TEACHERS' BELIEFS AND READINESS FOR TECHNOLOGY INTEGRATION INTO MATHEMATICS INSTRUCTION IN SECONDARY SCHOOLS IN MINNA METROPOLIS, NIGER STATE.

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ABBREVIATIONS

NCE	**:**	Nigeria Certificate in Education
DLS	**:**	Distance Learning System
TTS	**:**	Teach Thought Staff
CITED	**:**	Center for Implementing in Education
ISTE	**:**	International Society for Technology in Education
COVID	**:**	Corona Virus Disease
AR	**:**	Augmented Reality
STEM	**:**	Science, Technology, Engineering & Mathematics
NCTM	**:**	National Council of Teachers of Mathematics
ICTs	**:**	Information Communication Technologies
NAEP	**:**	National Assessment of Educational Progress
PRS	**:**	Planning, Research and Statistics
TPCK	**:**	Technology Pedagogy Content Knowledge (TPCK)

ABSTRACT

The purpose of the study was to investigate the teachers' beliefs and readiness for technology integration into mathematics instruction in secondary schools. The study employed cross sectional survey research method of descriptive research design. One hundred and seventy-seven (177) teachers were sampled and sixty four (64) teachers were randomly selected from ten (10) schools using Taro Yamane's formula. A 5-likert model of structured questionnaire was the instrument used for data collection. The reliability index was 0.702, five (5) research questions guided the research. Mean, standard deviations were used to answer the research questions while SPSS version 23 was used to analyze the data collected. The findings of the study revealed that teachers beliefs and ready for the utilization of technology in mathematics classroom. Based on the findings of the research study, some recommendations were made: Federal ministry of science and technology should provide necessary ICT equipment and educational technology tools as well as sufficient internet that can accommodate open educational resources for the teaching and learning in Niger State secondary schools, Minna and across the states in Nigeria. Government and school management should provide periodic seminar, training, conference, workshop and orientation on the use of technology for the teaching and learning of mathematics in secondary schools in Minna metropolis.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the study

Mathematics is the science that deals with the common sense of shape, quantity and arrangement. Math is all around us, in the total lot we do. It is the developing block for everything in our day by day lives. Including; mobile devices, architecture (ancient and modern), art, money, engineering, and even games (Elaine. 2013). This implies that mathematics can never be separated from everyday dwelling because no occupation doesn't require it for fixing one hassle or another. This is base on Adetula (1998) who determined that mathematics can be considered as a trial to resolve problems and hence, learning to clear up troubles is the principal purpose of all mathematics instructing in schools and an essential section of all day to day activities, an individual is bound to face one hassle or every other and these troubles need to be clear up in other to satisfy one's need.

Looking to Nigeria Certificate in Education (NCE) by using Distance Learning System (DLS) (course book in mathematics cycle 2) mathematics is described as the find out of relation between two or more quantities. In doing this, mathematics investigates the effect of more than a few in one or greater impartial variables on the different parameters taking in relationship. This is used in industrial, economic and social projections. Take for example:

I. In industries, one considers the result of changing the mannequin of production to the completed products. Such as impart of changing from Peugeot 404 of Peugeot 504 in the income.

II. In economics, the authorities considers the outcomes of amplify in revenue to the quantity of inflation in the value of commodities.

III. In politics, the government considers impart of introduction of extra states to the political stability of the country.

IV. In education, the ministry considers the results of Universal free primary education to the school principal population.

This useful or relational consideration is comparable to the “rate of change” used in calculus in mathematics. That suggests that mathematics is now not just an regular sun depend of fact or subject taught/happened in a four (4) walls of a class in schools but also has a very tangible effect, advantages and applications to our daily lives. As a matter of fact, mathematics as s subject should be taught or taken with the aid of qualified, certified, and nicely skilled instructors with at least the understanding of “Technonology” in order to meet up with the trendy of the other developed countries.

Teacher is any individual who helps other to analyze new things. According to (Oxford dictionary) Teacher is a character whose job is teaching, especially in a school. MaryC. (2020) said an instructor or faculty trainer is a character who offers education for scholars and students.

The role of instructor is frequently formal and ongoing, carried out at a school or different area of formal education. In many countries, a person who desires to come to be a teacher must first reap specific expert skills or credentials from a college or university. These expert qualifications include the study of pedagogy, the science of teaching, teachers, like other professional, may additionally have to proceed their education after they qualify, a system acknowledged as persevering with expert development. Teacher use lesson plan to facilitate students learning, presenting a direction of find out about which is referred to as curriculum. A teacher's function is varies amongst cultures. Teachers furnish guidelines in literacy and numeracy, craftsmanship or vocational training, the arts, religion, civic, community roles, or lifestyles skills. A trainer who allows education for an individual may also be describes as a private tutor, or, largely historically a governess.

With the noted stipulations in mathematics, and mathematics courses for all managerial studies, and with the roles played through certified mathematics teachers, the rate of college students enrollment in some of the program are very low in Zamfara State, especially for woman student, according to Bashir and Sani (2004) department of mathematics and statistics, AbdulGusal Polytechnic, Talata Mafara, Zamfara State. This really can be as an end result of students thinks about the subject (mathematics) as boring subject; this creates lack of pastime of the theme being mentioned and in a similar way is a tremendous task for instructors and educators, especially in the essential (primary) and secondary school stage of education. The place a correct study addiction and company to apprehend of primary idea have to be developed.

According to Piaget (1970) who found that children first enhance thoughts concretely and later development to abstraction. It is regularly useful to follow this principle in reverse to assist colleges students examine a summary ideas; provide them with extra tangible visualizations. In order to deliver back the interest of students to mathematics, schools or colleges need to use science (Technology) in mathematics instructions. Understanding technological know-how (Technology) is becoming extra and more essential in the workplace and other areas, competing with peer in the 21st- century sincerely necessitates the want for technological fineness by Teach Thought Staff (TTS, 2021). There is no exaggeration if I say students today are fabulous at usage of science and equipment such as Laptops, Smart phones, and tablets are already second nature to them.

According to this research, technology is the making, modification, usage and expertise of tools, machines, techniques, crafts, systems, approach of organizations, in order to solve a problem, enhance a preexisting solution to a problem, reap a purpose or operate a unique function. It can also refer to the collection of such tools, marching, modification, preparation and procedures. Robert (2015) stated that humans being viewed technological know-how (Technology) as a way to convey the world collectively and to help clear up some of our biggest challenges. Technology supply immediate accessibility to information that is why its presence in the study room is so vital. Smart phones, computers, and tablets are already an omnipresent thing of everyday life for students and instructors alike. It's only natural that the uses of technological gadgets in the school room are explored to create significant studying experiences for college students of all ages (Derexel University School of education, 2021).

Similarly, science (technology) can decrease the effort committed to tedious computations and will increase students' focal point on greater vital mathematics. It focuses student's wondering in ways that are relevant, not extraneous. In primary school, it is vital to examine to do arithmetic fluently, using technology to do this questioning for the pupils would be appropriate. In secondary school, alternatively students have mastered arithmetic and should be targeted on more advanced competencies and concepts.

Technology has grown to be increasingly important in schooling as most people use it daily. However, integrating technology in mathematics study room is nevertheless challenging, it require a change in mindset or educating styles. According to Joyce (2015) says: Although technological know-how (Technology) is ultimately being built-in into education, its use for educating and studying nonetheless remains a challenge. Despite the fact that many schools today are privileged to have access to technology, educated teachers, and favorable policy environment, the use of technology in the study room nonetheless low. These low levels of technological know-how (Technology) utilization in education can be attributing to the pedagogical beliefs of teachers. According to Center for Implementing in Education (CITEd) in (2005) determined typical challenges dealing with schools and districts with apprehend to imparting technology- higher mathematics instructions, including funding, time constraints, and favor to grant expert development restoration science in content material fabric place training.

Teachers order with the aid of advantage of most efficient authority by using and taking mathematics as a creative, emergent activity, which consist of mathematical explorations and inquiring beyond textbooks that may additionally end result in insights no longer completely for students, but moreover for teachers. Teachers draw from a variety of assets inclusive of textbooks, teachers' guides, online material, electronic devices, and the community (Clark 2014; Gueudet *et al* & Trouche, 2009). Following Gueudet *et al*, I conceive the Troche, 2013 adoption of curricular cloth as a creative act: "teachers' work with sources includes selecting, modifying and creating new resources, in class and out of class".

Many of today's high-demand jobs had been created in the last decade, according to the International Society for Technology in Education (ISTE, 2020). As advances in technology pressure globalization and digital transformation, instructors can help college students acquire the quintessential skills to succeed in the careers of the future.

How necessary is technology in education? The COVID-19 pandemic is quickly demonstrating why online education ought to be an integral section of instructing and learning. By integrating science (technology) into current curricula, as adversarial to the usage of it fully as a crisis-management tool, teachers can harness online mastering as an effective academic tool.

The superb use of digital studying equipment in study rooms can extend students engagement, assist instructors enhance their lesson plans, and facilitate personalized learning. It additionally helps college students build fundamental 21st-century skills.

Virtual classrooms, video, augmented reality (AR), robots, and other science (technology) tools can no longer only make classification more lively, they can additional create greater inclusive getting to know environments that foster collaboration and inquisitiveness and enable instructors to collect data on student performance.

Still, it’s vital to note that technological know-how is a tool used in schooling and no longer a stop in itself. The promise of educational technological know-how (technology) lies in what educators do with it and how it is used to first-class assist their students’ needs.

Therefore, the foremost gain of modern-day technology use in schooling has been to make bigger facts access and communication. Students mainly use science (technology) to gather, organize, analyze and document information, but this has no longer dramatically accelerated student performance, standardized checks in mathematics instruction.

