UTILIZATION OF ICT IN TEACHING MATHEMATICS IN PUBLIC SECONDARY SCHOOLS AT SAN MATEO, ISABELA

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Abstract. This study aimed to assess the current levels of use of Information Communication and technology (ICT) equipment in San Mateo, Isabela to gain a deeper understanding on the effect of ICT in learning mathematics. Descriptive research design was utilized in the conduct of the study to finds out the respondent's perception of the availability of technological gadgets and its effect in teaching mathematics in public secondary high school in San Mateo, Isabela. Mean and ranking were used to gain understanding on the impact of using modern gadgets to assist teachers in teaching secondary mathematics. The study revealed that most teachers are somewhat familiar with using technological tools or equipment's due to the fact that majority of the respondents have a mid- range socio economic status. The data from the study also shows that the selected public schools in San Mateo, Isabela have adequate and often used ICT equipment in teaching mathematics and this greatly affects the effectivity of the used of ICT in teaching Mathematics. Hence, the study showed problems in the implementation of ICT in teaching Mathematics, particularly the deficiencies in the number of computers in labs. To improve this study, there should be continuous support in improving Mathematics program in terms of expanded activities. Teachers should provide an environment of discovery to engage the students in Math exploration and promotion of advocacy that supports the utilization of ICT in teaching mathematics like benchmarking and brainstorming, wide dissemination, and implementation on the used of ICT in teaching mathematics.

Keywords: *equipment, information communication and technology (ICT), technological gadgets, mathematics*

Introduction

For the first time in history, students may be more skilled than teachers at using the instruments required for gaining and conveying information. Through the use of modern technology, children all across the world are forming their own virtual communities. They utilize chat features to communicate synchronously with both old and new friends, and email and short message services to communicate asynchronously with them. They participate in discussion forums, explore virtual environments, and seamlessly integrate new technology and software. In many respects, children are light years ahead of their parents and teachers in terms of information and communication technology (ICT) capabilities. As a consequence, kids get bored and dissatisfied, and teachers become agitated and disturbed. A significant challenge for our country's teacher preparation system is producing future educators who are adept at utilizing contemporary learning technologies to enhance student learning. Information and communications technology (ICT) has the potential to meet the learning needs of specific students, to advance equality of opportunity, to provide high-quality learning materials, and to boost self-efficacy and independent learning among students of all ages. ICT provides teachers with chances for their own professional growth in addition to being a necessary instrument for their everyday work in the teaching profession. It offers schools themselves the chance of a quicker path to establishing a meaningful role in the larger community, embracing students of all ages, linking and networking with other

educational establishments, and bringing professionals together across a range of areas. It can be used to encourage new ways of working as part of professional learning teams. But it seems that not everything that glitters is gold.

With the advent of modern technology, students who are homeschooled, have impairments, or who live in inaccessible rural areas have additional learning and research possibilities available to them. Students and instructors have access to a portal and a connection to the entire globe through an internet connection. When technology is used meaningfully, computers may provide paths that encourage learning and aid in the development of high order thinking abilities. Studies of technical advancements have frequently revealed connections between advancements in business and communications and advancements in pedagogy. The popularity and effectiveness of web-based curricula at all educational levels is simply the most recent illustration of how crucial technology is for learners as well as teachers. In addition to adapting the most recent technological advancements in the traditional classroom to "distance learners," educators are challenged by the increased reach of educational programs to a growing population of students via the internet to find new ways to enhance those students' overall educational experiences. It is more important than ever to provide students with the knowledge and abilities they will need to succeed in the twenty-first century due to the constantly changing nature of the educational landscape. Critical thinking and problem-solving stand out among these essential abilities as the foundations of success in both academic and practical situations. Early development of these skills is crucial, and the K–12 curriculum reflects this with particular general objectives created to foster students' capacity for critical thought and problem-solving.

All grade levels are covered by the basic goals for critical thinking and problem-solving, which are designed to provide students the skills they need to assess data, weigh their alternatives, and come up with original solutions. Teachers may help students become more adaptable, innovative, and capable of making wise decisions by encouraging these skills. The objectives for critical thinking and problem-solving cover a variety of related abilities and attitudes throughout the K-12 curriculum. Students are urged to investigate complicated issues, think critically, reason logically, and effectively convey their thoughts. They are given the chance to use mathematical ideas and principles in real-world contexts, participate in group problem-solving activities, and make use of technology to improve their problem-solving skills. The way mathematics is taught and studied has changed as a result of technology's integration into education in the quickly evolving digital age of today. The way that mathematics is taught in K–12 schools has changed dramatically because to technology, which includes interactive software, online resources, educational applications, and virtual simulations. Innovative strategies to engage pupils, improve conceptual comprehension, and build a greater appreciation for the beauty and usefulness of mathematics are being developed by educators as they embrace the promise of technology.

