ELECTRONIC GADGETS TO THE MATHEMATICAL PERFORMANCE OF GRADE 5 LEARNERS OF PULONG STA. CRUZ ELEMENTARY SCHOOL

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Abstract

The ubiquity of electronic devices together with its potential to bridge classroom learning to real-world has added a new angle to contextualizing mathematics learning. The study aimed to determine the mathematical performance of Grade 5 learners using electronic gadgets.

In conducting this study, a descriptive study method was used to collect the data and information needed to test the hypothesis and to answer questions concerning the "electronic gadgets to the mathematical performance of Grade 5 learners." The instrument used was questionnaire in the form of checklist. The respondents of the study composed of one hundred (100) respondents. Statistical treatment utilized in this study consisted of weighted mean, standard deviation, and frequency.

This study found that there is an equal distribution of respondents with respect to their genders. It was also seen that the respondents of the study are almost approaching their teens. Also, it can be inferred that the majority of the students have a more stable internet connection and accessible gadgets.

This study found that the level of the electronic gadgets with regards to usability, functionality, and ease of use of electronic gadgets was very high among the students. The level of mathematical performance of grade 5 learners using electronic gadgets from Quarter 1 to Quarter 3 was also found very satisfactory.

The study concluded that there was no significant effect observed from the profile of the students to their performance. Therefore, the null hypothesis stated is true. In this case students' profile doesn't affect their mathematical performance because of the device and internet availability nowadays.

Using electronic gadgets to students' mathematical performance was no significant effect. Moreover, it is suggested that even though there is no significance between the variables, using gadgets in their math class were more likely to achieve higher mathematical performance as they enjoy using those in their learning process, it also motivates them because they can explore more and do more using different kinds of application in those gadgets. Also, students find electronic gadgets more convenient and easier to use.

Keywords: Electronic device, Usability, Functionality, Ease of Use, Mathematical Performance, Different Kinds of Application

1. Main text

Introduction

Technology has played a vital role in educational innovations, providing both teachers and students with more options and flexibility in their teaching and learning practice. With the introduction of new technologies to our daily lives, electronic gadgets like cell cellphones, tablets, and computers have become widely and unrestrictedly used tools and one of the major phenomena during this new normal. Since the COVID-19 pandemic had an unusual impact on the education of children around the world especially here in the Philippines and with the implementation of strict social distancing measures and school closures in the Philippines, there have been rapid widespread and potentially permanent changes to traditional modes of teaching and learning.

With the introduction of new technologies to our daily lives the electronic gadgets like cell phone, tablets, iPad, computer, laptop, television, internet, have become widely and unrestrictedly used tools and one of the major phenomena, in the last decade. Using those gadgets has a huge impact on the academic performance and daily life of millions of students.

Electronic gadgets have become entrenched features in our education nowadays. Computer use has reached beyond work and is now a major source of information that students may use in their education. Scotland's Curriculum for Excellence (Education Scotland n.d., p. 40) noted that "use of technology in appropriate and effective ways" allows for learning experiences that promote the enjoyment of mathematics. In a survey of mathematics research in the United States over the past 30 years, Cheung and Slavin (2013) found that technology produced a positive effect on students' achievement in comparison to traditional methods. However, they also indicated that effects varied by the type of educational technology used. Mobile technologies have been gaining wider acceptance in education in recent years. School and government level initiatives have rolled out these technologies in the classroom (West 2012). Potential benefits of using mobile technologies for learning include facilitating learning across contexts, facilitating contextual learning, and providing personalization in both personal and collaborative environments (Cochrane, T. D. 2012). These potentials make mobile technology seem an ideal tool for learning mathematics..

Background of the Study

Using electronic gadgets for learning is a bandwagon these days, because of it everything is only one click away. Since living in the new normal is what we should get used to, using gadgets is one of the things that will indeed help our learners to study. Electronic gadgets have been used to facilitate the learning process through which students can learn. We need to make sure that our learners maximize the use of it in their education.

Mathematics is seen as a difficult school subject by many students, the methods teachers use in mathematics classes have an effect on the student's level of understanding (Murphy, D. 2016). The negative beliefs of people about the teaching and learning of mathematics appear as one of the biggest obstacles to effective teaching and learning in mathematics classes. In other words, many people believe that mathematics should be taught to today's students in the same way as they were taught mathematics (e.g. by memorizing formulas and procedures and repeating them over and over again.

Technology can be integrated into education at all levels of schooling and electronic devices is an important tool, especially in mathematics education, and the use of technology allows the reshaping of mathematics teaching (Abidin, Z. Mathrani, A. & Hunter, R. 2017). Integrating technology into mathematics is important in two respects; it is difficult to learn for many students and technological tools will facilitate this situation, whereas using electronic gadgets with a good pedagogy have the potential to facilitate the development of various skills such as critical thinking and problem solving (Viberg, Grönlund & Andersson, 2020). In addition, it is considered important in terms of developing positive attitudes towards mathematics lessons, increasing interest, reducing anxiety and fear towards mathematics lessons, and more importantly, developing effective thinking habits such as analytical and critical thinking.

Mathematics, to most, is a complex and difficult subject. The tendency for most students is to consider the subject as one that is boring, thus, creating a lack of interest in the topics being discussed. This poses a great

challenge for teachers and educators, especially in the primary and intermediate levels, wherein a good study habit and a firm grasp of basic concepts should be developed. The use of gadgets in a Mathematics classroom has been at the center stage for quite a while now. Although the use of a Smartphone in the classroom is still somewhat controversial, the researcher encourages it as a learning tool. Since cellphones or tablets are the most available electronic gadget tool among both students and teachers, the researcher tried to explore its affectivity as an educational tool.

Electronic gadgets provide additional opportunities for learners to see and interact with mathematical concepts. Students can explore and make discoveries with games, simulations, and digital tools. Most of us embrace technology because they see the enthusiasm, motivation, personalized educational experiences, and collaborative opportunities that technology can provide. Students are more motivated to learn if they are enjoying the process. They are connected to devices and enjoy using technology throughout their day-to-day lives. This level of engagement carries over when technology is offered as an option in the classroom.

Using electronic gadgets is becoming more and more important in school and other areas however some problems may encounter with the use of technology because not all students have access to technology. Depending on their socioeconomic status and living environment, some students may not have access to reliable Wi-Fi or be able to afford dependable devices. These disparities can affect online learning activities, online assignments, and access to online help. There are some schools that provide technology for students, which is certainly helpful. Some educational grants can also help offset the costs of technology. It is inevitable to integrate information technology into subjects to assist in students' learning with teaching materials, teaching methods, and diversified teaching media. It is the common responsibility for educators to have teaching become more efficient, allow students being glad to learn, and cultivate the new generation with creative and rational communication and critical thinking with technologies and network information in the new era.