This lookup tends to inspect the Teachers' beliefs and readiness toward educating mathematics in a built-in form by means of using technology for instruction. Then, the following problems/issues arise:

1. Do teachers genuinely belief that the use of technology for coaching in mathematics can yield a tremendous trade to student performance and competency?

2. Do teachers sincerely ready to use science (technology) for education in mathematics classes?

3. What attitude, beliefs, readiness, self belief have the mathematics instructors and capacity to use technology as a tool for instruction in mathematics classroom?

4. Do teachers sincerely have access to open educational for instruction in mathematics classroom?

5. If at all there is availability of open educational resources, how capable are the instructors in the usage of the open educational resources?

1.2 Statement of the Problem

Despite all these roles of technology in education, learning and instructing mathematics with technology is still a complicated technique requiring a trainer to place in suited rank, a variety of key competencies. Although many school are outfitted with computers and other technology, a stunning range of teachers are unable to use that science (technology) efficaciously (Lim *et al.* 2013) Looking to (Agyei & Voogt 2012). Said " Although now not explicitly stated, the common goals defined in the Ghana's Senior high faculty curriculum recommend the use of science (technology) mediate constructivist instructing and learning tactics the place college students are guided to use tools to explore mathematics idea rationally. However, lack of subject-focused technological knowledgical understanding and skills impede hinder teachers' ability to use technology in their classroom". Similarly accordance to (Koellner, *et al.* 2011) said "A professional development model, where teachers are engaged in technology- oriented things to do is the one of the key steps to enhance teachers' knowledge and capability to use applied sciences (technologies) to educate mathematics".

This study is therefore investigates the teachers' beliefs and readiness toward teaching in a built-in shape (integrated form) via the use of technological know-how (technology) for practice (instruction) in secondary schools.

1.3. Objectives of the Study.

Therefore, the specific targets of the find out about were:

1. To inspect teachers' beliefs toward educating mathematics by using technology for instruction.
2. To check out teachers' readiness toward educating (teaching) mathematics by means of using technology for instruction.
3. To achieve a perception of the instructors (teachers) relative expertise of technology integration.

4. To seem to be into the boundaries that prevents the integration of technological know-how (technology) in the mathematics study room.
5. To find out ways by which mathematics can be taught using technology.

1.4 Research Questions

To facilitate the investigation of the problem of this learn about on the objectives stated above, this study aimed at answering the below research questions:

1. What is the mean score of teacher beliefs, that using technology for instruction in mathematics class can yield a positive change to the student performance and competency?
2. What is the mean score of the teacher readiness to use technology for instruction in mathematics classes?
3. What is the suggest rating of the understanding of the mathematic instructors and potential to use technological know-how (technology) as a tool for instruction in mathematics study room?
4. What is the suggest score of the factors that serve as obstacles that avert the integration of science (technology) in mathematics study room?
5. What is the imply score of the ways with the aid of which mathematics can be taught with the usage of technology?

1.5. Significant of the Study

It is vital to note that the advantages of technological know-how (technology) in education, along with the expanded collaboration and communication, extended nice of education and enticing lessons that assist spark creativeness and a search for knowledge in students.

This study will help the Mathematics instructors by displaying ways through which mathematics can be taught using technology and assist to comprehend the obstacles which limit access in the technology. Similarly, this study will benefits people via calling the interest of Federal Ministry of Science and Technology of Nigeria on their mandate which is Development of Science, Technology, Engineering & Mathematics (STEM) education as well as setting up ICT center for state schools and STEM and ICT capacity building across all ministries, Department and Agencies (MDAs).

1.6 Limitation of the study

This research learn about is only restricted to some selected junior and senior secondary colleges (schools) in Minna town of Niger state.

1.7 Operational Definition of Terms.

Teacher: is anybody who helps others research new things.

Belief: A trust is an attitude that something is the case, or that some proposition about the world is true.

Readiness: the nation of being wholly organized for something.

Technology: the application of scientific knowledge for sensible purposes, in particular in industry. “Advances in pc technology”

Integration: takes place when separate humans or matters are introduced together, like the integral of students from all of the district's fundamental schools at the new middle school, or integration of snowboarding on all ski slopes. You may also know the word differently that means 'set apart' integrate is its opposite.

Technology integration: the nice implementation of academic applied science to accomplish intended studying outcomes.

Educational technology: any tool, equipment, or device electronic or mechanical that can help college students accomplish designated mastering goals. Educational science consists of each academic and mastering technology.

Instructional technology: educational applied science instructors employ to supply instruction.

Learning technology: educational applied sciences freshmen use to accomplish precise getting to know targets and tasks.

TPACK: Technological Pedagogical Content Knowledge, the know-how teachers want to efficiently and efficiently teach their specific contents material.

Educational policy: mandates for schools to make use of educational applied science in classrooms based on the beliefs that (1) technology can enhance practice and facilitate studying and (2) college students need to boost technology literacy and competencies in order to grow to be productive contributors of society in a aggressive world economy.

Technology-enabled assessment: assessment that makes use of science to facilitate and enhance a teacher's potential to measure scholar getting to know outcomes.

CHAPTER TWO

2.0 REVIEW OF RELATED LITERATURES

This chapter consists of the relevant associated literatures on the Teachers' Beliefs and readiness for science (technology) integration into mathematics educating in Minna metropolis. The literature is reviewed and referred to beneath the following sub headings: Conceptual Framework, Theoretical Framework, Empirical Study and Summary.

2.1 Conceptual Framework

Concept of Teacher

According to (wikipedia) A teacher (also referred to as a college trainer or, in some contexts, an educator) is a man or woman who helps students to accumulate knowledge, competence or virtue. Informally the feature of instructor might also additionally moreover be taken on with the aid of way of the use of performance of all of us (e.g. when exhibiting a colleague how to characteristic a particular task). In some countries, instruction youthful human beings of university age can also additionally in addition be carried out in a casual setting, such as indoors the family (homeschooling), one the one of a kind hand than in a formal placing such as college or school. Some one of a form profession can also in addition contain a large quantity of instructing (e.g. formative year's worker, pastor). In most countries, formal instruction of college students is commonly carried out with the advisable aid of paid professional teachers. This locate out about focuses on these who are employed, as their quintessential role, to train others in a formal educating context, such as at a university or awesome nearby of preliminary formal instructing or training.

According to (Freebase) a teacher or schoolteacher is a personality who gives teaching for college students and pupils. The characteristic of educate is generally formal and ongoing, carried out at a college or one of a kind vicinity of formal education. In many countries, a man or lady who wishes to stop up an instructor ought to first accumulate appropriate specialist competencies or credentials from a college or university. These expert perception can in addition consist of the stumble on out about of pedagogy, the science of teaching. Teachers, like top notch professionals, may additionally moreover in addition in addition have to proceed their instructing after they qualified, a method identified as persevering with professional development. Teacher can additionally in addition use a lesson plan to facilitate scholar learning, imparting a rout of hit upon out about which is referred to as the curriculum. A teacher's characteristic can in additional range amongst culture. Teachers in additional moreover furnish the instructing in literacy and numeracy, craftsmanship or vocational training, the arts, religion, civics, shut by roles, or existence skills. Educated person who approves teaching for a character can moreover in addition be described as a non-public tutor, or, in many instance historically, a governess. In some countries, formal training can take vicinity via the use of way of home schooling. Informal analyzing would per hazard in addition be assisted with the aid of doable of a train occupying a transient or ongoing role, such as household member, or thru the use of the use of all of us with archives or capability in the wider neighborhood setting. In the (The Roycroft Dictionary) instructor is described as 1. A person who is male or female, who instills in to the head of extraordinary person, each and every and each voluntarily or for pay, the sum and the substance of his or her ignorance. 2. One who makes two thought beautify the region in reality one grew before.

Mathematics Teacher

According to National Council of Teachers of Mathematics (NCTM, 2016) a mathematics educator is any man or woman who conjures up their college students or pupils to seem previous the pages of the textbook to come to the hassle solvers and quintessential thinkers. Every day your boundless ardour and dedication have and impart on each and every one of your students. As a mathematics teacher, you are making high amazing that your students will have the records and skills that will assist them now no longer truly be worthwhile in the study room, then as soon as greater in addition be empowered through mathematics to stop up productive citizen of our democratic society.

Concept of Beliefs

Many university students have blanketed attitudes, values, dispositions, and one-of-a-kind affective constructs in their definitions of beliefs. In tries to tease these ideas apart, some university students (scholars) have furnished the distinctions amongst massive than a few cognitive or affective elements (McLeod 1992; Goldin 2002; Philipp 2007; Wilkins 2008; Jong *et al.* 2015). Richardson (1996) described beliefs "psychologically held understandings, premises, or propositions about the world that are felt to be true". Other college students have used phrases such as "belief with certainty" or "justified true belief" in tries to distinguish archives from beliefs (Pajares 1992; Thompson 1992; Furinghetti & Pehkonen 2002; Philipp 2007). (Philipp 2007) furnished a useful, albeit general, definition of beliefs when he noted sincerely that an individual's belief system provides the framework thru which he perceives and interprets the world.

Drawing upon the work of (Green 1971) and (Rokeach 1960, 1968), (Thompson 1992) drew interest to the concept of belief system as a metaphor for making feel of the complicated community of interrelated beliefs that a character might also held. (Lewis 1990) argued that know-how (knowledge) and beliefs are synonymous and that even knowledge derived from the most integral perceptual commentary is inextricable from evaluative judgment or beliefs.

(Bandura 1986) argued that belief constructs and sub constructs are generally too vast and context-free to be beneficial in research. (Pajares 1992) wrote that faith constructs "must be context unique and applicable to the behavior under investigation to be beneficial to researchers and excellent for empirical study.