There are many different digital tools and platforms available today that are designed to improve the learning process, which characterizes the status of technology in math education. Interactive whiteboards, digital math applications, and online learning management systems are supplanting or even replacing more traditional teaching strategies for arithmetic, such as chalkboards and textbooks. Not only have these technology developments made mathematics more approachable, but they have also opened up possibilities for individualized learning, adaptive teaching, and data-driven examinations. Online instruction is already enhanced by computers' unique capacity to

offer lessons in multimedia formats and to enable real-time dialogue and exchange between students and teachers, but this capability may only be the beginning of what emerging technologies will do for the provision of high-quality education in the twenty-first century. Teachers that are proficient in teaching online or through e-learning must be able to transfer information and culture to their students in order to advance in this rapidly changing and dynamic technological world. It's excellent that you're eager to take on these problems because some teachers are hesitant or even afraid to employ the most cutting-edge technologies available today. For instance, simply placing a computer and software in the classroom won't teach the pupils anything because that doesn't equate to meaningful learning.

Additionally, important elements like the circumstances in which instructors interact, their beliefs, and their attitudes toward teaching and learning have a significant impact on how well technology is integrated into education. Learning that is "student centered" is described as being "more individualized than standardized; students are active participants in their learning; they learn at their own pace and use their own strategies; they are more intrinsically than extrinsically motivated." In order to better understand the impact of ICT on the learning of mathematics, this study was designed to evaluate the present levels of ICT equipment usage in San Mateo, Isabela.

Related literature

Today's education industry makes extensive use of information and communication technology (ICT), which includes computers, the Internet, and electronic delivery systems including radios, TVs, and projectors among others. According to Kent and Facer, kids engage in a variety of computer-related activities at school, but they also engage in a smaller range of computer-related activities at home on a regular basis. ICT is increasingly being used in education, learning, and evaluation with success. ICT is seen as a potent instrument for changing and reforming education. A number of earlier research have demonstrated that effective ICT use may improve educational quality and link classroom instruction to real-world scenarios. Learning is a continuous, lifelong process in which people seek information instead of using conventional methods, changing their expectations in the process. They will need to be ready and eager to seek out new information sources as time goes on. For these learners, having ICT skills would be a crucial necessity. Access to education is often increased through ICT. Learning may take place anytime, anyplace, and through ICT. For instance, online course materials may be accessed every day of the week, 24 hours a day. Students and teachers may communicate simultaneously and easily in teleconferencing courses. Learning and education are no longer just reliant on printed materials because to ICT. On the Internet, there are a variety of resources available, and you may learn things by watching videos, listening to audio files, looking at pictures. According to Sanchez and Alemán (2011), recent research has shown that ICT may help shift a classroom environment into one that is learner-centered. The instructor gives the students the authority to make decisions, plans, and other decisions since they are actively participating in the learning processes in ICT classrooms. ICT therefore expands educational opportunities and affordances for both students and teachers. The following benefits of ICT in education are more detailed.

ICT is utilized as a tool for students to find out about learning topics, solve difficulties, and offer answers to the problems in the learning process, as stated by Brush et al. (2008). While involving students in the use of ICT, ICT makes knowledge

acquisition more accessible and ideas in learning domains are grasped. According to Sanchez and Alemán (2011), students now utilize computers in meaningful ways more frequently. Through accessing, picking, arranging, and interpreting information and data, they develop new knowledge. Students are better equipped to use information and data from many sources and evaluate the value of the learning materials thanks to ICT-based education. According Brush et al. (2008), ICT fosters students' new knowledge in their subject fields of study. ICT offers more original answers to many learning-related questions. E-books, for instance, are frequently utilized in reading aloud exercises in reading classes. Students may easily access all different sorts of literature via computers, laptops, personal digital assistants (PDAs), or iPads, from basic to intermediate levels. More precisely, these e-books could include reading software that includes a reading-aloud interface, exercises for enhancing vocabulary, games for improving reading comprehension and vocabulary learning, and more. ICT thus includes apps that are specifically created to offer creative solutions to a range of learning demands. According to Koç (2005), students may collaborate, exchange, and communicate via ICT anytime, anyplace. For instance, a teleconferencing classroom may invite students to congregate concurrently for a topic debate from all around the world. They could have the chance to create notions, examine ideas, and assess issues. They could assess ICT-based learning options further. Along with learning together, students also share a variety of learning experiences with one another in order to express themselves and think back on what they have learned.