This research opted to find out the effect of electronic gadgets on the Mathematical performance of Grade 5 learners of Pulong Sta. Cruz Elementary School.

Theoretical Framework

The goal of this study is to educate, enlighten, and provide resources that will help and encourage the readers to what the research and recent information reveal about the correlation of educational theory and integration of these electronic gadgets in the Mathematical performance of Grade 5 learners of Pulong Sta. Cruz Elementary School. Gadgets play a vital role in the educational field to improve their skills and knowledge but at some point, they can also be used for some other stuff that won't help in their learning. Several theories will help us understand the effect of using gadgets or technology and how it will affect the Mathematical performance of our students.

Technology is perhaps the strongest factor shaping the educational landscape today. Many school districts are showing support for increased levels of technology in the classroom by providing hardware such as tablets and computers, enhancing internet connectivity, and implementing programs designed to improve computer literacy for both teachers and students.

Constructivist learning is one of the typical approaches adopted in math studies that employ technology use (Li, Q. and Ma, X. 2012). Its application to mobile learning literature is just as prominent as it is in math's learning literature. Mobile technologies support constructivist learning through active learning activities (Wijers, M. et al. 2012), immersion in authentic environments (Sommerauer and Mu¨ller 2014), and learner-generated context (Bray et al. 2013). Moreover, mobile devices are ''inherently social collaboration and communication devices that provide powerful tools for enabling social constructivist pedagogy (Cochrane 2014, p. 72)''. Effective technology integration requires consideration of the technology and underpinning pedagogy. Drijvers (2012) pointed out that pedagogical design, the role of the teacher, and educational context are crucial elements in integrating technology for mathematics.

One of the noted advantages of mobile technology over traditional computing is its capacity to support learners in a variety of contexts (Tangney, B. et al. 2012). Through the ubiquitous learning environments that mobile technologies support, learners are afforded the chance to learn in site (Baya'a, N.F. and Daher, W.M. 2012). In these learning environments, students have found mobile devices helpful in terms of facilitating the

visualization of maths concepts. Most of these studies, however, have been exploratory and qualitative in design. Studies that provide evidence in terms of improvement in student performance are few (Wu et al. 2015; Hwang et al. 2015).

Children that would become adults in a technology-mediated society and need to learn how to interact with symbols and how to critically use technology. In this sense, Prensky, Marc (2012), described a "homo sapiens digital" or a "digital human" and stated that people could be "wiser" (than not "smarter") with the use of technology and that it implies that citizens that are technology literate would be in a better position than those that are not. Implications that echo on formal education's need to change. According to Chris Dede, Chris (2015) "Rapid advances in information technology are reshaping the learning styles of many students in higher education." As a result, advances in technology create new opportunities for higher education; emerging technologies can be used to deliver instruction matched to the learning styles of the new genre of students. Therefore, higher education must make use of modern technologies in a manner that encourages and optimizes learning.

Technologies have provided various approaches to learning: engaging learners in contextualized learning environments using mobile devices' built-in sensors (Tangney et al. 2012); using the mobile phone to journal math learning (Project Tomorrow 2011), and connecting learners through mobile phones and social media (Roberts and Butcher 2013). Internet, a user could link to the server, through the network, to select proper digital teaching materials for the learning; and the instant tests allow students controlling the contents of digital teaching materials. Accordingly, practical teaching strategies could be developed by combining with current teaching trend and extracting the advantages of digital learning to achieve the teaching effectiveness (Lai et al. 2012).

Early studies suggest that teachers and students respond to mobile technologies favorably. For example, 90 percent of teachers in a study of 100 palm equipped classrooms reported that handhelds were effective instructional tools with the potential impact student learning positively in cross curricular topics and instructional activities. In a study of Yousuf, M.B. (2017) contained within the article, revealed that a significant majority (90%) of the respondents of a survey agreed that mobile learning being flexible is available anytime and anywhere and that (78%), of respondents supported the statement that quicker feedback in distance learning is possible through mobile learning. In constructivist learning theory, there mobile technologies are more efficient when utilized and has an impact in future development of learning. It is expected that in the near future teachers, students and the entire community will have the ability to utilize mobile technology in most major areas. This allows them to experiment and learn. Mobile wireless technology devices will have access at school district and university libraries, lecture halls, cafeterias, and research centers. Research shows that 17 academic institutions were studied, and that 57 percent of library areas were covered with wireless technology for the sole purpose of support mobile technology, and the figure increased to percent in 2003 (Boggs, J. P. 2012). This information reveals that mobile technology infrastructure is expanding and reaching out into the classroom.

In consonance with the earlier principles the researchers are confident and certain of having the ability to assess the effect of electronic gadgets with regards to the academic performance of Grade 5 learners of Pulong Sta. Cruz Elementary School.

Conceptual Framework

Gadgets help improve the efficiency of teaching methods and learning capacities of students using tablets in class. Overall, the usage of electronic gadgets has made activities conducted in classrooms or at home more flexible.

The research paradigm of the study is depicted in Figure 1 identifies the independent variables and the dependent variables of the study showing the relationships between the electronic gadgets on the mathematical performance of Grade 5 learners according to age, sex, internet availability and types of device use. The dependent variable was the Quarter 1 to Quarter 3 mathematical performance of Grade 5 learners of Pulong Sta. Cruz Elementary School.

