education in terms of the following:
 - 2.1 confidence in learning Mathematics;
 - 2.2 confidence in using technology; and
 - 2.3 computers and graphic calculators in learning Mathematics?
3. What is the academic performance in Mathematics of the student-respondents based on their mean grade in the first and second quarters?
4. Is there a significant relationship between the perceived technology integration in Mathematics and the following:
 - 4.1 student-respondents' demographic profile; and
 - 4.2 academic performance in Mathematics of the students?
5. What intervention program may be derived based on the findings of the study?

III. CONCEPTUAL FRAMEWORK

The conceptual framework presented the relationship between perceived technology integration and academic performance in Mathematics among Grade School students of Samar Colleges, Inc. It illustrated how the students' characteristics and perceptions of technology integration were examined in relation to their Mathematics performance and how the findings served as a basis for developing an intervention program aimed at improving academic outcomes.

At the base of the framework, the study identified the Grade School students of Samar Colleges, Inc. as the respondents and context of the investigation. The study focused on learners who experienced Mathematics instruction within the context of the New Normal Education. Their experiences and characteristics provided the foundation for examining their perceptions of technology integration and their academic performance in Mathematics.

The first major component was the profile of the student-respondents. This included age and sex, mean grade during the previous grade in Mathematics, parents' highest educational attainment, parents' occupation, gross monthly family income, attitude toward relevant in-service trainings, attitude toward schooling during the New Normal, and attitude toward the use of technology in learning. These variables described the respondents' characteristics and provided context for interpreting the study's findings. The profile variables also provided relevant information for understanding the students' experiences and perceptions of technology-supported Mathematics learning.

The second major component was perceived technology integration in learning Mathematics. This variable consisted of three dimensions: confidence in learning Mathematics, confidence in using technology, and computers and graphic calculators in learning Mathematics. These dimensions represented the learners'

perceptions and experiences concerning the use of technology in Mathematics learning. Confidence in learning Mathematics reflected the learners' perceived ability to learn and accomplish mathematical tasks. Confidence in using technology pertained to their perceived ability and comfort in utilizing technological tools for learning. Meanwhile, computers and graphic calculators represented technological resources that could support mathematical computation, visualization, exploration, and problem-solving.