ICT aids students in concentrating on more difficult ideas rather than less important chores since it is based on a constructive learning strategy. According to research by Levin and Wadmany (2006), there are statistically significant associations between using ICT while learning and developing critical thinking abilities. Longer time spent in an ICT setting can help pupils develop stronger critical thinking abilities. Therefore, it is strongly advocated that schools incorporate technology into all areas of instruction and at all academic levels. Students are able to use technology in these situations to reach greater levels of cognition within particular learning environments. ICT aids students in concentrating on more difficult ideas rather than less important chores since it is based on a constructive learning strategy. According to research by Levin and Wadmany (2006), there are statistically significant associations between using ICT while learning and developing critical thinking abilities. Longer time spent in an ICT setting can help pupils develop stronger critical thinking abilities. Therefore, it is strongly advocated that schools incorporate technology into all areas of instruction and at all academic levels. Students are able to use technology in these situations to reach greater levels of cognition within particular learning environments.

ICT promotes autonomy by enabling teachers to produce their own content, giving them greater control over course content than is feasible in a traditional classroom, according to Serhan (2009). When it comes to competence, students can grow the ability to apply and transfer information while using new technologies with efficiency and effectiveness as they feel more secure in their learning processes. For instance, students could be instructed to improve their pronunciation utilizing an online audio dictionary in an ESL listening and speaking lesson. They must learn the definitions and use examples of new words in addition to hearing the native pronunciation from the dictionary. They must next record their own pronunciation and give instances of how to utilize the new term in a sentence. They must be aware of which browser to use in order to look for an appropriate online audio dictionary before finishing this activity. They

must look through a number of online dictionaries and choose the one that best suits their learning requirements. Another requirement for these learners is to locate quality voice recording software. As a result, the entire educational process enhances pupils' capacity for learning and increases their knowledge base. Students' creativity may be maximized by using ICT. They could learn about new multimedia technologies and produce content using the styles that are easily accessible to them via games, CDs, and television. The use of ICT can enhance the quality of teaching and learning by combining student autonomy, aptitude, and creativity.

Teachers can serve as catalysts for the ICT integration of technology, according to Watts-Taffe et al. (2003). Creating an ICT class will be simpler for instructors if institutes provide them with the support, resources, and technological assistance they need. These instructors' major duties will be to alter the structure of their courses, design and explain new tasks, and set up the computer lab with the aid of their assistants or technology-learning specialists. In conclusion, ICT gives students additional time to investigate outside of the mechanics of course content, helping them to comprehend topics more fully, as noted by Reid (2002). The link between teaching and learning is altered by the usage of ICT. Teachers stated that the connection between teachers and student is occasionally inverted with reference to information technology in light of Reid's study's findings. When students can assist teachers with technological difficulties in the classroom thanks to this relationship, their confidence is increased. ICT alters the conventional teacher-centered approach, thus instructors must be more inventive in how they customize and modify their own curriculum. Although prior studies have shown the benefits of ICT use in the classroom, there are still obstacles or difficulties that must be overcome. The biggest difficulties with ICT use, according to Frederick et al. (2012), are student mobility, special requirements, and concern about test outcomes. More genuine group-and problem-based learning activities, as well as proper learning assistance, can address these issues. They also highlighted additional obstacles from the viewpoint of the student, such as poor technical proficiency that restricts access to ICT in the classroom, a lack of adequate academic counselors, a delay in receiving timely feedback from instructors, and less engagement with classmates and teachers. As a result, the author suggests the expansion of podcasting and online conferencing tools, as well as more student induction, orientation, and training. She also emphasizes the importance of instructor accessibility and efficient administration. In general, lowering student hurdles and enhancing the efficiency of ICT usage in the classroom involve the development of capacity, curriculum, infrastructure, policy, and government assistance.

The reality that the most sought technical, scientific, and economic applications for mathematics cannot be sustained is highlighted by evidence of the low performance in mathematics by primary school children. This underscores the need of finding a teaching method for mathematics that attempts to enhance students' practical performance and comprehension of the subject. Learning fundamental facts, ideas, and procedures as well as problem-solving objectives may all be accomplished through the use of problem solving as a teaching strategy. Mathematical problem solving has various applications and frequently these applications reflect significant mathematical challenges. According to Ganyaupfu (2013), problem solving is introduced into classroom mathematics to pique students' interest and excitement. The influence of information and communication technology (ICT) has altered many facets of how we live. ICT has had a huge influence over the past two or three decades if one were to compare it to industries like law, finance, engineering, architecture, tourism, and the

travel and tourist industry. These fields now work in a very different manner from how they did in the past. However, when compared to other industries, education appears to have seen a startling lack of impact and significant change. Many people have made an effort to investigate this lack of activity and effect. The widespread use of ICT in education across all sectors has been hampered by a variety of problems. According to Soloway and Pryor (1996), these have included things like a lack of finance to support the acquisition of the technology, a lack of training among experienced instructors, a lack of enthusiasm among teachers, and a need among teachers to use ICT as teaching tools.