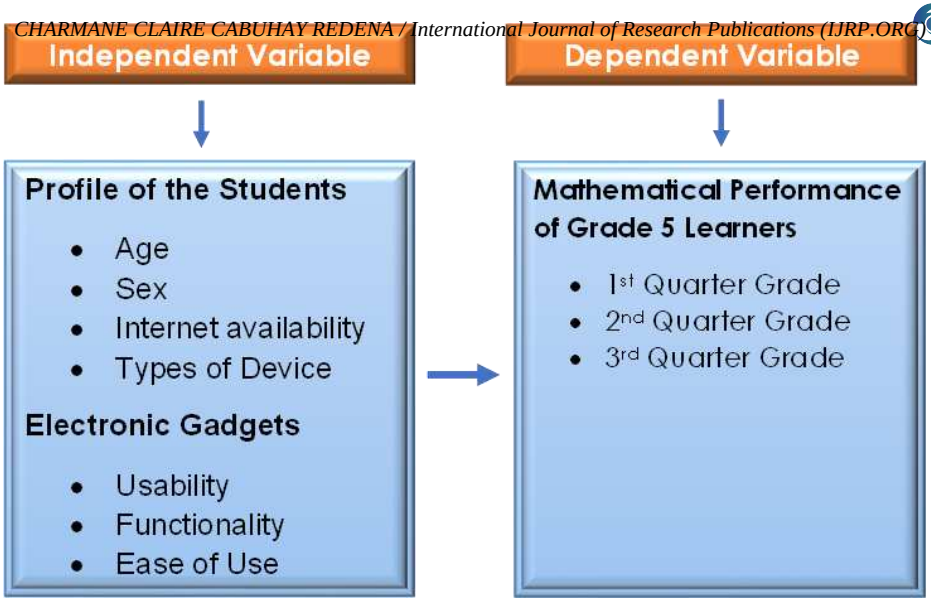

Figure 1. Research Pradigm of the Study

Statement of the Problem

The researcher intended to find out the Mathematical Performance of Grade 5 learners of Pulong Sta. Cruz Elementary School. Specifically, this study sought to answer the following questions:

1. What is the status of profile of the students in terms of:
   - 1.1 Age;
   - 1.2 Sex;
   - 1.3 Internet availability; and
   - 1.4 Types of device?
2. What is the level of the electronic gadgets with regards to:
   - 2.1 Usability;
   - 2.2 Functionality; and
   - 2.3 Ease of Use?
3. What is the level of Mathematical performance of grade 5 learners in terms of;
   - 3.1 First Quarter Grade;
   - 3.2 Second Quarter Grade; and
   - 3.3 Third Quarter Grade?
4. Is there a significant effect between the profile and the Mathematical Performance of Grade 5 Learners?
5. Is there a significant effect on the Mathematical performance of Grade 5 learners?

Research Methodology

The research design used in this study was descriptive method. A quantitative research design was used to collect and gather information about the electronic gadget on the Mathematical performance of Grade 5 learners of Pulong Sta. Cruz Elementary School. A quantitative research design was used to describe and test relationships between objects. It was also presented in numerical form and analyzed through the use of statistics.

It focused on gathering numerical data and generalizing it across groups of people or explaining a particular phenomenon. This research design was used by giving questionnaires to the respondents of this study.

The respondents of this study were one hundred (100) elementary school students in the municipality of Sta. Rosa City, Laguna, who were officially enrolled in Pulong Sta. Cruz Elementary School as Grade 5 during the school year 2021-2022. The purpose of the study was to identify the Mathematical Performance of learners in the use of electronic gadgets. Data collection is based on a recent study on electronic gadgets on students' Mathematical performance. In the research, the researcher will use tools such as a questionnaire in obtaining research information. The questions in this study are based on the experience of Pulong Sta. Cruz Elementary School students on the use of electronic gadgets in their education. The researcher will identify the Mathematical performance on using electronic gadgets in the respondents' education, whether positive or negative in the study. Researchers will obtain 100 respondents from Grade 5 in this study.

Data were collected following the standard operating procedures.

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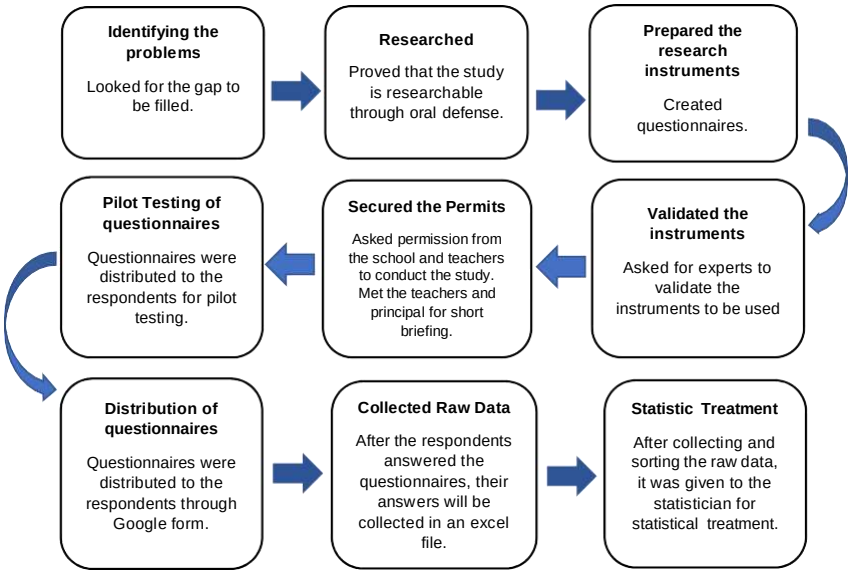

Before the questionnaire was uploaded online in Google form, the questionnaire must pass two (2) types of validation, namely, face validation and content validation.

In the face validation, the validators investigated the format of questionnaire to ensure that it follows a consistent pattern in the presentation, to make certain that it will look good for the respondents who should not be intimidated by it which can cause for their refusal to answer the questionnaire. In addition, the validators checked the sentence constructions of the indicators in the questionnaire. The indicators as well as the instructions in the questionnaire should be very specific, direct to the point, and unambiguous. They must be grammatically correct and clear enough for respondents to understand them.

The equally important type of validation is content validation. In this type of validation, validators looked for sufficiency of indicators included in each category of indicators to ensure that they have generated adequate data for statistical analysis. More importantly, validators examined the indicators to determine whether they are appropriate for the focus of the study. They must be relevant for the topic of investigation of the study, and they must be appropriate for the category to which they belong.

The research instrument used in gathering the data was a questionnaire. The question was prepared by the researcher. A quantitative research questionnaire was used to gather the data and information about the Mathematical performance on the use of electronic gadgets in learning.

The survey administration software use in this study is Google Form survey. Because of the ongoing pandemic,

distributing questionnaires face-to-face interaction is prohibited therefore the researchers will use the internet in conducting the survey with the use of Google forms.

Results and Discussion

Status of Profile of the Students

The following pie graph refers to age, sex, internet availability and types of devices use by the students. Followed by the tables that refers to usability, functionality, and ease of use of electronic device, next to that is the first quarter, second quarter and third quarter grades, the table for the profile of the students to the Mathematical Performance of Grade 5 Learners, lastly the table for Mathematical Performance of Grade 5 Learners.