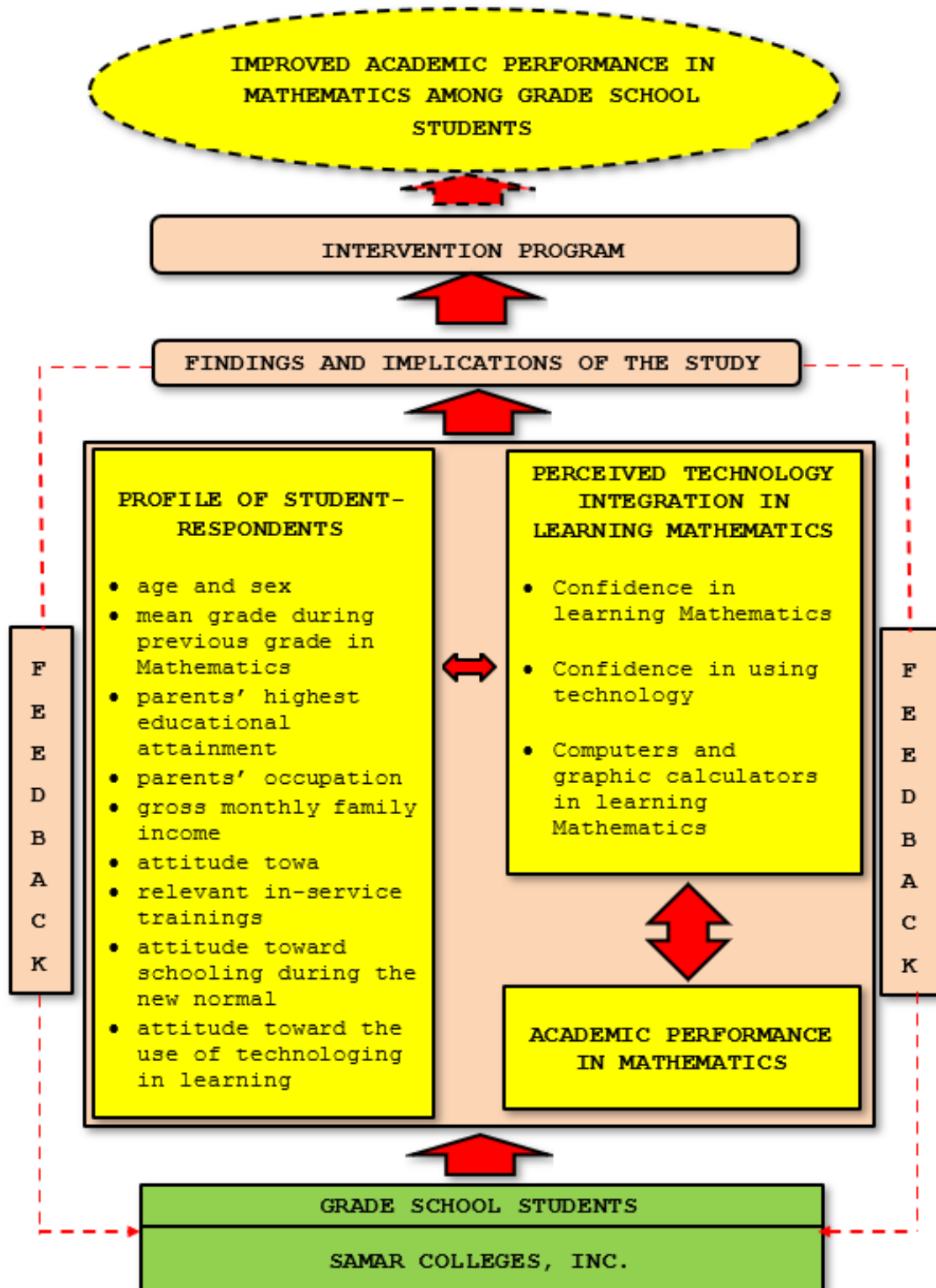


Figure 1. the paradigm of the study

The framework showed an interaction between the profile of the student-respondents and perceived technology integration, indicating that learners' characteristics and experiences provided contextual information in understanding their perceptions of technology-supported Mathematics learning. The framework also showed a relationship between perceived technology integration and academic performance in Mathematics. This relationship was examined to determine whether students' perceptions of technology integration were significantly associated with their actual academic performance. Specifically, the study determined whether confidence in learning Mathematics, confidence in using technology, and the use of computers and graphic calculators were significantly related to students' Mathematics performance.

Academic performance in Mathematics served as the principal outcome variable of the study. It represented the students' demonstrated achievement in Mathematics based on the academic performance measure used in the study. Examining this outcome in relation to perceived technology integration provided evidence regarding whether technology-supported Mathematics learning was associated with students' academic achievement.

The framework also incorporated feedback, represented by the arrows surrounding the major components. The feedback mechanism indicated that the findings of the study provided information that could be used to understand the strengths, weaknesses, and learning needs associated with technology integration in Mathematics. The findings and their implications therefore served as an empirical basis for identifying areas that required improvement.

The "Findings and Implications of the Study" constituted the succeeding component of the framework. The results obtained from the analysis of the students' profiles, perceptions of technology integration, and academic performance were interpreted to identify meaningful patterns and relationships. These findings provided an empirical basis for determining the aspects of technology-supported Mathematics learning that needed to be strengthened or improved.

Based on the findings and implications, an intervention program was developed. The intervention program was intended to address the identified gaps in students' Mathematics learning and technology integration. Rather than introducing a generalized intervention, the program was designed based on the specific needs revealed by the results of the study. Thus, the framework established a logical progression from the identification of learner characteristics and perceptions of technology integration, to the assessment of academic performance, interpretation of findings, and development of an appropriate intervention program.

The ultimate outcome of the framework was "Improved Academic Performance in Mathematics Among Grade School Students." This represented the desired end goal of the study. The intervention program was expected to address the areas identified through the research findings and provide appropriate strategies and activities that could strengthen students' Mathematics learning. Ultimately, the framework assumed that evidence-based improvements in technology integration and Mathematics learning practices could contribute to better academic performance.

IV. METHODOLOGY

Research Design

This study employed a quantitative research approach using a descriptive-correlational research design. The descriptive component was used to determine and describe the students' perceived technology integration in learning Mathematics and their academic performance, while the correlational component was used to examine the relationships among the variables under investigation. Specifically, the study determined the academic performance in Mathematics of Grade School students of Samar Colleges, Inc. during the New Normal Education.

The study utilized a researcher-developed questionnaire as the primary data-gathering instrument for determining the students' perceptions of technology integration in learning Mathematics. The questionnaire gathered data on the identified dimensions of technology integration, particularly confidence in learning Mathematics, confidence in using technology, and the use of computers and graphic calculators in learning Mathematics. In addition to the survey data, documentary analysis was conducted using the official academic records of the student-respondents. The students' records, particularly their Mathematics grades during the first and second quarters, were obtained from the respective class advisers and the Records Section of Samar

Colleges, Inc. These records served as the basis for determining the students' academic performance in Mathematics.