Concept of Teacher Beliefs

According to (Pajares 1992), says "Beliefs travel in mask and often also recognized as attitudes, values, judgments, axioms, opinions, ideology, perceptions, conceptions, conceptual systems, preconceptions, dispositions, implicit theories, specific theories, non-public theories, interior intellectual processes, action strategy, policies of practice, sensible principles, perspectives, repertories of understanding, and social strategy, to name but a few that can be observed in the literatures". Teachers' beliefs are typically defined as private construct that can supply understandings, judgment and critiques of teachers' practices. Set of strong feelings and attitude of teachers about things that can affect the teaching-learning interaction. What instructors believes in have direct implication on teaching-learning transaction.

Prior to the onset of a real training, instructor can also have developed preconceived notions, and these beliefs provide the lens thru which the instructor will view or technique the facts offered by means of the professional improvement facilitator (Tillema 1995). The researcher additionally defined that teachers can also hold steadfast beliefs about their instruction styles. Challenge matter and pedagogical framework; these foundational beliefs also influence how expertise is received, processed and stored. Even when instructors are receptive to the idea that science (technology) can help them with the undertaking expert or administrative tasks, teachers may additionally be reluctant to rent technology with their students due to the fact their current trust system might also no longer be given this change (Hew & Brush 2007). Unlike preservice or newbie teachers whose pedagogical beliefs are persevering with to be formed and formed, teachers may have pedagogical beliefs that are well established; therefore, these beliefs are greater hard to exchange (Ertmer & OttenbreitLeftwich 2010). (Kagan 1992) asserted beliefs are influential predictors of behavior, and beliefs may additionally keep even better influence than knowledge when deciding how teachers understand and tackle unique duties or issues. Furthermore, Kagan links a teacher's beliefs to a comparable fashion of teaching.

2.2 Theoretical Frame Work

According to Kimmons (2020) Technology integration in education refers to the significant use of technology to achieve gaining knowledge of goals. This seeks to reply the question; what is higher-quality technological know-how integration?

Learning Theories

Ever because there have been educators attempting to teach students, there have been theories that information how these educators view the mastering process. These mastering process encompass our beliefs about the nature of information and how an individual learns.

Debates surrounding studying theories have existed for millennia; and even in the current world, there is gorgeous range in how scientists, psychologists, and educator view learning. Some of the most important learning theories that structure modern conversation surrounding science integration encompass behaviorism, cognitivism, constructivism, constructionism, and connectivism. Each of these theories have been studied and written about at length and it is impossible to commit ample time and attention to every idea in the limited house supplied in this chapter. Rather, all educators should study competing getting to know theories and improve their personal perception of how human beings learn. In this study, it will in simple terms grant an extraordinary high stage overview of every of these theories, briefly explaining what every entails and what everyone would possible mean for instructing and learning with technology.

Behaviorism

Behaviorism was popularized in the mid 20th century as psychologists studied behavior pattern and response system in human beings and other animals. Behaviorism treats getting to know as a response to stimulus. That is human and other animals are trained to reply in positive ways to sure stimuli, such as salivating when a dinner bell rings or repeating a memorized truth to get hold of some exterior reward. Teaching and learning, then, is a procedure of conditioning students to desirable react to stimuli, and technology can assist facilitate this training via providing incentives to learning, such as games or other rewards, or through supplying structures to correctly improve stimulus-response conditioning, such as dril-and- kill practices.

Congnitivism

Cognitivism arose as an alternative to behaviorism in part due to the fact that behaviorism dealt with the approach of the brain as and imperceptible black box, whereby understanding how the talent worked was once now not viewed vital for assisting people learn. Cognitivism therefore, dealt with the talent features and how records is processed, stored, retrieved, and applied. By treating human beings as wondering machine, as a substitute than as animals to be trained, lookup in cognitivism for teaching and studying centered on helping humans improve efficient instructing and reading technique that would permit their brains to make meaningful use of information. Through this lens, technology knowledge can assist in supplying data and study assets that help the Genius in correctly storing and retrieving information, such as via the use of mnemonic units or more than one modality (e.g., video, audio).

2.3 Empirical Studies

The integration of technology in teaching and learning is now not supposed to change regular methods. However to help colleges to improve teaching and getting to know (Tishkovskaya and Lancaster, 2012) Some science equipment encompass 'power points, web-based games, the internet, projectors, smart boards, Elmos, calculators, videos, DVDs and music' (Moore, 2012).

Information Communication Technologies (ICTs), especially computer systems and net technologies, guide new approaches of teaching and studying as a substitute than without a doubt permitting instructors and college students to do what they have achieved earlier than in a better way (Noor-Ul-Amin, 2013). However for educating and studying to improve, technologies have to be used as cognitive tools for gaining knowledge of and no longer without a doubt as a choice shipping platform (Herrington *et al.* 2010). (Moore 2012) reports that integrating technology in a mathematics school room can promote the improvement of computational abilities whilst additionally developing greater order mathematical skills. The view of (Forster 2006) is that the use of technological tools can enhance the mastering of mathematics by way of allowing the beginners to pay attention to underlying residences and relationships instead of focusing on tedious tricky calculation that can also every now and then detract from the suppose outcomes ICT provides possibilities for mastering by means of supporting newcomers to access, spread, renovate and share thought and information, which is transmitted in built-in verbal exchange patterns and designs. Technological tools can also open up get right of entry to a wider variety problem-solving strategies than those restrained to paper and pencil techniques (Bansilal 2015).

Tools such as on-line movies enable the students to vary the tempo at which they can analyze new material in mathematics (Bansilal 2015). By providing access to exclusive representations that assist visualization of mathematical objects, certain mathematical software program can contribute to a deeper perception of the concepts. Technology additionally opens up probabilities for developing statistical standards by means of enabling the visualization of the ideas (Sorto and Lesser 2009); it can make the demonstration of complicated summary ideas simpler whilst additional imparting more than one examples (Chance *et al.* 2007). In teaching statistics, technology can aid students in gaining knowledge of assume of to assume statistically with the aid of facilitating get entry to actual (and frequently large) facts sets and fostering energetic learning. Thus it can enable a learner to explore principle and analyze data, control and visualize data, function inference, and check prerequisites that underlie inference methods (GAISE College Report ASA Revision Committee 2016).

Some studies have suggested that the use of technological know-how also will increase teachers' self assurance in the content material (Brändström 2011; Buabeng-Andoh 2012; Cassim 2010; Cox *et al.* 1999; Leendertz *et al.* 2013; Mumtaz 2000; O'Dwyer *et al.* 2003; Remesh 2013; Sabzian & Gilakjani 2013; Yang 2013). For instance, in Cox *et al.*'s (1999) study, instructor suggested that using ICT increased their confidence. (O'Dwyer *et al.* 2003) further discovered that greater teacher confidence is related with the biggest improved use for the delivering education and, in particular, improve use of classification preparation. Further findings confirmed a massive relationship between teachers' self assurance and ICT functions (Albion *et al.* 2011; Tasir *et al.* 2012).

Access to technology, while nonetheless a concern, has taken a back seat to the predicament of profitable technology integration. According to (Cuban 2003), 21st century teachers usually use the equal tools as these who occupied the school room years before them. (Picciano 2006) explained that teachers who have been educated prior to the early Nineties had been now not require to take unique instructional science (technology) courses as part of their preservice education or instructor certification program. Due to this void, many Veteran teachers have been reluctant or slow to enhance the necessary capabilities to guide science infusion. (Picciano, 2006). Veteran teachers may additionally be uncomfortable with having to modify their instructional transport style and this pain can result in a poor response to science in the classroom. (Norton & Sprague, 2001). As consumers of science (technology) in a present day world, veteran teachers have been provided with in-service training, the fine of which varies from district to district, and but these teachers nevertheless may want pedagogical guide as they scan with education that include science (technology) integration (Ertmer & Ottenbreit-Leftwich 2010). When Veteran teachers experience insufficient in phrases of their readiness to comprise technology, their concerns may additionally originated from authentic lack of knowledge, uncertain about wonderful use, or lack of digital resources (Project Tomorrow 2014).

The imaginative and prescient of thoroughly built-in technological classroom and a one-to-one student device ratio in turning into a reality; as (Fullan 2013) stated, “The floodgates are opening” and “Resistance is futile”. However, the digital revolution, which so many educators anticipate, may additionally turn into a digital disaster if it is not now built-in integrated. Furthermore, the organizational support— vision, culture, leadership, training-for the use of technology in faculties in severely underdeveloped (Fullan 2013).

(Wenglinsky 1998) used statistics from the 1996 National Assessment of Educational Progress (NAEP) in Mathematics to find out about the outcome of teachers’ use of educational technology on pupil fulfillment in mathematics. Finding printed that when accurately used, computer may also serve to enhance scholar of mathematics achievement as nicely as beautify the typical studying surroundings of the school. Teachers who acquired education in the location of academic technological know-how were discovered more probably than these who had now not to use computer system in higher-quality methods such as in simulations, applications, and math getting to know games. (Wenglinsky 2000) additionally used the 1996 NAEP fact to show the wonderful result of the use of educational science to nurture higher order wondering capabilities in the mathematics classroom.