Figure 2 presents the profile of the students in terms of Age. Out of one hundred (100) respondents, ninety-one (91) were identified to be of the ages "10 to 11" which accounts to 91% of the population. This is seconded by those who have the ages "12 to 13" which accounts to 8% of the population. On the other hand, there was only one (1) respondent that was identified to be aged between "13 to 14".

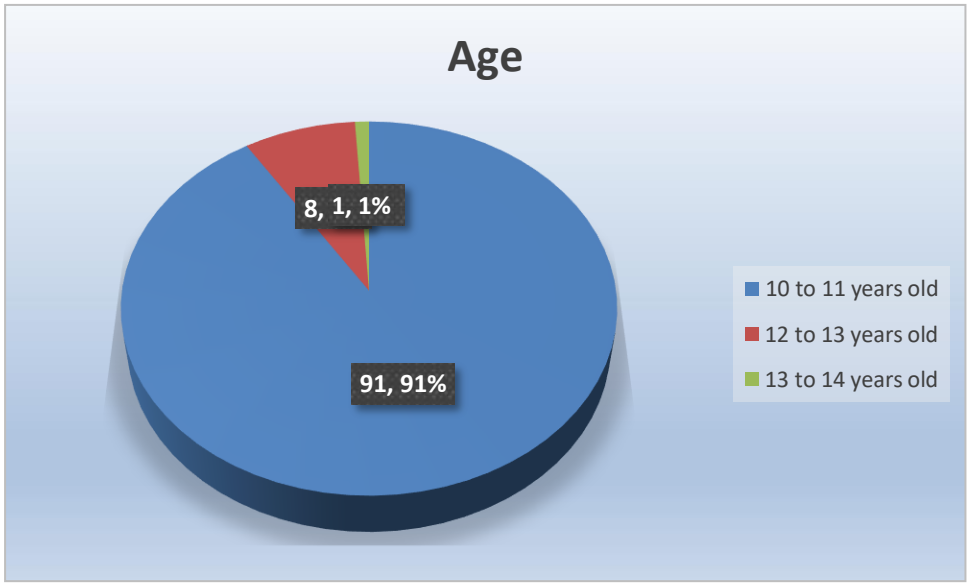

Figure 2. Status of the Profile of the Students in terms of Age

From the above figure, it can be inferred that the respondents of the study are in their late childhood and approaching their teens. Electronic media use has become the most popular for children and adolescents (7–18 years old).

Moreover, electronic media use includes screen-based activities such as computer and smart phone use, electronic video games and television viewing. Young people today are more "connected" than ever. In counties with high rates of connectivity, young people aged 7-18 generally outnumber others in terms of overall online population (International Telecommunication Union, 2016). Young people have shown preferences for using the internet for studying, gaming, chatting and social networking purposes (Durkee et al., 2012). The use of technology in the learning environment can develop students' higher-level thinking by moving beyond simple memorization and recall.

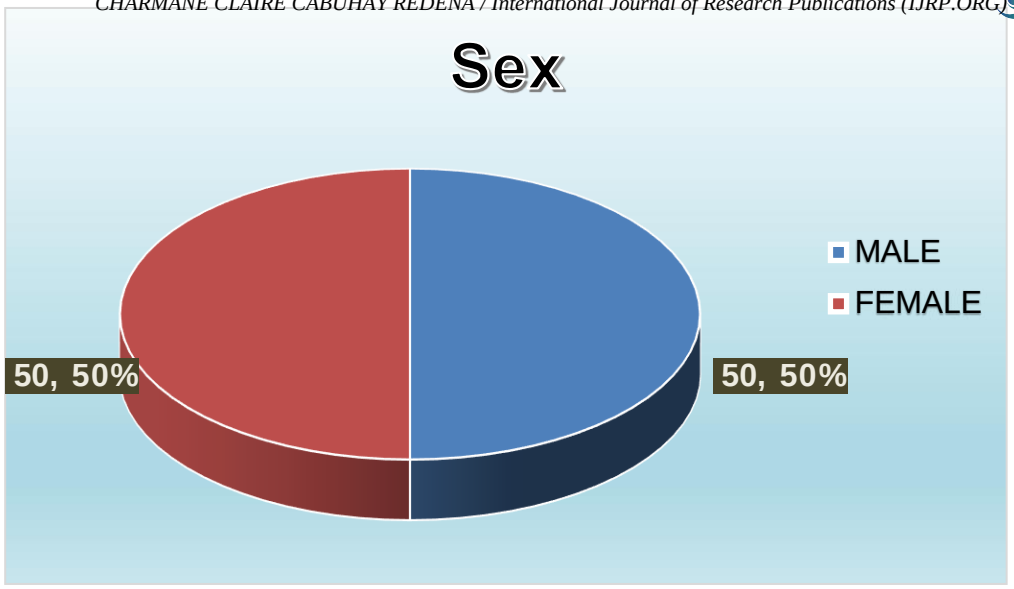

Figure 3. Status of the Profile of the Students in terms of Sex

Figure 3 presents the profile of students in terms of sex. Out of one hundred (100) respondents, fifty (50) were identified to be "Male" which makes up 50% of the population. On the other hand, "Female" respondents make up the remaining 50% which is about fifty (50) students.

From the above data, it can be stated that there is an equal distribution of respondents with respect to their sex. This result suggests that male and female students' perceptions of mobile technology use did not vary. This finding is consistent with other mobile learning studies in mathematics (Tsuei et al. 2013; Deater-Deckard et al. 2014) where gender does is not a contributing factor to students' evaluation of mobile learning activities. However, when equal access is provided to all students, females are less likely to use computers than males because females perceive that using technology for learning is predominately a male activity.