The correlational component of the design was employed to determine whether significant relationships existed between perceived technology integration in learning Mathematics and the selected characteristics of the student-respondents, as well as between perceived technology integration and their academic performance in Mathematics. Academic performance was determined based on the students' mean grades during the first and second quarters. The use of a correlational design allowed the researcher to examine the direction and significance of associations among the variables without manipulating any of them.

Descriptive statistical tools were used to summarize, organize, and interpret the data obtained from the respondents. These included frequency counts and percentages for categorical and profile variables, median where appropriate for describing the central tendency of the data, mean average deviation for measuring the variability of responses, and weighted mean for determining the overall level of students' perceptions of technology integration in Mathematics learning. These statistical measures provided a quantitative description of the respondents' characteristics, perceptions, and academic performance.

Inferential statistical tools were also employed to test the hypotheses and determine the significance of the relationships among the variables. The Chi-Square Test was used to examine associations between appropriate categorical variables. Spearman's Rank-Order Correlation Coefficient (Spearman's rho) was used to determine the strength and direction of the relationship between students' perceived technology integration and their academic performance. Fisher's t-test, as specified in the study's statistical treatment, was used to determine the significance of the corresponding correlation results. All inferential tests were evaluated using the level of significance specified in the study.

Overall, the quantitative descriptive-correlational design provided an appropriate framework for systematically describing the students' perceptions and academic performance and for determining whether significant relationships existed among the variables without manipulating the learning environment or the respondents' experiences. The results subsequently served as the empirical basis for formulating the findings, implications, and proposed intervention program aimed at improving students' academic performance in Mathematics.

Locale of the Study

This research was conducted in Samar Colleges, Inc., City of Catbalogan, Province of Samar, as shown in Figure 2.



Figure 2. The map showing the locale of the study

Instrumentation

The adopted questionnaire served as the primary data-gathering instrument of the study. The instrument used to measure the students' general confidence in Mathematics, general confidence in using technology, and attitudes toward the use of technology in Mathematics learning in the New Normal approach was adopted from Fogarty (2001). The questionnaire consisted of four parts. Part I gathered information about the demographic and academic profile of the student-respondents in terms of age and sex, mean grade in Mathematics during the previous grade level, parents' highest educational attainment, parents' occupation, and gross monthly family income. Part II assessed the students' attitude toward schooling and consisted of 20 items divided into two areas, namely, the teacher variable and the school variable. Part III assessed the students' attitude toward the use of technology during New Normal learning and consisted of six attitude statements. Part IV assessed the students' perception of technology integration in learning Mathematics during the New Normal Education and consisted of 28 indicators categorized into three dimensions: confidence in learning Mathematics, confidence in using technology, and computers and graphic calculators in learning Mathematics. The completed questionnaires were collected, checked for completeness, organized, and prepared for statistical analysis.

Validation of Instrument

The adopted questionnaire underwent expert validation before it was administered to the student-respondents. The draft questionnaire was initially presented to the research adviser and members of the research panel during the pre-oral defense for evaluation in terms of the relevance, clarity, appropriateness, organization, and alignment of the items with the objectives and variables of the study. The researcher carefully considered and incorporated the corrections, comments, and suggestions provided by the experts and revised the items accordingly. The revised questionnaire was then reviewed and finalized after all recommended modifications had been addressed. Through this process, the instrument underwent expert evaluation to establish its content validity and ensure that the items adequately represented the constructs being measured and were appropriate for the intended respondents and research context.

Data Gathering Procedure

The data-gathering procedure commenced with the researcher securing the necessary permission to conduct the study from the School Administrator of Samar Colleges, Inc., the Vice-President for Basic Education, the Principal of the Elementary Department, and the class advisers of the participating grade levels. The researcher presented the approved research proposal and questionnaire and coordinated with the concerned school officials regarding the schedule and procedures for data collection. Upon approval, the researcher proceeded with the administration of the questionnaire to the student-respondents through Google Forms, following the applicable health and safety protocols at the time of the study. The researcher coordinated with the Vice-President for Basic Education and the class advisers to establish an appropriate schedule for the administration and to facilitate the distribution and retrieval of the accomplished questionnaires.

In addition to the survey questionnaire, the researcher employed documentary analysis of official school records upon securing the necessary authorization from the concerned school authorities. The relevant academic records of the student-respondents were obtained through proper coordination with the class advisers and authorized school personnel. These records provided the necessary information for determining the student-respondents' academic performance in Mathematics based on their recorded grades in the subject.