Unfortunately, (Lederman and Neiss 2000), file that technological know-how (technology) publication which are phase of instructor guidance application frequently emphasis pre-service teachers' studying about science rather than integration of technological know-how (technology) into school room teaching. The need for trainer education programs to serve as catalysts for the integration of technology into study room practice is vital. Abilities, knowledge, and competencies in instructing with the technology need to be emphasized in the education of teachers so that they can make informed decisions about which science to use for precise educating purposes. Linking science (technology) to curriculum has triggered big and adjustments in instructing and learning. (Wright 1999) reports higher student achievement, self-concept, attitude, and teacher-student interplay as a result of interactive gaining knowledge of made possible by using technology. (Kerrigan 2002) has discovered the benefits of the usage of mathematics software program and websites to encompass advertising students' higher order questioning skills, growing and keeping their computational skills, introducing them to collection and evaluation of data, facilitating their algebraic and geometric thinking, and displaying them the function of mathematics in an interdisciplinary setting. As a result of such research, (Neiss 2001) reports the National Council of Teachers of Mathematics pinpoints science (technology) as a crucial element of the Pre K-12 mathematics studying environment, influencing the mathematics that is taught as nicely as enhancing students' learning. Despite these results get entry to technology, (Kent 2001) reviews the U.S. Department of Education estimates that solely 20% of all public college instructors sense cozy using technology in classroom. Of these teachers, 99% have access to computers and the internet somewhere in their schools. However, only 39% reported regularly use of computers or the net to create instructional materials; 34% used them for record-keeping; and less than 10% used them to right of entry to lesson plan, do research, or check out exceptional practices. Today's science (technology) standards, International Society for Technology in Education (ISTE 2000) undertaking instructor training package throughout the state to tackle the need to produce laptop literate teacher who are now not simple knowledgeable of the internet work processing programs, spreadsheet, and presentation software, but are additionally confident in their ability to contain educational software program and web sites into daily study room teaching. (Cesarone 2000) reviews the National Council for Accreditation of Teacher Education Task Force has advocated more high quality make use of science (technology) in teaching training programs, and (Halpin 1999) urges instructor educator to determined wonderful approaches to put together pre-service instructor to integrate technology accurately into lecture room instruction.

Teachers' potential to pick gorgeous software program and websites is an indispensable issue of the remaining of efficaciously integrating instructional applied science (technology) into lecture room teaching. (Ertmer *et al.* 1999) kingdom that "Teachers, no longer technology, hold the key to attaining built-in technological know-how use." While (Haughland 2000) states that "How computers are used is more necessary than if computer system are used."

(Umugiraneza and North 2018) It is repeatedly argued that science (technology) can be make use of, as a device for educating and mastering and make contribution to learners' achievement. This article reports on a study about how Kwazulu-Natal mathematics instructors use, access and combine technology in the instructing and mastering of mathematics. A questionnaire containing closed and Likert scale questions related to the use of technology, was allotted to seventy- five (75) Kwazulu-Natal mathematics teachers. The findings revealed that the technological know-how used most typically by the group for instructing mathematics is calculators. Almost all the instructor mentioned that they, by no means use computer systems in their educating of mathematics. Although the instructors stated that they do not longer use computer system in educating and learning, about 80% of the individuals conveyed a tremendous view that using technology improves learners' appreciation of mathematics. The findings similarly point out the teachers' propensity to use science (technology) in academic exercise is associated with demographic factors associated to instructing experience, gender, level of find out about and participation in professional learning activities. The learn about also confirmed that instructor who have get admission to, to net academic assets have greater tiers of self belief in educating mathematics and keep broader belief about the nature of mathematics and the aim of educating mathematics than the teachers who do no longer use the net for instructional purposes. The similarity of this learn about with the present study is that each research use questionnaire for information collection. However, there exist a different between this study and the current study, as this modern study discover the teachers' belief and readiness for science (technology) integration into mathematics instruction in Minna metropolis.

2.4 Summary of Literatures Reviewed

The literature reviewed so far published the teachers' beliefs and readiness toward teaching in a built-in form (integrated form) by using technological know-how (technology) for instruction. The implication is the big role of teachers in making an effective affect on students' educational performance in Mathematics by using splendid technological tools for instruction. As a count number of fact, mathematics as a subject, must be taught or taken by means of qualified, certified, and skilled instructors with at least the knowledge of "Technology" in order to meet up with the widespread of the other developed countries.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Design

This learns about study adopted survey technique of descriptive research design. In which cross sectional survey was once considered. Survey research is a form of descriptive research that is aimed at amassing giant and small sample from population in order to look at the distribution, incidence and interplay of instructional and sociological phenomena. (Denga and Ali 1983). The design of this study is basically on the Teachers' beliefs and readiness for technology integration into mathematics instruction in secondary schools.

3.2 Population of the Study

The population of the study involves of all junior secondary schools and senior secondary schools teachers in Minna metropolis of Niger State, which are (2,832). The targent populace for the study use to be mathematics instructor (teachers) in both junior and senior secondary schools in Minna metropolis which are (177). Niger State Ministry of Education Planning, Research and Statistics (PRS UNIT 2019/2020).

Table 3.1

Population of both Junior and Senior Secondary (Public) Schools mathematics Teachers by way of School

S/N	Name of school	Number of mathematics

		teachers
1.	Abdullahi Dada Secondary School Maikunkele	5
2.	Bosso Secondary School	7
3.	Day Secondary School Gbada Gidan Mongoro	2
4.	Day Secondary School Chanchaga Minna’’B’’	6
5.	Day Secondary Secondary School Garatu	1
6.	Day Secondary School Maikunkele ‘’A’’	1
7.	Day Secondary School Maitumbi Minna	6
8.	Day Secondary School Pyata	2
9.	Day Secondary School Shatta	1
10.	Federal Government College Minna	8
11.	Government Army Day Secondary School	5
12.	Government Day Secondary School Beji	1
13.	Government Science College Chanchaga	9
14.	Government Senior Secondary School Kampala	2
15.	Government Technical College Minna	7
16.	Hilltop Model Secondary School	7
17.	Maryam Babangida Girls Science College	7
18.	Model Science College Tudun Fulani	1
19.	Niger State School for Special Education Minna	3
20.	Sheikh Muhammad Sanbo College of Arts and	7

	Islamic Studies Tudun Fulani Minna	
21.	Ahmadu Bahago Secondary School Minna	7
22.	Day Secondary School Barikin Sale	6
23.	Day Secondary School Kwasau	3
24.	Day secondary School Limawa	6
25.	FR. O' Connell Science College, Minna	5
26.	Government Day Secondary School, Bosso Road	7
27.	Government Day Science College Tunga, Minna	7
28.	Government Girls Science College Bosso Road, Minna	6
29.	Government Girls Secondary School Minna	5
30.	Government Vocational Training Center	2
31.	Woman Day College	3
32.	Zarumai Model College	5
33.	Junior Secondary School Shakwataa	3
34.	Junior Secondary School Kodo	4
35.	Junior Secondary School Kadna	3
36.	Junior Secondary School Birji	3
37.	Government Junior Secondary School Gurusu	2
38.	Gbangbapi Junior Secondary School	3

39.	Government Girls Secondary School Old Airport	3
40.	JSS Shanu-Minna	3
41.	Police Secondary School Minna	3
	TOTAL	**177**

3.3 Sample and Sample Techniques

Ten (10) Secondary Schools out of the 41has been selected with the usage of the purposive sampling method. Purposive sampling method is a method in which the researcher chooses the sample based on schools that will be fantastic for the study. Therefore, the ten (10) schools that were purposively chosen are:

Table 3.2

Teachers Population via School and Gender

S/N	Name of school	Male	Female	Total
1	Ahmadu Bahago Secondary School Minna	4	2	**6**
2	Bosso Secondary School Minna	4	2	**6**
3	Maryam Babangida Girls Science College	2	4	**6**
4	Model Science college Tudun Fulani	1	0	**1**
5	Government Science College Chanchaga	6	3	**9**
6.	Government Day Secondary School, Bosso Road	4	4	**8**
7.	Government Girls Science College Bosso Road, Minna	3	1	**4**
8.	Government Day Science College Tunga, Minna	9	5	**14**
9.	Day Secondary School Maikunkele ‘’A’’	5	2	**7**
10.	Sheikh Muhammad Sanbo College of Arts and Islamic Studies Tudun Fulani Minna	2	1	**3**
	TOTAL	**40**	**24**	**64**

The sample of this research work is composed of sixty-four (64) secondary schools mathematics teachers from ten (10) schools in Minna city of Niger State have been selected at random.

Random sampling approach was used to choose ten (10) secondary schools teachers from the population schools. Sample selected reduce throughout each male and female teachers in selected schools. Thereafter, the researcher used convenience sampling to select male and female teachers based on their availability, representing (64) sampled teachers,

Using Taro Yamane's formula [$n = N/1+ N(e)^2$].

3.4 Research Instrument

A questionnaire adopted or developed by means of (Beswick *et al.* 2012) used to be used to probe a number aspects of teachers' knowledge, beliefs and self assurance associated to the instructing and mastering of mathematics and statistics. The authentic questionnaire (Beswick *et al*. 2012) focused on mathematics which prolonged to the instructing of statistics and the use of science (technology) in classrooms. Similarly some section of the declaration in the questionnaire was once taken from questionnaire adopted in the (Kubiatko & Haláková 2009) and (Siragusa & Dixon 2009). The structured or closed questionnaire used by the researcher focused on the teachers' beliefs and readiness for technology integration into mathematics instruction. The questionnaire was divided into two (2) sections. Each section sought for information to reply related research questions. Five (5) factor (Likert scale) rating scale used to be used as stated: Strongly Agree (SA) = 5, Agree (A) = 4, Undecided (U) = 3, Disagree (D) = 2, Strongly Disagree (SD) = 1

3.5 Validity of Research Instrument

The instrument (questionnaire) used for gathering records for the study was a questionnaire validated by way of two lecturers in the School of Science and Technology Education, from science education department who are experts in Measurements and Evaluations for their consent about the usage of the instrument (questionnaire). The rank of the validators had been Associate professor and lecturer (2) from science education department , which are also expert in mathematics.