Factors such as the increasing need to examine program delivery efficiencies, the opportunities for flexible delivery provided by ICTs, the capability of technology to support customized educational programs to meet the needs of individual learners, and the expanding use of the Internet and WWW as information tools are just a few of the recent developments that have strengthened and encouraged moves to adopt ICTs into classrooms and learning settings. As a result of all this action, several educational endeavors should experience noticeable advancements. Learning outcomes should be more purposeful and focused, learning opportunities should be diverse in what is taught and who is learning, and learning should become more relevant to stakeholders' requirements. At the same time, when stakeholder groups discover that the offers are in line with their requirements and expectations, the quality of programs as determined by fitness for purpose should keep rising. It will be crucial, as it is in every other field, to maintain funding for educational research and development so that education as a whole can learn from within and that the experiences and endeavors of various institutions and sectors can instruct and direct others without the constant need for re-invention of the wheel. Once more, ICTs are important in enabling much of this work to reach its full potential. There has been much coverage on the value and benefits of utilizing ICT in the classroom.

In a discussion paper, NCET makes the claim that "Information technology is quickly altering our reality. Indeed, one of the recommendations of the Report of the National Committee of Inquiry into Higher Education, according to HMSO (1997), was that "All higher education institutions in the UK should have in place overarching communications and information strategies by 1999/2000." ICT is changing society and the nature of employment, which is changing the requirements placed on schools and colleges. ICT can be used across the curriculum to improve student learning. One of the main benefits of ICT in teaching and learning is that it enables schools and colleges to cater for the needs of the individual rather than the average needs of the class. Another significant benefit is that ICT can significantly improve access to information for, and communication of ideas by, students with special learning needsFor instance, word processing allows students to simply reflect on their writing and make modifications, which helps them enhance the quality of their written work in any topic. Using animated images and computer simulations to convey complex ideas can make them easier to comprehend. Use of CD-ROMs and, to a lesser extent, the Internet can make it easier for students to have access to high-quality content. According to Abelardo et al. (2019), minority children and children with low socioeconomic status are less likely to have a computer in their home, so children and adolescents whose parents have at least some graduate education and whose families have incomes of $75,000 or more per year are more likely to have access to the internet at home (47 percent compared with 82 percent).

Internet connectivity is becoming a common resource rather than a luxury good. Overall, the results of this research demonstrate that even though 20 months have passed, significant work still has to be done. For practically all demographic categories, the prevalence of computer ownership and Internet connectivity is fast increasing countrywide. Nevertheless, certain American populations remain insufficiently digitally linked. We must continue to take initiatives to increase access to these information resources until everyone has access to new technological tools.

Related studies

Chessler et al. (1998) drew conclusions from a research that tracked participants in the Microsoft-Toshiba Laptop Pilot Program. Sandholtz et al. (1997) discovered that high levels of interest and enjoyment persisted throughout the program's second year. In a six-year investigation on students' use of technology in the classroom, Sandholtz et al. (1997) discovered that when appropriate, curriculum-wide use of computers as tools was promoted, engagement rose and was sustained. These findings suggest that technology-supported activities can boost and sustain student motivation, but further investigation is required to determine the conditions under which this happens. Kaye (1996) study of students using a networked learning environment indicates that characteristics of computer networks can support discovery-based, student-centered learning through a range of collaborative and individualized activities. Follansbee et. al. found that students with online access reported more frequent use of computers over the course of the study for the types of school work that are most closely related to a project-based unit of study (e.g. assisting with basic tasks, gathering information, organizing and presenting information and creating multimedia packages). Lighthall and Haycock (1997) report that improved access to information and software resources can support a wider range of learning activities, especially for students in rural areas.

According to Bernauer (1996), the installation of computer capabilities at his school led to the creation of student-created hypermedia software. He also talks about how students participated in the collaborative creation of Web-based virtual worlds. We pay special attention to online collaboration activities where students may collaborate with peers or others from outside the classroom. According to a study of RuralNet teachers, there has been a growth in the utilization of hands-on, project-based, investigative activities that encourage cooperation with classmates and outsiders. Becker discusses how students collaborate on writing assignments with classrooms across the country, in-person activities like field trips, and online publication. Statistics from the study by CCA Research demonstrate growing interest in the usage of technology to help distant learners. The picture that is forming from this literature study points to many important areas of concentration. With a focus on government, business, or locally financed projects, several scholars have been interested in presenting an overview of the current level of technology deployment. These data, which are primarily from the United States, show that schools are having more access to computer resources and hardware. The growing divide between the infrastructures in high-and low-wealth communities, however, is cause for worry. Another issue is the frequently erroneous association that these reports frequently make between the impact or efficacy of teaching and learning and the school's access to computer-based technologies. Some studies are interested in how employing computer technology in the classroom affects students' attitudes and motivation. According to research, using a computer may boost motivation, and this boost can last for a long time.