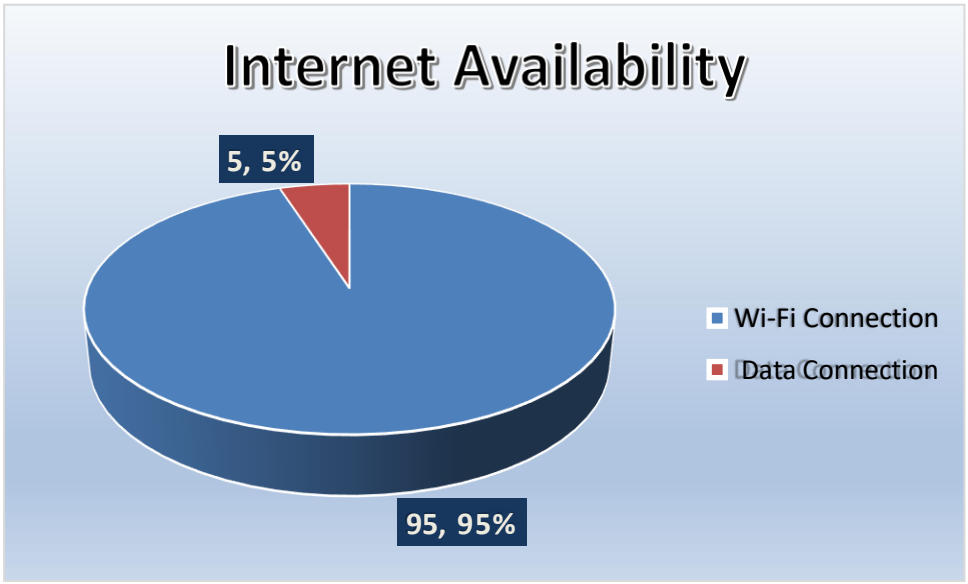

Figure 4. Status of the Profile of the Students in terms of Internet Availability

Figure 4 presents the profile of the students in terms of Internet Availability. Out of one hundred (100) respondents, ninety-five (95) have stated that they have "Wi-Fi Connection" which is about 95% of the total population. On the other hand, only five (5) stated that they have "Data Connection" which makes up 5% of the population.

It can be inferred from above that the majority of the students have a more stable connection. Based on another perspective, a majority of the respondents in a related study showed readiness for online learning (Muthuprasad, T. et al., 2021). As Donald Tapscott (2009, 20) put it, "to them, technology is like the air." Thus, in many ways, talking about the Internet and education simply means talking about contemporary education. The Internet is already an integral element of education in (over)developed nations, and we can be certain that its worldwide educational significance will continue.

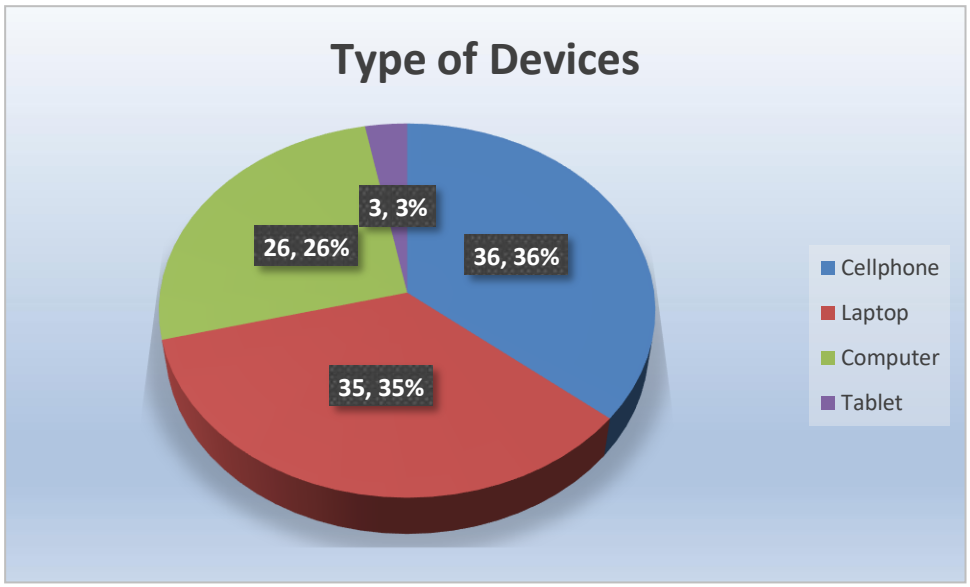

Figure 5. Status of the Profile of the Students in terms of Types of Device

Figure 5 presents the profile of the students in terms of Types of Devices. Out of one hundred (100) respondents, thirty-six (36) have stated that they have "Cellphone" which is about 36% of the total population. This is seconded by those who have "Laptop" with thirty-five (35) students each making up 35% of the population. Followed by those who has computer with twenty-six (26) students which makes up 26% of the population. On the other hand, only three (3) stated that they have a "Tablet" which makes up 3% of the population.

It can be inferred from above that there is an accessible gadget to all of the respondents. Students possessed various types and brands of mobile phones especially smartphones (Essel, H. B. et al., 2018). This is possible because the market of mobile phones became in demand and the prices are very competitive for consumers. Some studies showed the dependency of students on smartphones for online learning and internet access (Apuke, O. D. & Ivendo, T. O. 2018; Muthuprasad, T. et al., 2021). Children are "connected" in different contexts, not just the home environment. PISA 2012 (Program for International Student Assessment) data reported that across OECD (Organization for Economic Co-operation and Development) countries 72% of students reported using computer technologies (desktops, laptops or tablet computers) at school versus 93% at home (OECD, 2015). in the findings of Jin, W. and Sabio (2018), the use of mobile devices has the potential to be used and adapted for learning. Another study showed that the greater number of device types owned by a student, the greater the level of learning readiness (Estira, K.L.A. 2020). In addition, from another state university in the country, a study revealed the students' readiness for online classes however, the burden from computer and internet rentals in cafes exists (Yra, J.F.P et al., 2020).

Level of Electronic Gadgets

In the age of technology and connectivity, electronic gadgets have graced their way into the learning process of students in the classroom. These gadgets have been used to continually improve and expound methods through which students can learn. The gadgets mostly used by students are tablets, mobile phones, laptop, iPad and computer. Also, the growing demand in terms of requirements from students is assisted by these electronic gadgets. Tasks and collaboration are done easier using technology available for educational purposes.

The table refers to the level of electronic gadgets in terms of usability, functionality and ease of use of electronic gadgets.

STATEMENTS	Mean	Standard Deviation	Remarks
Uses electronic device in learning Mathematics. (Gumagamit ng electronic device sa pag-aaral ng Mathematics).	4.50	0.745	All the time
Able to acquire knowledge through the use of electronic device. (May kakayahang makakuha ng kaalaman sa pamamagitan ng electronic device.).	4.18	0.821	Most of the time
Uses of electronic device motivates me to study more in Mathematics. (Ang paggamit ng electronic device ay nag-uudyok sa akin na mag-aral ng higit pa sa Mathematics).	4.27	0.815	All the time
Uses electronic device for remediation, or reinforcement of Mathematics skills. (Gumagamit ng electronic device para sa remediation, o pagpapalakas ng mga kasanayang Mathematics).	4.26	0.848	All the time
Finds electronic device essential to my education. (Nakikita ko na mahalaga ang electronic device sa aking pag-aaral).	4.54	0.797	All the time

Overall Mean = 4.35
Standard Deviation = 0.82
Verbal Interpretation = Very High

The following table shows the mean, standard deviation and verbal interpretation.