3.6 Reliability of Research Instrument

The reliability of the instrument used to be achieved with the aid of administer the instrument to twenty (20) instructors (teachers) in some selected secondary schools in Minna metropolis of Niger state, which are not amongst the sampled colleges (schools) used for the find out about however phase of the population. A reliability evaluation Cronbach's alpha was used and shown the questionnaire suitable reliability, $\alpha = 0.702$ which is appropriate and acceptable. According to (Konting *et al.* 2009).

3.7 Method of Data Collection

The technique of data collection began with adapting of the instrument (questionnaire). Then the researcher gathered an introductory letter from the department of science education, Federal university of technology, Minna. The researcher goes ahead personally, visited all the sampled colleges (schools) searching for reliable permission from the authority to use the school as nicely as seeking the co-operation, followed all the due processes for the collection of records in the school. The questionnaires had been administered and collected on the spot to ensure one hundred percent retrieve.

3.8 Method of Data Analysis

The statistics accrued were analyzed by the usage of global Business Machine for Statistics Package for the Social Science (SPSS) statistics 23 version. The package deal was once used to evaluate the connection between the use of technology for instructional coaching functions and teachers' self assurance and beliefs. Moreover, it used to be used to identify the necessary factors that may also affect teachers' capacity to use technology. The mean and standard deviation was once used to answer the five (5) research questions. A suggest choice rule of three (3) used to be used in this study. An average imply above 3 was once viewed as agreed, and geared up to utilize. On the different hand, a value much less than 3 used to be considered as disagreed and not ready to utilize.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Answers to Research Questions

Research question 1:

1. What is the mean score of teacher beliefs, that using technology for instruction in mathematics class can yield a positive change to the student performance and competency?

Table 4.1

Mean and Standard Deviation of Respondents on the Teachers' Beliefs of Using Technology for Instruction in Mathematics Class.

Items	N	Mean($\bar{\bar{X}}$)	Std. Deviation	Remarks
Using technology in mathematics class can raise student performance.	64	4.11	1.12	Agree

Using technology in mathematics class will make my students learn independently.	64	4.08	.84	Agree
Using technology in teaching mathematics enhance learning.	64	4.30	.75	Agree
Using technology in teaching mathematics encourages students self-learning.	64	4.20	.82	Agree
Using technology in instructing mathematics demonstrates the mathematics principles to students.	64	4.06	.69	Agree
Grand mean		**4.15**		**Agree**

Decision Mean: 3.0

Table 4.1 above reveals that teachers' beliefs, that using technology for instruction in mathematics class can yield a wonderful alternate to the student performance and competency; item one has a suggest mean of 4.11 and a standard deviation of 1.12, item two has a suggest mean of 4.08 and a standard deviation of 0.841, item three has a suggest mean of 4.30 and a standard deviation of 0.75, item four has a suggest mean of 4.20 and a standard deviation of 0.82, item five has a suggest mean of 4.06 and a standard deviation of 0.69. The table publishes in addition that; suggest grand mean score of rating of responses to the five items used to be 4.15 which were greater than the selection imply rating of 3.0. This implies that the teachers' beliefs, that the usage of technology for instruction in mathematics class room can yield a nice exchange to the student performance and competency.

Research question 2:

What is the mean score of the teacher readiness to use technology for instruction in mathematics classes?

Table 4.2

Shows Mean and Standard Deviation of Respondents on the Teachers' Readiness to Use Technology for Instruction in Mathematics Classes.

Items	N	Mean($\bar{X}$)	Std. Deviation	Remarks
I have the willingness to use technology in teaching mathematics.	64	4.27	.84	Agree
I have the intention to use technology in teaching mathematics.	64	4.20	.76	Agree

I plan to use technology in teaching mathematics.	64	3.77	.96	Agree
Engaging with technology makes me feel frustrated.	64	2.19	1.51	Disagree
Using technology in teaching mathematics is pleasant.	64	4.05	.81	Agree
Grand mean		**3.70**		**Agree**

Decision Mean: 3.0

Table 4.2 above table reveals that teachers' are prepared to use technology for practice in the mathematics classes; item one has a mean of 4.27 and a standard deviation of 0.84, item two has a mean of 4.20 and a standard deviation of 0.76, item three has a mean of 3.77 and a standard deviation of 0.96, item four has a mean of 2.19 and a standard deviation of 1.51, item five has a mean of 4.05 and a standard deviation of 0.81. The table printed in addition that, the grand mean score of responses to the 5 items used to be 3.70 which were greater than the selection imply mean score of 3.0. This implies that teachers' are very prepared to use technology for instruction in mathematics classes.

Research question 3:

What is the suggest rating of the understanding of the mathematic instructors and potential to use technological know-how (technology) as a tool for instruction in mathematics study room?

Table 4.3

Mean and Standard Deviation of Respondents on the Knowledge of the Mathematics Instructors and Ability to Use Technology as a Tool for Instruction in Mathematics Classroom.

Items	N	Mean($\bar{\bar{X}}$)	Std. Deviation	Remarks
I have the vital efficiency to deal with technology in instructing mathematics.	64	3.77	.77	Agree
I have the competencies to use splendid science (technology) tools in instructing different mathematics topics.	64	3.66	1.09	Agree
Engaging with technology is so difficult.	64	2.41	1.21	Disagree
If I want, I can engage efficiently with technology at all levels of education.	64	3.84	.90	Agree
I have the critical skills to use technology in teaching mathematics.	64	3.86	1.02	Agree
Grand mean		**3.51**		**Agree**

Decision Mean: 3.0

Table 4.3 above displays that teachers' have the knowledge and potential to use technology as a device for guidance in mathematics classroom; item one has a mean of 3.77 and a standard deviation of 0.77, item two has a mean of 3.66 and a standard deviation of 1.09, item three has a mean of 2.41 and a standard deviation of 1.21, item four has a mean of 3.84 and a standard deviation of 0.90, item five has a mean of 3.86 and a standard deviation of 1.02. The table published in addition that, the grand mean score of responses used to be 3.51 which have been increased that the selection imply rating of 3.0. This implies that teachers' have the knowledge and potential to use technology as a tool for instruction in mathematics classroom.

Research question 4:

What is the suggest score of the factors that serve as obstacles that avert the integration of science (technology) in mathematics study room?

Table 4.4

Mean and Standard Deviation of Respondents on the Factors that Serve as Barriers that Hinder the Integration of Technology in Mathematics Classroom.

Items	N	Mean($\bar{\bar{X}}$)	Std. Deviation	Remarks
Poor infrastructure, inadequate technology and lack of sufficient technological tools.	64	3.72	1.25	Agree
Lack of resources, including time, access to equipment, teaching and administrative support.	64	4.08	1.15	Agree
Lack of technology skills and knowledge, specifically in pedagogy and classroom management.	64	3.61	1.32	Agree
Institutional barriers, including leaderships, class scheduling and school planning.	64	3.58	1.17	Agree
Teachers' attitudes and beliefs about technology's advantages and relevance.	64	3.44	1.13	Agree
Grand mean		**3.69**		**Agree**

Decision Mean: 3.0

Table 4.4 above exhibits the obstacle that preclude the integration of technology in mathematics classroom; item one has a mean of 3.72 and a standard deviation of 1.25, item two has a mean of 4.08 and a standard deviation of 1.15, item three has a mean of 3.61 and a standard deviation of 1.32, item four has a mean of 3.58 and a standard deviation of 1.17, item five has a mean of 3.44 and a standard deviation of 1.13. The table published the similarity that, the grand mean score of responses to the five items was 3.69 which had been higher than the decision mean score of 3.0. This implies that the barriers are hindering the integration of technology in mathematics classroom.

Research question 5:

What is the imply score of the ways with the aid of which mathematics can be taught with the usage of technology?

Table 4.5 ***Shows Mean and Standard Deviation of Respondents on the Ways by Which Mathematics Can be Taught Using Technology.***

Items	N	Mean($\bar{\bar{X}}$)	Std. Deviation	Remarks
Expose students to goggle classroom by giving everyone edit access to a goggle slide deck.	64	4.36	6.50	Agree
Curricula planners have to encompass using of technology into mathematics curriculum.	64	4.14	.79	Agree
Use of video, audio and textual content can jointly toughen standards and enable students to engage with the same thoughts in more than one way.	64	4.36	.86	Agree
Educational games, can give students some new thought about how games can assist them learn.	64	4.34	.72	Agree
A workshop, seminar should be organized for teachers so that they can be introduced to the notion (concept) of the technology pedagogy content knowledge (TPCK) frame work and mastering technology with the aid of design.	64	4.66	.78	Agree
Grand mean		**4.37**		**Agree**

Decision Mean: 3.0

Table 4.5 above displays that, these afore mentioned approaches are precise for integration of technology in mathematics classroom; item one has a mean of 4.36 and a standard deviation of 6.50, item two has a mean of 4.14 and a standard deviation of 0.79, item three has a mean of 4.36 and a standard deviation of 0.86, item four has a mean of 4.34 and a standard deviation of 0.72, item five has a mean of 4.66 and a standard deviation of 0.78. The table printed similarly that, the grand mean score of responses to the five items was once 4.37 which were increased than the selection imply rating of 3.0. This implies that the approaches are accurate for integration of technology in mathematics classroom.