After the questionnaires and relevant school records had been obtained, the collected data were organized, coded, tabulated, and analyzed using the appropriate statistical tools. The researcher carefully checked the completeness and consistency of the gathered information before proceeding with the statistical treatment and interpretation. Throughout the data-gathering process, confidentiality and proper handling of the information provided by the student-respondents were observed.

V. SUMMARY OF FINDINGS

The following were the salient findings of the study:

1. The student-respondents ranged from six years old to 12 years old whereby their median age was posted at nine years old with a MAD of one year. Moreover, majority of the student-respondents belonged to the female sex accounting for 117 or 52.47 percent.

2. The mean grade of the student-respondents ranged from 79 to 98 whereby their median mean grade in Mathematics during the previous grade level was posted at 89 with a MAD of two points.

3. Among the fathers of the student-respondents, majority of them were high school graduates accounting for 141 or 63.23 percent while among the mothers of the student-respondents, majority of them were high school graduates accounting for 137 or 61.44 percent.

4. Among the fathers of the student-respondents, a number of them, that is, 96 or 43.05 percent were government employees while among the mothers of the student-respondents, a number of them, that is 93 or 41.70 percent were government employees also.

5. The median gross monthly family income of the student-respondents was posted at P39,000.00 with a MAD of P19,000.00.

6. The student-respondents “agreed” on their attitude toward schooling, as shown by the grand weighted mean of 1.76.

7. The student-respondents were “undecided” on their attitude toward the use of technology during the new normal education, as indicated by the grand weighted mean of 2.79.

8. The student-respondents were “undecided” on their perception toward technology integration in learning Mathematics during the New Normal Education (Fogarty, 2001) in terms of confidence in learning Mathematics, confidence in using technology, and computers and graphic calculators in learning Mathematics, with a grand weighted means of 2.99, 3.16, and 2.88, respectively.

9. The median grade of the student-respondents in Mathematics during the first quarter was posted at 90.00 with a MAD of 2.00 while the median academic performance during the Second Quarter was posted at 91.00 with a MAD of 2.00.

10. In associating the relationship between the perceived technology integration in Mathematics and the student-respondents' demographic profile, the following evaluation was noted: age, significant; sex, not significant; mean grade during the previous grade in Mathematics, significant; parents' highest educational attainment, not significant; parent's occupation, significant; gross monthly family income, not significant; attitudes toward schooling during the new normal, significant; and attitude toward the use of technology during the new normal learning, not significant.

11. In associating the relationship between the perceived technology integration in Mathematics and the academic performance of the students, it was found significant in terms of confidence in learning Mathematics and confidence in using technology; but it was not significant in terms of computers and graphic calculators in learning Mathematics.

VI. CONCLUSION AND RECOMMENDATION

Based on the findings, the following conclusions were drawn: First, the student-respondents were generally within the expected age range for their grade levels, with females slightly predominating. Second, the student-respondents demonstrated satisfactory academic performance in Mathematics during their previous grade level. Third, their parents generally had formal educational backgrounds and were engaged in various occupations, providing basic support for their children's educational needs. Fourth, the student-respondents manifested a highly favorable attitude toward schooling during New Normal Education but only a moderately favorable attitude toward the use of technology. Fifth, they also demonstrated a moderately favorable perception of technology integration in Mathematics in terms of confidence in learning Mathematics, confidence in using technology, and the use of computers and graphic calculators. Sixth, the student-respondents demonstrated exemplary academic performance in Mathematics during the first and second quarters despite the changes in the learning modality. Seventh, age, previous Mathematics grade, parents' occupation, and attitude toward schooling were significantly associated with students' perceptions of technology integration, while the other profile variables were not. Finally, confidence in learning Mathematics and confidence in using technology were significantly and positively associated with academic performance in Mathematics, whereas the use of computers and graphic calculators was not significantly associated with academic performance.

Based on the conclusions, the following recommendations were proposed: First, Samar Colleges, Inc. should develop an intervention program to strengthen students' attitudes, confidence, and engagement in technology-integrated Mathematics learning. Second, teachers should provide age-appropriate and differentiated technology-based activities to address differences in learners' developmental levels. Third, students' academic performance in Mathematics should be sustained through continuous enrichment, remediation, and appropriate

learning interventions. Fourth, the school should strengthen parent involvement through orientations and activities that enhance parents' capacity to support their children's technology-assisted learning. Fifth, teachers should sustain students' favorable attitude toward schooling through regular monitoring, learner support, and strengthened home-school collaboration. Sixth, technology should be consistently integrated into Mathematics instruction through accessible and meaningful digital learning activities rather than being used only during intervention programs. Seventh, teachers should continue developing students' confidence in learning Mathematics and using technology while providing opportunities to improve their skills in using computers and graphic calculators. Finally, future researchers may examine other dimensions of technology integration, learner characteristics, and contextual factors that may contribute to improved Mathematics learning and academic performance.