Table 1 illustrates the level of the level of electronic gadgets with regards to Usability. Among the statements above, “Finds electronic device essential to my education. (Nakikita ko na mahalaga ang electronic device sa aking pag-aaral)” yielded the highest mean score (M=4.54, SD=0.797) and was remarked as All of the time. This is followed by “Uses electronic device in learning Mathematics. (Gumagamit ng electronic device sa pag-aaral ng Mathematics)” with a mean score (M=4.26, SD=0.848) and was also remarked as All of the time. On the other hand, the statement “Able to acquire knowledge through the use of electronic device. (May kakayahang makakuha ng kaalaman sa pamamagitan ng electronic device.)” received the lowest mean score of responses with (M=4.18, SD=0.821) yet was also remarked All of the time.

Overall, the level of electronic gadgets with regards to Usability attained a mean score of 4.35 and a standard deviation of 0.815 and was Very High among the students.

Crompton and Burke’s (2015) survey of mobile learning in mathematics showed that there is a growing interest in mobile technology effectiveness, with 75% of 48 studies reporting positive learning outcomes. Similarly, in Fabian et al. (2016) review of mobile learning studies in mathematics, 77% of 31 studies reported that mobile technologies improved students’ achievement.

The advent of modern technologies had gradually shifted the uses of technology away from an

emphasis on lower-level skills towards developing students more complex ways of thinking about and understanding mathematics. These potential benefits include development of students' higher order thinking skills, facilitation of students mathematical conceptual understanding and mathematical modeling (Maschietto, 2018; Tucker, 2018), and the creation of inquiry dash base and constructivist learning environments (Psycharis et. al., 2013; Olive et al., 2010).

Table 2. Level of the Electronic Gadgets with regards to Functionality

STATEMENTS	Mean	Standard Deviation	Remarks
Understands the visual model in lesson such as Fractions, Divisibility Rules, PMDAS, GMDAS, GCF and LCM through the use of electronic device. (Nauunawaan ang visual na modelo sa aralin tulad ng Fractions, Divisibility Rules, PMDAS, GMDAS, GCF at LCM sa pamamagitan ng mga electronic device).	4.43	0.64	All the time
Learns mathematics more deeply with the appropriate use of electronic device. (Natututo ng Mathematics nang mas malalim sa tamang paggamit ng mga electronic device).	4.35	0.67	All the time
Ables to answer activities and performance task in Mathematics using electronic device. (Nakasagot sa mga gawain at gawain sa pagganap sa Mathematics gamit ang electronic device).	4.49	0.73	All the time
Able to remember more and do better on my Mathematics tests using electronic device. (Mas nakakaalala at nakakagawa ng mas mahusay sa aking mga pagsusulit sa Matematika gamit ang electronic device).	4.29	0.82	All the time
Able to explore several software tools to improve my Mathematics skills. (Nakapag-explore ng ilang software tool para mapahusay ang aking mga kasanayan sa Matematika).	4.63	0.63	All the time

Overall Mean = 4.36
Standard Deviation = 0.70
Verbal Interpretation = Very High

Table 2 illustrates the level of the level of electronic gadgets with regards to Functionality. Among the statements above, "Able to answer activities and performance task in Mathematics using electronic device. (Nakasagot sa mga gawain at gawain sa pagganap sa Mathematics gamit ang electronic device)" yielded the highest mean score (M=4.49, SD=0.732) and was remarked as All of the time. This is followed by "Understands the visual model in lesson such as Fractions, Divisibility Rules, PMDAS, GMDAS, GCF and LCM through the use of electronic device. (Nauunawaan ang visual na modelo sa aralin tulad ng Fractions, Divisibility Rules, PMDAS, GMDAS, GCF at LCM sa pamamagitan ng mga electronic device)" with a mean score (M=4.43, SD=0.640) and was also remarked as All of the time. On the other hand, the statement "Able to explore several software tools to improve my Mathematics skills. (Nakapag-explore ng ilang software tool para mapahusay ang aking mga kasanayan sa Matematika)" received the lowest mean score of responses with (M=4.63, SD=0.633) yet was also remarked All of the time.

Overall, the level of the level of electronic gadgets with regards to Functionality attained a mean score of 4.36 and a standard deviation of 0.706 and was Very High among the students.

Mobile learning studies on mathematics yielded the same results. Students found the use of mobile technologies engaging and useful (Baya'a and Daher 20; Lai et al. 2012). Baya'a and Daher reported that students saw mobile technologies as useful mathematics tools because they facilitated visualization, encouraged collaborative

learning and enabled exploration of mathematics in an outdoor environment. the usage of electronic gadgets has made activities conducted in classrooms more flexible.

The various features and functions of gadgets in class also play a part to efficiently transform teaching and learning methods, because of this, different senses of students are activated through the use of these gadgets.

Table 3. Level of the Electronic Gadgets with regards to Ease of Use

STATEMENTS	Mean	Standard Deviation	Remarks
I am more comfortable using an electronic device in studying Mathematics. (Mas komportable akong gumamit ng electronic device sa pag-aaral ng Mathematics.).	4.22	1.177	All the time
Finds it easy to use search engine tools using electronic device. (Madaling gamitin ang search engine tool gamit ang electronic device.).	4.18	1.067	All the time
I can easily talk to my teacher when I have a question in our Mathematics Lesson with the help of electronic device. (Madali kong nakakausap ang aking guro kapag ako ay may katanungan sa Mathematics na aralin sa tulong ng electronic device).	4.33	0.888	All the time
Ables student-teacher interaction with the help of electronic device. (Nagagawa ang pakikipag-ugnayan ng mag-aaral sa guro sa tulong ng mga electronic device).	4.35	1.009	All the time
I am more comfortable using an electronic device in studying Mathematics. (Mas komportable akong gumamit ng electronic device sa pag-aaral ng Mathematics.).	4.14	1.101	Most of the time

Overall Mean = 4.24
Standard Deviation = 1.052
Verbal Interpretation = Very High

Table 3 illustrates the level of the level of electronic gadgets with regards to Ease of Use. Among the statements above, “Able student-teacher interaction with the help of electronic device. (Nagagawa ang pakikipag-ugnayan ng mag-aaral sa guro sa tulong ng mga electronic device)” yielded the highest mean score (M=4.35, SD=1.009) and was remarked as All of the time. This is followed by “I can easily talk to my teacher when I have a question in our Mathematics Lesson with the help of electronic device. (Madali kong nakakausap ang aking guro kapag ako ay may katanungan sa Mathematics na aralin sa tulong ng electronic device)” with a mean score (M=4.33, SD=0.888) and was also remarked as All of the time. On the other hand, the statement “I am more comfortable using an electronic device in studying Mathematics. (Mas komportable akong gumamit ng electronic device sa pag-aaral ng Mathematics.)” received the lowest mean score of responses with (M=4.22, SD=1.177) and was remarked Most of the time.