4.2 Discussion of Findings

The discussion primarily based on the findings of this research is as follows;

The findings base on the facts amassed is analyzed on the mean perception of both male and female of secondary schools teachers of the teachers' beliefs and readiness for science (technology) integration in mathematics instruction. According to the findings of this research, populace of the respondents (51%) agreed that teachers beliefs that using technology for instruction can increase students performance. Population of the respondents (52%) agreed that they are geared up to use technology as a device for instruction. Population of the respondents (52%) agreed that they have expertise and capacity to use technology as equipment for training in mathematics classroom. Similarly, population of the respondents (68%) agreed that poor infrastructure, inadequate technology and lack of adequate technological tools, lack of resources, along with time, access to equipment, teaching and administrative support, lack of technology competencies and knowledge, specifically in pedagogy and study room management, institutional barriers, which includes leaderships, class scheduling and school planning, teachers' attitudes and beliefs about technology's advantages and relevance are the obstacles that hindering the integration of technology in mathematics instruction. Population of the respondents (60%) agreed that, expose students to goggle lecture room through giving anyone edit get right of entry to a Google slide deck, curricula planner should consist of the usage of technology into mathematics curriculum, use of video, audio and text can mutually improve standards and allow students to interact with the identical ideas in multiple ways, educational games, can give students some new ideas about how games can help them learn and a workshop, seminar have to be prepared for the instructors so that they can be introduced to the thinking of the technology pedagogy content knowledge (TPCK) frame work and learning technology by design. These are methods by which mathematics can be taught by means of the use of technology.

From the results and the analysis on the teachers beliefs and readiness for technology integration in mathematics instruction, it can be deduced or confirmed that mathematics teachers beliefs on technology and very prepared for the utilization of the technology in the mathematics classroom but what is meant delaying the schools is that they lack training, conference, seminar, workshop, for instructors (teachers) in the use of technology. (Li, Yuen and Wong 2015) the obstacles served as the setback for the integration.

4.3 Summary of the Finding

According to the results of this study, it was revealed that teachers of secondary schools of Minna metropolis of Niger state, beliefs and ready for technology integration into mathematics instruction.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This findings where summarized of the most important of the research

1. There was once a statistically finding, proved that teachers in Minna town of Niger State

   Beliefs, that using technology for instruction in mathematics class can yield a superb change to the student overall performance and competency.

2. Mathematics teachers in Minna town secondary schools are geared up to utilize technology for teaching and gaining knowledge of in mathematics classroom.
3. Secondary schools teachers have said that they have knowledge and potential to use technology as a device for instruction in mathematics classroom.
4. There was a statistically finding, proved that lack of resources, which include time, access to equipment, teaching and administrative support, lack of technology skills and knowledge, in particular in pedagogy and classroom management, institutional barriers, inclusive of leaderships, class scheduling and school planning, teachers' attitudes and beliefs about technology's advantages and relevance are the obstacle that hindering the integration of technology in mathematics instruction.
5. Higher population of the respondents agreed that, expose students to goggle lecture room by way of giving everyone person edit get right of entry to a goggle slide deck, curricula planner should include using of technology into mathematics curriculum, use of video, audio and text can at the same time support ideas and allow college students to engage with the equal thoughts in more than one way, educational games, can give

college some new thoughts about how video games can assist them study and a workshop, seminar ought to be organized for instructors so that they can be brought to the thought of the science (technology) pedagogy content knowledge (TPCK) frame work and gaining knowledge of technology by means of design. These are the ways by which mathematics can be taught via the usage of technology.

5.2 Conclusions

Base on the findings of this study, the bellow conclusions were made:

1. Secondary schools mathematics teachers in Minna metropolis of Niger State beliefs in technology for teaching and learning in mathematics as tool for instruction.
2. Mathematics instructors in Minna city are geared up to utilized technological equipments for educating and learning.
3. Mathematics trainers of secondary schools in Minna town have expertise and ability to use technology in mathematics classroom.
4. Bad infrastructure, inadequate technology and lack of enough technological tools, lack of resources, which includes time, access to equipment, teaching and administrative support, lack of technology abilities and knowledge, particularly in pedagogy and classroom management, institutional barriers, together with leaderships, class scheduling and school planning, teachers' attitudes and beliefs about technology's benefits and relevance are the boundaries that hindering the integration of technology in mathematics instruction.
5. Expose college students to goggle study room by giving everyone edit access to a goggle slide deck, curricula planner must encompass the use of technology into the mathematics curriculum, use of video, audio and textual content can collectively boost to standards and enable students to have interaction with the same thoughts in more

than one way, academic games can provide students some new thoughts about how games can assist them study and a workshop, seminar must be prepared for instructors so that they can be delivered to the thinking of the technological know-how technology pedagogy content knowledge (TPCK) frame work and learning science (technology) via design. These are the strategies by way of way of which mathematics can be taught through way of using technology.

From the findings of this study, I hereby concluded that secondary schools mathematics teachers should utilize technology for mathematics instruction in order to carry back the college student interest in the subject and come to the applicable to other developed countries.

5.3 Recommendations

Mathematics as a subject plays great role in development of a nation because it is certainly times that without mathematics; we cannot survive economically, politically or even socially. Thus, Mathematics has real importance in science, social, political and economic development of our nation.

Moreover, mathematics occupies a central position in the science generally, as a matter of fact, all entry qualification for post-secondary institution of certificate, Diploma and degree in science and applied science include physics. Mathematics performs necessary role in the improvement of science and technology in any country. Hence, mathematics should be properly taught at secondary school stage with the aid of the use of technology.

Government need to additionally furnish enough funding for every school authority for equipping and managing mathematics laboratory should also provide adequate funding for every schools authority for equipping and managing mathematics laboratories.

The following suggestions are viewed relevant for the ideal educating and getting to know of mathematics.

1. Successful integration of technological information can have transformative affect on schools and the education system as a whole. The study suggests that teachers belief and ready for the utilization of the technology. Hence, supporting teachers to take on technological property per chance to help them to amplify new pedagogies that can aid inexperience persons have interplay productivity with the content material of the subject.
2. Continuous professional development will be required to assist the instructors (teachers) mix the newly got technological knowledge so that they can make bigger in all the factors distinctive in TPACK framework.
3. Teachers need sustained information and assist to decorate the integral technological capabilities.
4. Any intervention that includes provision of technological property as internet access, mobile pills or laptops will prefer to be accompanied with the aid of the relevant trainer professional improvement training courses, as well as teaching and sustained aid for the use of and holding the infrastructure.
5. Government and school administration should provide periodic seminar, training, conference, workshop and orientation on the use of technology for the teaching and learning of mathematics in secondary schools in Minna metropolis.
6. Federal ministry of science and technology need to provide necessary ICT equipment and educational technology tools as well as sufficient internet that can accommodate

open educational resources for the teaching and learning in Niger State secondary schools, Minna.

5.4 Contribution to the Body of Knowledge

The study has introduced to the physique of expertise in the following ways:

1. The study has succeeded in reposition in Niger State secondary schools teachers toward the use of science (technology) in educating and mastering of mathematics.

2. It was also established from the study that science (technology) are used in academic delivery, it will change the understanding of each instructor and college students positively toward it.

3. The study contributed to the current literature on science (technology) integration in mathematics instruction.

5.5 Suggestions for Further Studies

Therefore, the following guidelines are made for similarly research with the aid of subsequent studies;

i. This study should be carried out in different states in order to compare the studies with the existing one.

ii. Further lookup ought to be carried out specifically on the upkeep of the technological equipment for consistent utilization.

iii. Other viable methods of teaching mathematics by way of the use of technology should be seemed into.

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APPENDIX A

QUESTIONNAIRE

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION

DEPARTMENT OF SCIENCE EDUCATION (MATHEMATICS OPTION)

Dear respondent,

I am a final year student of the above named institution currently carrying out a research to investigate Teachers' beliefs and readiness for technology integration into mathematics instruction in secondary schools in Minna Metropolis of Niger State.

This questionnaire is designed to aid data collection for a successful research. Kindly provide the necessary answers to the questions asked, bear in mind that the information provided shall be treated with utmost confidentiality.

INSTRUCTION: There are two (2) sections. The first (section A) is the personal information of respondent while the second (section B) is the main questionnaire.

Please kindly tick in the appropriate box that best represents your view on each statement.

SECTION A: **(TEACHER'S BIO-DATA)**

This questionnaire is designed to investigate the teacher's beliefs and readiness for technology integration into mathematics instruction in Minna Metropolis. It would be highly appreciated

if you fill this questionnaire with all sense of honesty and sincerity. All information received will be treated with utmost confidentiality.
Thanks.

INSTRUCTION: Fill in your personal data in this section

Name of school…………………………………………………...

1. Gender: Male [ ], Female [ ]
2. Age:15-25 years [ ], 25-35 years [ ], 35 years and above [ ]
3. Qualification: N.C.E [ ], B.s.c [ ], Masters [ ], Doctorate [ ], Others[ ]
4. Rank (Grade level) GL 07-10 [ ], GL 11-14 [ ], GL 15-17 [ ]

SECTION B:

INSTRUCTION: Please read each item carefully and objectively tick [√] the response that best describes your feeling/opinion in the spaces provided. Use the following response scale to respond to each statement.