Research question

In the research questions, (1) what is the profile of the respondents in terms of: (a) gender; (b) age; and(c) Socio- economic status? (2). What are the general objectives in teaching mathematics? (3) What is the extent of adequacy of technology on teaching Mathematics? (4) Extent of ICT equipment and materials in teaching Mathematics in terms of: (a) Frequency of usage; and (b) Effectiveness of ICT in teaching Mathematics;(5) What are the problems encountered in the use of ICT in teaching Mathematics?

Materials and Methods

The study utilized descriptive research design because the study finds out the respondent's perception of the availability of technological gadgets and its effects in teaching Mathematics in public secondary high school in San Mateo

Research instruments

The study made used of a set of questionnaires that asked about the respondent's profile as to age, gender and socio-economic status and the respondent's perception of the impact of the use of technology on teaching Mathematics as to, technological gadgets used in teaching, teacher's proficiency in teaching Mathematics and respondents' perception on the effectiveness of modern technology in teaching Mathematics. Since the questionnaire is self-developed by the researcher, the questionnaire was subjected to reliability testing to ensure that it properly measured what it was designed to assess. The researcher used Cronbach's Alpha to assess the instrument's internal consistency. The instrument's Cronbach Alpha using SPSS is 0.89. So, on George and Mallery (2019) scale (>.9 - Excellent, >.8 - Good, >.7 - Acceptable, >.6 - Questionable, >.5 - Poor, and .5 - Unacceptable), the instrument is good.

Statistical treatment

Statistical Package for Social Science was used to record, classify, tabulate, and analyze the data collected from respondents via the questionnaire (SPSS). The frequency and percentage was used in determining the personal circumstances of the respondents in terms of age, gender and socio- economic status. Weighted mean is also used by the researcher by adding all of the observations and dividing by the number of observations. Ranking was used to determine relationship between a set of items such that, for any two items, the first is either 'ranked higher than', 'ranked lower than' or 'ranked equal to' the second. The following table was tabulated and computed using the formula as shown below (*Table 1*).

Table 1. *Scoring and interpretation on degree of realization of the general objectives of Mathematics.*

Weighted mean	Description
4.21-5.00	Fully realized
3.21-4.20	Realized
2.61-3.20	Somewhat realized
1.81-2.60	Slightly realized

1.00-1.80	Least realized

The computed and weighted average was interpreted using the scale below (*Table 2*), the scale was used to determine the extent of adequacy of technology on teaching Mathematics.

***Table 2**. Scoring and interpretation on the extent of adequacy of technology on teaching Mathematics.*

Weighted mean	Description
4.21-5.00	Very Adequate (VA)
3.21-4.20	Adequate (A)
2.61-3.20	Moderately Adequate (MA)
1.81-2.60	Somewhat Adequate (SA)
1.00-1.80	Not Adequate (NA)

The computed and weighted average was interpreted using the scale below (*Table 3*), the scale was used to determine the extent of ICT equipment and materials in teaching Mathematics.

***Table 3**. Scoring and interpretation on extent of ICT equipment and materials in teaching Mathematics.*

Weighted mean	Description
4.21-5.00	Very Often (VO)
3.21-4.20	Often (O)
2.61-3.20	Sometimes (SM)
1.81-2.60	Seldom (SL)
1.00-1.80	Not at All (NA)

The computed and weighted average was interpreted using the scale below (*Table 4*), the scale was used to determine the degree of seriousness of the problems encountered in teaching mathematics.

***Table 4**. Scoring and interpretation on seriousness of the problems encountered in teaching Mathematics.*

Weighted mean	Description
4.21-5.00	Very Serious (VS)
3.21-4.20	Serious (S)
2.61-3.20	Moderately Serious (MS)
1.81-2.60	Slightly Serious (SS)
1.00-1.80	Not a Problem (NP)

Results and Discussion

The presentation is composed of two parts which is the profile of the respondents and information proper. For clearer understanding, the data were presented in table forms and were treated comprehensively.