Overall, the level of the level of electronic gadgets with regards to Ease of Use attained a mean score of 4.24 and a standard deviation of 1.052 and was Very High among the students.

Harper (2018) noted that the teachers' enhanced role as "facilitators of students' explorative learning experiences," both face to-face and in an online context, provided the opportunity for rich, "sustained, learning-oriented interactions" (p. 223). He also found that technology, opened the way for greater "frequency, duration and quality of communications between teachers and students," which, in turn, led to "greater academic success" (p. 223).

With the advancement of technology and the development of the functions of technological tools such as portability, usability, ease of use and internet access, technology has gained wide acceptance among people and has become a learning tool beyond the walls of the school and classroom and the borders of education have

been expanded with these technological tools (Borba, Askar, Engelbrecht, Gadanidis, Llinares & Aguilar, 2016).

Table 4. Level of Mathematical Performance of Grade 5 Learners in terms of First Quarter

Range	Frequency	Percentage	Remarks
90 to 100	33	33.00	Outstanding
85 to 89	27	27.00	Very Satisfactory
80 to 84	39	39.00	Satisfactory
75 to 79	1	1.00	Fairly Satisfactory
Below 75	0	0.00	Did Not Meet Expectations
Total	100	100.00	
Overall Mean	86.94		
Standard Deviation	4.909		
Verbal Interpretation	Very Satisfactory		

Table 4 illustrates the level of mathematical performance of grade 5 learners in terms of grades in first quarter. Out of one hundred (100) students, thirty-nine (39) or 39.00% of the total population gained grades of "80 to 84" which was satisfactory. This was followed in frequency by those who had grades of "90 to 100" which thirty-three (33) students or 33.00% of the population was identified to perform as such. On the other hand, only one (1) respondent gained a grade between "75 to 79" which was Did not meet expectations.

Overall, the level of level of mathematical performance of grade 5 learners in terms of grades in first quarter was very satisfactory with a mean score of 86.94 and a standard deviation of 4.909.

Several studies support the use of mobile devices to enhance math instruction and improve the academic achievement of students (Bryant et al., 2015; Musti-Rao & Plati, 2015; Zhang et al., 2015; Nordness, Haverkost, 10 & Volberding, 2011; Cihak & Bowlin, 2009).

Table 5. Level of Mathematical Performance of Grade 5 Learners in terms of Second Quarter

Range	Frequency	Percentage	Remarks
90 to 100	29	29.00	Outstanding
85 to 89	44	44.00	Very Satisfactory
80 to 84	26	26.00	Satisfactory
75 to 79	1	1.00	Fairly Satisfactory
Below 75	0	0.00	Did Not Meet Expectations
Total	100	100.00	
Overall Mean	86.73		
Standard Deviation	4.096		
Verbal Interpretation	Very Satisfactory		

Table 5 illustrates the level of mathematical performance of grade 5 learners in terms of grades in second quarter. Out of one hundred (100) students, forty-four (44) or 44.00% of the total population gained grades of "85 to 89" which was very satisfactory. This was followed in frequency by those who had grades of "90 to 100" which twenty-nine (29) students or 29.00% of the population was identified to perform as such. On the other hand, only one (1) respondent gained a grade between "75 to 79" which was Did not meet expectations.

Overall, the level of level of mathematical performance of grade 5 learners in terms of grades in second quarter was very satisfactory with a mean score of 86.73 and a standard deviation of 4.096.

From a historical perspective, technology and their impact on students' mathematics performance have been ever-changing (Cibulka & Cooper, 2017). Initially, technology was introduced in mathematical classrooms as providing ancillary tools for teachers to use, for example, using televisions to represent class contents.

Table 6. Level of Mathematical Performance of Grade 5 Learners in terms of Third Quarter

Range	Frequency	Percentage	Remarks
90 to 100	32	32.00	Outstanding
85 to 89	53	53.00	Very Satisfactory
80 to 84	14	14.00	Satisfactory
75 to 79	1	1.00	Fairly Satisfactory
Below 75	0	0.00	Did Not Meet Expectations
Total	100	100.00	
Overall Mean	87.33		
Standard Deviation	4.074		
Verbal Interpretation	Very Satisfactory		

Table 6 illustrates the level of mathematical performance of grade 5 learners in terms of grades in third quarter. Out of one hundred (100) students, fourteen (48) or 48.00% of the total population gained grades of "90 to 100" which was outstanding. This was followed in frequency by those who had grades of "85 to 89" which forty-six (46) students or 46.00% of the population was identified to perform as such. On the other hand, only six (6) respondents gained a grade between "80 to 84" which was satisfactory.

Overall, the level of level of mathematical performance of grade 5 learners in terms of grades in third quarter was very satisfactory with a mean score of 88.95 and a standard deviation of 3.34.

Marzouki, Idrissi and Bennani (2017) have mentioned the positive effects of mobile learning on knowledge acquisition, student academic performance, attitudes, and motivation in social constructivist learning environments. According to Liu & Chen (2005), academic standing and study habits are said to improving because of the advent and the wide use of Internet, hypertext and multimedia resources which greatly affect the academic performance of students.

Table 7. Significant Effect of the Profile of the Students to Mathematical Performance of the Grade 5 Leaners

Profile	Beta	t value	p-value	Analysis
Age	1.385	1.530	0.139	Not Significant
Sex	-0.140	-0.426	0.674	Not Significant
Internet Availability	-1.385	-1.530	0.139	Not Significant
Types of Devices	0.209	1.501	0.146	Not Significant

R Square: 17.51%
F value: 1.326
Sig.: 0.288

Table 7 presents the significant effect of the profile of the students to the mathematical performance of the grade 5 learners.

There was no significant effect observed from the profile to the performance based on the computed p-values which were greater than the significance alpha 0.05. Furthermore, only a small percentage of the performance was explained by the profile as presented by the r-square 17.51%.