SA = Strongly Agree, A= Agree, U= Undecided, D= Disagree, SD= Strongly Disagree

Variables		Items	Agreement Scale				
			SD	D	U	A	SA
			1	2	3	4	5
What is the mean score of teacher beliefs, that using technology for instruction in mathematics class can yield a positive change to the student performance and competency? (TBUT)	TBUT1	Using technology in mathematics class can raise student performance.					
	TBUT2	Using technology in mathematics class will make my students learn independently.					
	TBUT3	Using technology in teaching mathematics enhance learning.					
	TBUT4	Using technology in teaching mathematics encourages students self-learning.					
	TBUT5	Using technology in teaching mathematics demonstrates the mathematics concepts to students.					
What is the mean score of the teacher readiness to use technology for instruction in mathematics classes? (TRRT)	TRRT1	I have the willingness to use technology in teaching mathematics.					
	TRRT2	I have the intention to use technology in teaching mathematics.					
	TRRT3	I plan to use technology in teaching mathematics.					
	TRRT4	Engaging with technology makes me feel frustrated.					
	TRRT5	Using technology in teaching					

		mathematics is pleasant.					
What is the mean score of the knowledge of the mathematic instructors and ability to use technology as a tool for instruction in mathematics classroom? (KCAT)	KCAT1	I have the necessary efficiency to deal with technology in teaching mathematics.					
	KCAT2	I have the skills to use appropriate technology tools in teaching different mathematics topics.					
	KCAT3	Engaging with technology is so difficult.					
	KCAT4	If I want, I can engage successfully with technology at all levels of education.					
	KCAT5	I have the necessary skills to use technology in teaching mathematics.					
What is the mean score of the factors that serve as barriers that hinder the integration of technology in mathematics classroom? (FBHIT)	FBHIT1	Poor infrastructure, inadequate technology and lack of sufficient technological tools.					
	FBHIT2	Lack of resources, including time, access to equipment, teaching and administrative support.					
	FBHIT3	Lack of technology skills and knowledge, specifically in pedagogy and classroom management.					
	FBHIT4	Institutional barriers, including leaderships, class scheduling and school planning.					
	FBHIT5	Teachers’ attitudes and beliefs about technology’s benefits and relevance.					
What is the mean score of the ways by which mathematics can be taught using technology? (WMTT)	WMTT1	Expose students to goggle classroom by giving everyone edit access to a goggle slide deck.					
	WMTT2	Curricula planner should include using of technology into mathematics curriculum.					
	WMTT3	Use of video, audio and text can mutually reinforce concepts and enable students to engage with the same ideas in multiple ways.					

	WMTT4	Educational games, can give students some new ideas about how games can help them learn.					
	WMTT5	A workshop, seminar should be organized for teachers so that they can be introduced to the concept of the technology pedagogy content knowledge (TPCK) frame work and learning technology by design.					

APPENDIX B

DATA ANALYSIS

ANALYSIS RESPONDENTS BASED ON GENDER

Table: 4.1.1 Shows the analysis of respondent by Sex

Gender

Sex		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	40	62.5	62.5	62.5
	Female	24	37.5	37.5	100.0
	Total	64	100.0	100.0	

Table 4.1 above shows that about 40 of respondents representing 62.5% of the population are males and about 24 of the respondents representing 37.5% of the population are females. This indicates that males teachers are more in Minna public schools than females teachers.

Figure 4.1.1

A bar chart showing the percentage of respondent gender

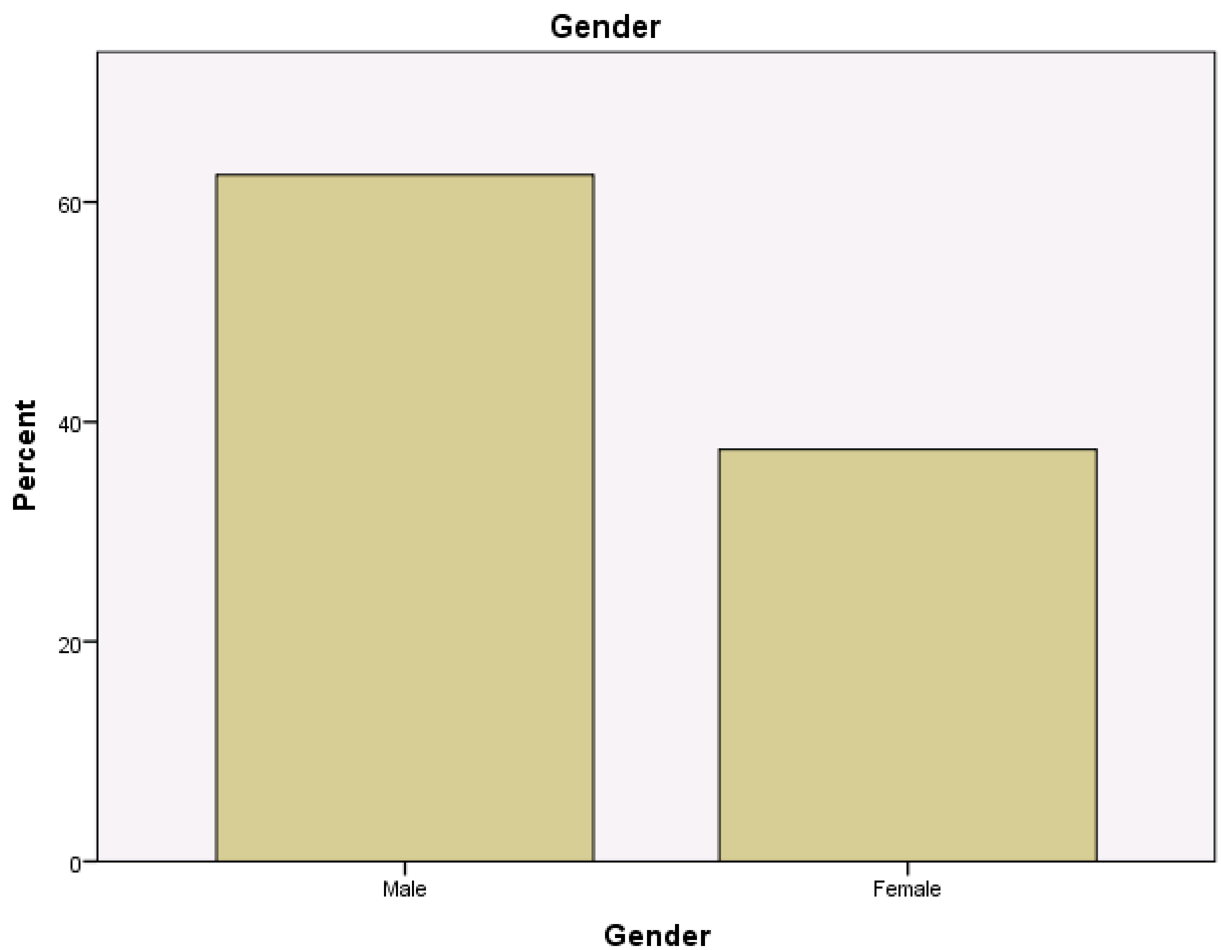


Table 4.2 Shows that using technology in mathematics class can raise student performance.

Using technology in mathematics class can raise student performance.

Options		**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Strongly disagree	4	6.3	6.3	6.3
	Disagree	4	6.3	6.3	12.5
	Undecided	1	1.6	1.6	14.1
	Agree	27	42.2	42.2	56.3
	Strongly agree	28	43.8	43.8	100.0
	Total	64	100.0	100.0	

The table above shows the response of the teachers toward the question, 27 out of 64 respondents agree that using technology in mathematics class can raise student performance, that is about 42.2%, 28 out of 64 respondents strongly agree that using technology in mathematics class can raise student performance which is 43.8% while 4 out of 64 respondents disagree and strongly disagree about the question being asked, that is about 6.3% and 1 respondent undecided about the question which is about 1.6%.

Figure 4.1.1

A bar chart showing the percentage of respondent that using technology in mathematics class can raise student performance.

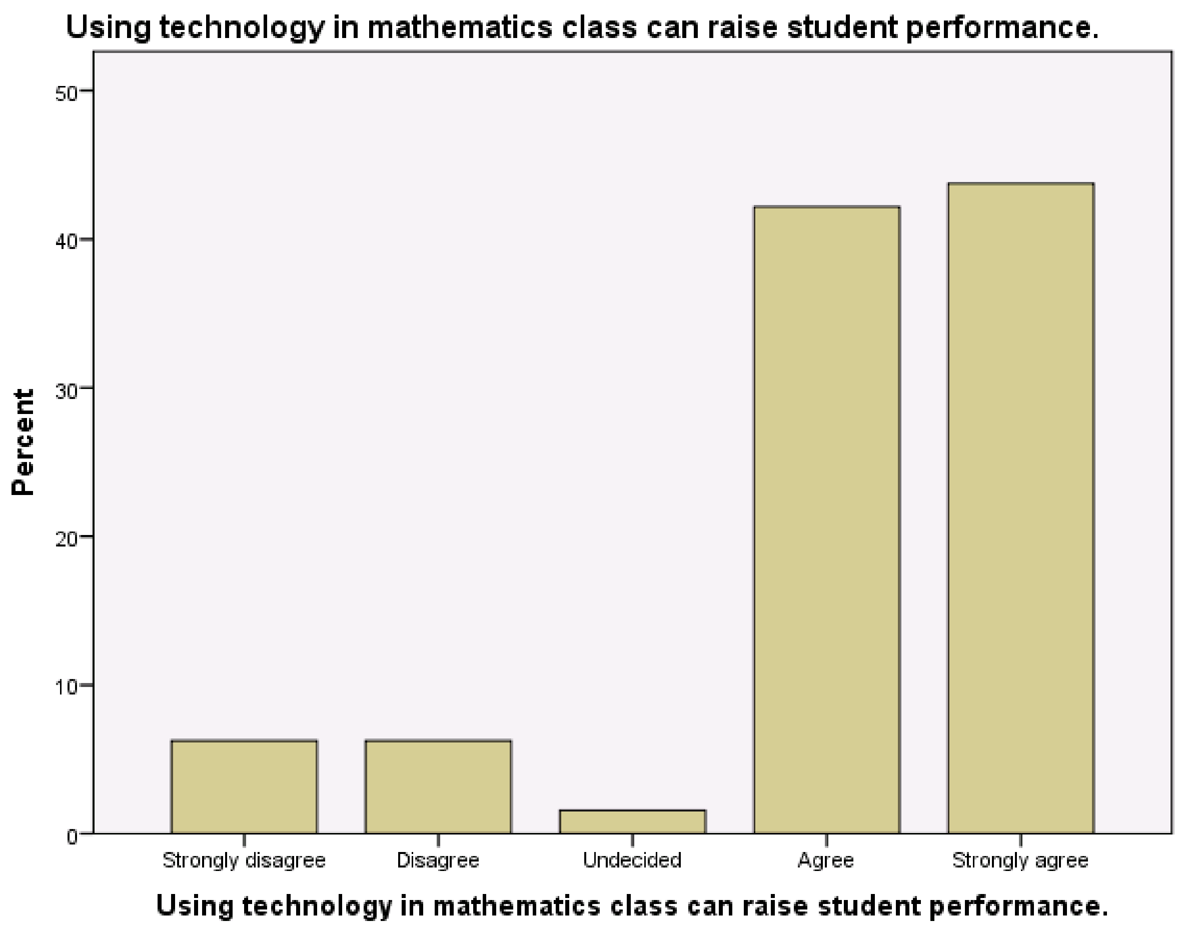


Table 4.2 Shows that Using technology in mathematics class will make students learn independently.