Profile of the respondents

Age

On the respondents frequency distribution of respondent's profile in terms of age is presented in *Table 5*. The data shows that there are 9 respondents or 45% who are aged 20 to 30. 5 respondents or 25% are aged 31 to 40. There are 3 respondents who are aged 41 to 50 or 15% and there are also 3 respondents who are aged 51 and above.

***Table 5**. Profile of the respondents in term of gender.*

Indicators	Frequency (N)	Percentage (%)
20-30	9	45
31-40	5	25
41-50	3	15
>51	3	15
Total	20	100

Gender

Table 6 reflects the profile of the respondents in terms of gender. The data shows that there are 13 male respondents or 65% and 7 female respondents or 35%.

***Table 6**. Profile of the respondents in terms of gender.*

Indicators	Frequency (N)	Percentage (%)
Male	13	65
Female	7	35
Total	20	100

Socio-economic status

The frequency and percentage of the respondent's profile in terms of socio-economic status is presented in *Table 7*. On the respondent's frequency distribution by socio-economic status, there are 3 respondents or 15% who earns P5,001 to P15,000 monthly. Majority of the respondents or 14 have a monthly income of P15,001 to P35,000. There are 3 respondents who earns P35,001 and above monthly. According to Levin and Wadmany (2006) families with higher income, has higher familiarity with the use of technological gadgets, the data shows that most of the respondents are in the middle class are prone to use of gadgets at home.

***Table 7**. Profile of the respondents in terms of socio-economic status.*

Indicators	Frequency (N)	Percentage (%)
P5,001 to P15,000	3	15
P15,001 to)35,000	14	70
>P35,001	3	15
Total	20	100

Information proper

General objective in teaching Mathematics

Table 8 displays the general objectives in teaching mathematics. It can be observed that the average weighted mean on the respondents' general objectives in teaching mathematics garnered 4.17 with qualitative description Fully realized. First in rank is "The learner demonstrates understanding of key concepts and principles of -in critical thinking" with mean of 4.49 and a qualitative description of "Fully realized." This shows that the respondents feel that their students use critical thinking when trying to

solve math problems. Second is "The learner demonstrates understanding of key concepts and principles of linear equations and inequalities in two variables" with a mean of 4.43 and a qualitative description of "Fully realized." Understanding key concepts is important for the students to acquire before they can try to solve math problems. The learner demonstrates understanding of key concepts and principles of triangle congruence, inequalities in a triangle has the third highest rank with a mean of 4.40 (Fully Realized) followed by "The learner demonstrates understanding of key concepts and principles of statistics and probability" being the fourth highest rank with a mean of 4.27(Fully Realized). The learner demonstrates understanding of key concepts and principles of making connections, representations, and decisions in real life has the fifth highest rank with 4.24 (Fully Realized) followed by "The learner demonstrates understanding of key concepts and principles of problem solving" being the sixth highest rank with a mean of 4.16 (Realized). The learner demonstrates understanding of key concepts and principles of reasoning and communicating has the seventh highest rank with a mean of 4.14 (Realized). The eight highest rank is "The learner demonstrates understanding of key concepts and principles of geometry" with a mean of 3.97 (Realized followed by "The learner demonstrates understanding of key concepts and principles of systems of linear equations and inequalities in two variables" with a mean of 3.83 (Realized). Last in rank is "The learner demonstrates understanding of key concepts and principles of patterns and algebra" with a mean of 3.75 and a qualitative description of "Realized". Although it is the lowest in the set, it still scored a qualitative description of "Realized" which shows that students understand key concepts in algebra although not as high as other math skills.

***Table 8**. General objectives in teaching Mathematics.*

	Indicators	Mean	QD	Rank
1.	The learner demonstrates understanding of key concepts and principles of pattern and algebra.	3.75	R	10
2.	The learner demonstrates understanding of key concepts and principles of linear equations and inequalities in two variables.	4.43	FR	2
3.	The learner demonstrates understanding of key concepts and principles of systems of linear equations and inequalities in two variables.	3.83	FR	9
4.	The learner demonstrates understanding of key concepts and principles of geometry.	3.97	R	8
5.	The learner demonstrates understanding of key concepts and principles of triangle congruence, inequalities in a triangle.	4.40	FR	3
6.	The learner demonstrates understanding of key concepts and principles of statistics and probability.	4.27	FR	4
7.	The learner demonstrates understanding of key concepts and principles of -in critical thinking.	4.49	R	1
8.	The learner demonstrates understanding of key concepts and principles of problem solving.	4.16	R	6
9.	The learner demonstrates understanding of key concepts and principles of reasoning and communicating.	4.14	R	7
10.	The learner demonstrates understanding of key concepts and principles of making connections, representations, and decisions in real life.	4.24	FR	5
	Average weighted mean	4.17	Fully Realized	