VII. ACKNOWLEDGEMENTS

The researcher would like to express her sincere appreciation and gratitude to the individuals who, in various ways, extended their support, guidance, encouragement, and assistance toward the completion of this research endeavor.

Dr. Letercia R. Guerra, Vice-President for Basic Education of Samar Colleges, Inc. and her research adviser, for her unwavering support, invaluable expertise, insightful ideas, and professional guidance throughout the conduct and completion of this study;

Dr. Nimfa T. Torremoro, Dean of the College of Graduate Studies and Chairperson of the Panel of Examiners, for her guidance, encouragement, and motivation that inspired the researcher to persevere in the completion of this academic endeavor;

Dr. Natalia B. Uy, Dean of the College of Business and Management of Samar Colleges, Inc.; **Dr. Michelle L. Mustacisa**, Public Schools District Supervisor of the Schools Division of Catbalogan City; **Dr. Imelda M. Uy**, Public Schools District Supervisor of the Schools Division of Catbalogan City; and **Dr. Guillermo D. Lagbo**, Graduate Faculty of Samar Colleges, Inc., for their valuable insights, constructive criticisms, thoughtful comments, and recommendations that greatly contributed to the improvement of this research work;

The **student-respondents of Samar Colleges, Inc.**, for their cooperation, honesty, and willingness to participate in the study, which provided the essential information needed for its completion;

Her friends, brothers, sisters, and all those who, in one way or another, offered their time, assistance, encouragement, and inspiration, for their invaluable contributions to the realization of this research endeavor; and

Above all, Almighty God, for His guidance, wisdom, strength, grace, and abundant provision throughout the entire journey, making the completion of this research possible.

REFERENCES

- [1] Ali, M. S. B., Yasmeen, R., & Munawar, Z. (2023). The impact of technology integration on student engagement and achievement in mathematics education: A systematic review. *International Journal on Integrated Education*, 6(3), 222–232. <https://doi.org/10.31149/ijie.v6i3.4182>
- [2] Barcelo, L. R., Duliente, C. S., Gamaru, J. D., Madday, M. S., Villamor, P. J., & Rosario, J. B. (2025). Enhancing students' mathematics performance through contextualized instruction and technology integration. *Isabela State University Linker: Journal of Education, Social Sciences and Allied Health*, 2(2), 98–108. <https://doi.org/10.65141/jessah.v2i2.n7>
- [3] Barrientos, I. G. (2021). The use of math apps and the mathematics performance of Grade 8 students in new normal education. *International Journal of Research and Development*, 6(7).
- [4] Boadu, S. K., & Boateng, F. O. (2024). Enhancing students' achievement in mathematics education in the 21st century through technology integration, collaborative learning, and student motivation: The mediating role of student interest. *Eurasia Journal of Mathematics, Science and Technology Education*, 20(11), Article em2534.
- [5] Capacio, L. J. (2021). Improving mathematics achievement in the new normal education system using Genyo e-learning. *International Journal of Theory and Application in Elementary and Secondary School Education*, 3(2), 7–21.
- [6] Das, K. (2021). Integrating e-learning & technology in mathematics education. *Journal of Information and Computational Science*, 11(1), 310–319.

- [7] De Vera, J. L., Andrada, M. D., Bello, A., & De Vera, M. G. (2021). Teachers' competencies in educational technology integration on instructional methodologies in the new normal. *Lukad: An Online Journal of Pedagogy*, 1(1), 61–80.
- [8] Dela Cruz, R. Z., & Hernandez, G. D. (2023). Challenges of public-school elementary mathematics teaching in the new normal. *Indonesian Journal of Social Sciences*, 15(1), 8–20.
- [9] Gamit, A. M. (2023). ICT integration in elementary school for mathematics subject. *International Journal of Learning, Teaching and Educational Research*, 22(2), 432–465.
- [10] Mamolo, L. A., & Sugano, S. G. C. (2024). Digital interactive app and students' mathematics self-efficacy, anxiety, and achievement in the "new normal." *E-Learning and Digital Media*, 21(5), 427–443. <https://doi.org/10.1177/20427530231167646>
- [11] Maryani, I., Latifah, S., Fatmawati, L., Erviana, V. Y., & Mahmudah, F. N. (2023). Technology readiness and learning outcomes of elementary school students during online learning in the new normal era. *Pegem Journal of Education and Instruction*, 13(2), 45–49.