From the findings above, it can be inferred that at 0.05 level of significance, the null hypothesis "There is no significant effect on the profile of the students on the Mathematical performance of the Grade 5 learners" is true. Thus there is no significant effect. In this case students profile doesn't affect their mathematical performance because of the device and internet availability nowadays.

Table 8. Significant Effect of the Electronic Gadgets to the Mathematical Performance of the Grade 5 Learners

Use of Electronic Gadgets	Beta	t value	p-value	Analysis
Usability	-0.704	-1.773	0.088	Not Significant
Functionality	0.965	1.577	0.127	Not Significant
Ease of Use	-0.369	-1.186	0.246	Not Significant

R Square: 15.42%
F value: 1.580
Sig.: 0.218

Table 8 presents the significant effect of the electronic gadgets to the mathematical performance of the grade 5 learners.

As observed from the beta coefficients, whenever there is a unit increase in the Functionality; the performance of the students increases as depicted by the positive values. On the other hand, whenever there is an increase in Usability and Ease of Use, the performance of the students' decrease. However, there was no significant effect observed from the use of gadgets to the performance based on the computed p-values which were greater than the significance alpha 0.05.

From the findings above, it can be inferred that at 0.05 level of significance, the null hypothesis "There is no significant effect on the electronic gadgets on the Mathematical performance of the Grade learners" is true. Thus there is no significant effect.

Harper (2018) noted that the teachers' enhanced role as "facilitators of students' explorative learning experiences," both face to-face and in an online context, provided the opportunity for rich, "sustained, learning-oriented interactions". He also found that technology, opened the way for greater "frequency, duration and quality of communications between teachers and students," which, in turn, led to "greater academic success".

Summary of Findings

This research intended to find out the mathematical performance of Grade 5 learners using electronic gadgets. The respondents of this study are one hundred (100) Grade 5 learners of Pulong Sta. Cruz Elementary School in City of Sta. Rosa, Laguna for School Year 2021– 2022.

The ubiquity of mobile devices together with its potential to bridge classroom learning to real-world has added a new angle to contextualizing mathematics learning. Technology use in classrooms in today's world is believed to have a positive impact on students' success and performance towards lessons. The use of instructional technology in class enhances learning so that students can learn more effectively. In technology-implemented classes, interactive student involvement in the learning process is fostered, and learning becomes more fun and more attractive for the students.

This research intended to find out the mathematical performance of Grade 5 learners using electronic gadgets. This study intended to answer the following: (1) what is the profile of the students in terms of: age, sex, internet availability, types of device; (2) what is the level of the electronic gadgets with regards to: usability, functionality, ease of use; (3) What is the level of Mathematical performance of grade 5 learners in terms of; first quarter, second quarter and third quarter; (4) do the profile of the students have a significant effect on the Mathematical performance of the Grade 5 learners; (5) do electronic gadgets have a significant effect on the Mathematical performance of Grade 5 learners?

This study found that there is an equal distribution of respondents with respect to their sex. It was also seen in the age that the respondents of the study are almost approaching their teens. Also, it can be inferred that the majority of the students have a more stable internet connection and accessible gadgets.

This study found that the level of the electronic gadgets with regards to usability, functionality, and ease of use of electronic gadgets was very high among the students. For this reason, it is vital to determine how easy it is for the user especially students to use these digital technologies. Technology provides additional opportunities for learners to see and interact with mathematical concepts. Students can explore and make discoveries with

games, simulations and other digital tools.

The level of mathematical performance of grade 5 learners using electronic gadgets from Quarter 1 to Quarter 3 was a found very satisfactory. It is believed that when technology is used appropriately in classroom instruction, it has a very positive impact on students' performance or success. Moreover, using technology motivates active student learning, collaboration, and cooperation. It is pronounced that technologies contribute in learning mathematics

There was no significant effect observed from the profile of the students to their performance. In this case students' profile doesn't affect their mathematical performance because of the device and internet availability nowadays.

Using electronic gadgets to students' mathematical performance has no significant effect. However, the aforementioned studies suggested that even though there is no significance between the variables, using gadgets in their math class were more likely to achieve higher mathematical performance as they enjoy using those in their learning process, it also motivates them because they can explore more and do more using different kinds of application in those gadgets. Also, students find electronic gadgets more convenient and easier to use.

Before the study, students' previous exposure to mathematics instruction was almost solely in the classroom through very traditional methods. Through the use of technology-enriched like electronic devices for instruction, these students were introduced to a whole new world, available at their fingertips. They could, and did, spend hours on building their competency in Math outside of the classroom. They could choose activities in the order and at the difficulty level in which they felt comfortable, taking ownership of their own learning.

Students could see their own improvement and celebrate their immediate success because the data was available to them instantly on the screen. Because of technology, students were flourishing as rational, creative beings in a world, which up to that point in their education, had been highly prescribed and inhibitive. This would seem to corroborate that technology not only supports the flourishing of students, but also provides teachers with the tools to differentiate instruction for each student to best address their individual needs and to best encourage the gifts and abilities of each learner in their classroom.

Conclusion

Based on the foregoing findings of the study, the researcher drawn the following conclusions.

The study concluded that there was no significant effect observed from the profile of the students to their performance. Therefore, the null hypothesis which stated that ""There is no significant effect on the profile of the students on the Mathematical performance of the Grade 5 learners" is accepted. In this case students' profile doesn't affect their mathematical performance because of the device and internet availability nowadays.

Using electronic gadgets to students' mathematical performance was no significant effect. Therefore, the null hypothesis on the Mathematical performance of the Grade 5 learners" is accepted.

Moreover, it is suggested that even though there is no significance between the variables, using gadgets in their math class were more likely to achieve higher mathematical performance as they enjoy using those in their learning process, it also motivates them because they can explore more and do more using different kinds of application in those gadgets. Also, students find electronic gadgets more convenient and easier to use.

Recommendations

In view of the presented conclusions, the following recommendations are hereby deduced.

1. With the given result, continue providing students with access to the basic technologies that are most important to their academic success.
2. Students need a supportive, encouraging, and friendly environment with focused on productive learning activities. Teachers may integrate digital learning practices with a mix of teacher- and student-led activities where children take the lead and explore educational apps together.
3. Parents must be supportive on the use of the electronic gadgets because it is very effective in the academic performance of students. Although, children need to be reminded on their limitations to these gadgets, they are also challenged to use and manipulate electronic gadgets for their academic advancement and to make them acquire unlimited knowledge about their specific field of discipline.

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