Extent of adequacy of technology on teaching Mathematics

The mean, qualitative description and ranks on the extent of adequacy of technology on teaching mathematics is presented in *Table 9*. It can be observed that the average weighted mean is 3.99 with a qualitative description of "adequate". Among the seven indicators, one of those been used by the teachers to a very adequate and the rest are adequate. Internet appeared to have the highest rank with a mean of 4.50 (very Adequate) followed by Laptop/Desktop Computer with a mean of 4.15 (Adequate). The third rank is smartphones/tablets with a mean of 4.05 (Adequate). Digital camera and

LCD/LED Screen TV have the same mean of 3.90(Adequate). LCD projector and portable mini speaker appeared to be on the last rank with a mean of 3.70 (Adequate).

***Table 9**. Extent of adequacy of technology on teaching Matheatics.*

	Indicators	Mean	QD	Rank
1.	Internet.	4.50	VA	1
2.	Laptop/desktop computer	4.15	A	2
3.	Smartphones/tablest	4.05	A	3
4.	Digital camera	3.90	A	4
5.	LCD/LED screen TV	3.90	A	4
6.	LCD projector	3.70	A	6
7.	Portable mini speaker (lapel)	3.70	A	6
	Average weighted mean	3.99	Adequate	

Extent of ICT equipment and materials in teaching Mathematics in terms of frequency of usage

Frequency of usage

Table 10 presents the extent of ICT equipment and materials in teaching mathematics in terms of frequency of usage. Among the seven indicators, one has been use by the respondents to a very often, five of those has been use often and one is sometimes. The respondent's extent of frequency of usage garnered an average mean of 3.58 or "Often". In the data, first in rank is "Internet" with a mean of 4.20 and a qualitative description of "Very often". Second is "Laptop/Desktop Computer" and "Smartphones/Tablets" both with a mean of 3.60 and a qualitative description of "Often". Fourth in rank are "LCD projector" and "Portable mini speaker (lapel)" both receiving a mean of 3.55 and a qualitative description of "Often". LCD/LED Screen TV appeared to be in sixth rank with a mean of 3.40(Often). Last in rank is "Digital Camera" with a mean of 3.15 and a qualitative description of "Sometimes".

***Table 10**. Frequency of usage.*

	Indicators	Mean	QD	Rank
1.	Internet.	4.20	VO	1
2.	Laptop/desktop computer	3.60	O	2
3.	Smartphones/tablest	3.60	O	2
4.	LCD projector	3.55	O	4
5.	Portable mini speaker (lapel)	3.55	O	4
6.	LCD/LED screen TV	3.40	O	6
7.	Digital camera	3.15	SM	7
	Average weighted mean	3.58	Often	

Effectiveness of ICT in teaching Mathematics

The mean, qualitative descriptions and rank of the indicators on the extent of ICT equipment and materials in teaching mathematics in terms of effectiveness of ICT in Teaching Mathematics is presented in *Table 11*. It can be observed that the average weighted mean is 4.10 with a descriptive interpretation of Often. Modern technology is a valuable instructional tool appeared to be in rank 1 with a mean of 4.80 (very often). Modern technology is expensive has the second highest rank with a mean of 4.70 (very often) followed by Modern technology makes teachers feel more competent as educators being in the third highest rank with a mean of 4.60 (very often). Modern technology is functional only if computers are regularly maintained by technical staff has the fourth highest mean with 4.20 (often) followed by the use of modern technology makes us learn additional skills beyond what is in the lesson plan with a mean of 4.10 (often). Modern technology gives teachers the opportunity to act as facilitators instead

has the sixth highest mean with 4.00 (often) followed by Modern technology is an effective tool for all students especially the disabled with a mean 3.95 (often). Eight in the rank is Modern technology is functional only if there is the support of parents with a mean of 3.85 (often) followed by Modern technology demands that more time be spent on technical problems with a mean of 3.70 (often). Modern technology becomes pointless because students will learn computer skills on their own, outside of school appeared to be in the lowest rank with a mean of 3.05 (Sometimes).

Table 11. *Effectiveness of ICT in teaching Mathematics.*

	Indicators	Mean	QD	Rank
1.	Modern technology is a valuable instructional tool.	4.80	VO	1
2.	Modern technology is expensive.	4.70	VO	2
3.	Modern technology makes teachers feel more competent as educators.	4.60	VO	3
4.	Modern technology is functional only if computers are regularly maintained by technical staff.	4.20	O	4
5.	The use of modern technology makes us learn additional skills beyond what is in the lesson plan.	4.10	O	4
6.	Modern technology gives teachers the opportunity to act as facilitators instead.	4.00	O	6
7.	Modern technology is an effective tool for all students especially the disabled.	3.95	O	7
8.	Modern technology is functional only if there is the support of parents.	3.85	O	8
9.	Modern technology demands that more time be spent on technical problems.	3.70	O	9
10.	Modern technology becomes pointless because students will learn computer skills on their own, outside of school.	3.05	SM	10
	Average weighted mean	3.58	Often	

Problems encountered in the use of ICT in teaching Mathematics

Table 12 displays the problems encountered by respondents in the use of ICT in teaching Mathematics Among the fifteen indicators, one of it was a serious problem, five of which is moderately serious problem, and the rest is slightly serious problem encountered by the respondents. Results shows that the average weighted mean of the problems encountered in the use of ICT in teaching mathematics is 3.58 (Often). Deficiencies of number of computers in labs appeared to be in the first rank with a mean of 3.45 (Serious). Second rank is Lack of technologies such as computer, Internet and e-mail etc. in the classroom with a mean of 3.15 (Moderately Serious) followed by lack of up-to-date technological tools with a mean of 3.00 (Moderately Serious). Lack of school budget required for the integration of ICT appeared to be in the fourth rank garnered a mean of 2.85 (Moderately Serious) followed by Lack of a clearly determined plan and policy of technology Inappropriateness of physical environment (Crowded classroom etc.) which has a mean of 2.80 (Moderately Serious). The difficulties of class management in the courses where ICT is (especially crowded classroom) has the sixth highest rank with a mean of 2.75 (Moderately Serious). Lack of software and hardware has the seventh highest rank with 2.55 (Slightly serious) followed by lack of technical support with a mean of 2.50 (Slightly serious). Lack of time for training computer-aided appeared to be in the ninth rank with a mean of 2.40 (Slightly serious). Insufficiency of ICT-based in-service trainings offered to teachers has the 10th highest rank with a mean of 2.30 (Slightly serious) followed by Teacher's lack of knowledge and competence about technology integration with a mean of 2.20 (Slightly serious). Teachers attitudes and beliefs towards technology has the twelve highest rank with 2.05 mean (Slightly serious). Lack of teachers' responsibilities using ICT into teaching has a mean of 2.00 (Slightly serious) followed by teachers' fear of change with a mean of 1.85 (Slightly serious). Lack of support from school administration has the lowest rank with a mean of 1.80 (Slightly serious).

***Table 12**. Problems encountered in the use of ICT in teaching Mathematics.*

	Indicators	Mean	QD	Rank
1.	Deficiencies of number of computers in labs.	3.45	S	1
2.	Lack of technologies such as computer, Internet and e-mail etc. in the classroom.	3.15	MS	2
3.	Lack of up-to-date technological tools.	3.00	MS	3
4.	Lack of school budget required for the integration of ICT.	2.85	MS	4
5.	Lack of a clearly determined plan and policy of technology Inappropriateness of physical environment (Crowded classroom etc.).	2.80	MS	5
6.	The difficulties of class management in the courses where ICT is (especially crowded classroom).	2.75	MS	6
7.	Lack of software and hardware.	2.55	SS	7
8.	Lack of technical support.	2.50	SS	8
9.	Lack of time for training computer-aided.	2.40	SS	9
10.	Insufficiency of ICT-based in-service trainings offered to teachers.	2.30	SS	10
11.	Teacher's lack of knowledge and competence about technology integration.	2.20	SS	11
12.	Teachers attitudes and beliefs toward technology.	2.05	SS	12
13.	Lack of teachers' responsibilities using ICT into teaching.	2.00	SS	13
14.	Teachers 'fear of change.	1.85	SS	14
15.	Lack of support from school administration.	1.80	SS	15
	Average weighted mean	2.51	Slightly Serious	

Conclusion

The following conclusions were formed as a result of the findings: (1) It can be concluded from the data gathered by this study that the majority of the teachers are somewhat familiar with using technological tools or equipment according to Judge et.al due to the fact that majority of the respondents have a mid-range socio economic status; (2) The data from the study also shows that the selected public schools in San Mateo have adequate and oftenly use ICT equipment in teaching Mathematics, this result greatly affects the effectivity of the use of ICT in teaching Mathematics as evident by the reaction of the respondents; and (3) The study also showed problems in the implementation of ICT in teaching Mathematics, particularly the deficiencies in the number of computers in labs. Public schools often do not have ready replacements for damaged or inoperable equipment, the problem maybe the result of lack of funding from the government. The subsequent problems found are also related to lack of funds or support from the national government.

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Conflict of interest

The authors confirm that there is no conflict of interest with any parties involved with the study.

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