Using technology in mathematics class will make my students learn independently.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	5	7.8	7.8	7.8
	Undecided	5	7.8	7.8	15.6
	Agree	34	53.1	53.1	68.8
	Strongly agree	20	31.3	31.3	100.0
	Total	64	100.0	100.0	

The table above shows the response of the teachers toward the question, 34 out of 64 respondents agree that using technology in mathematics class will make students learn independently, that is about 53.1%, 20 out of 64 respondents strongly agree that using technology in mathematics class will make students learn independently, which is 31.3% while 5 out of 64 respondents disagree and undecided about the question being asked, that is about 7.8%

Figure 4.1.2

A bar chart showing the percentage of respondent that, using technology in mathematics class will make students learn independently.

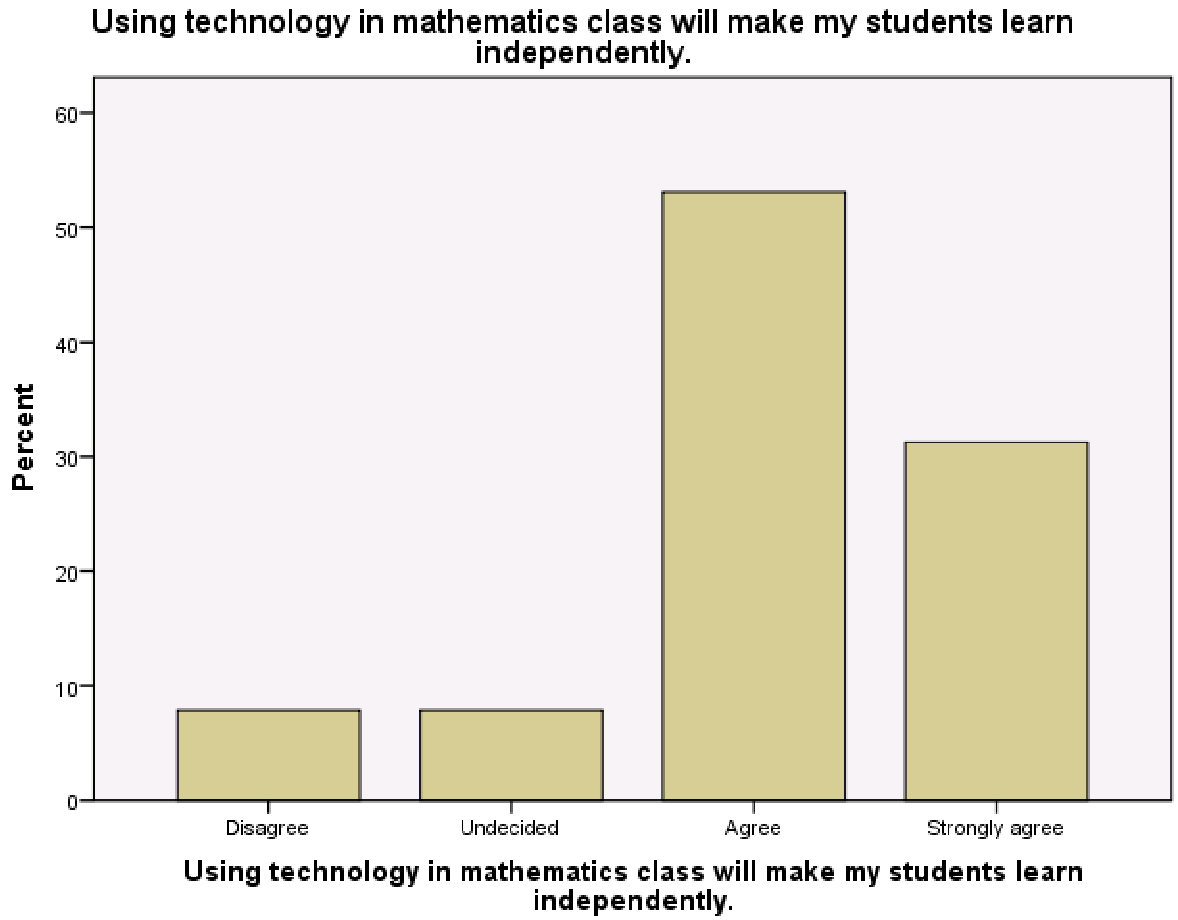


Table. 4.3 Shows that Using Technology in Teaching Mathematics Enhance Learning.

Using technology in teaching mathematics enhance learning.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	1.6	1.6	1.6
	Undecided	8	12.5	12.5	14.1
	Agree	26	40.6	40.6	54.7
	Strongly agree	29	45.3	45.3	100.0
	Total	64	100.0	100.0	

The table above shows the response of the teachers toward the question, 29 out of 64 respondents strongly agree that using technology in teaching mathematics enhance learning, which covered about 45.3%, 26 out of 64 respondents agree that using technology in teaching mathematics enhance learning, which is about 40.6%, 1 out of 64 respondents disagree which covered about 1.6%, while 8 out of 64 respondents undecided, that is about 12.5%.

Figure 4.1.3

A bar chart showing the percentage of respondent that, Using Technology in Teaching Mathematics Enhance Learning.

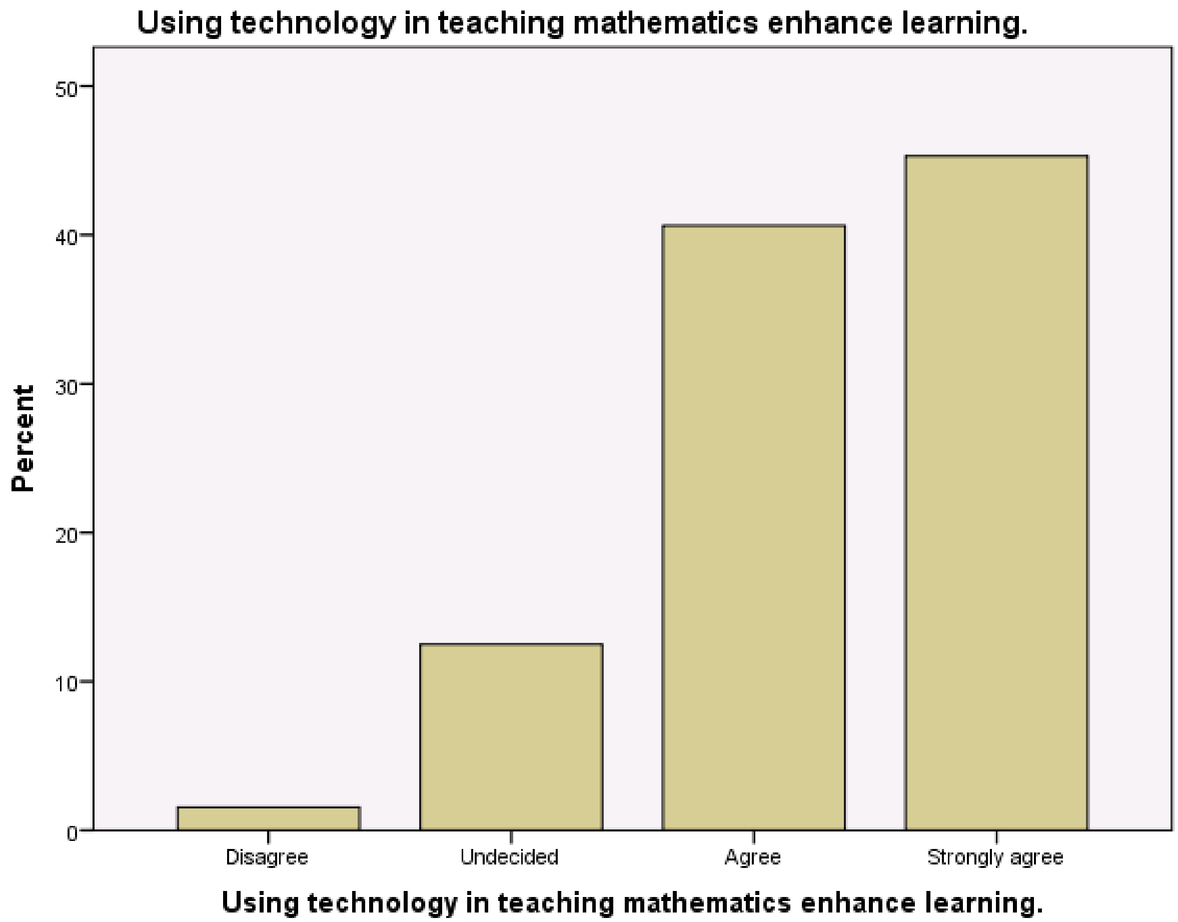


Table 4.4 Shows that Using Technology in Teaching Mathematics Encourages Students Self-learning.

Using technology in teaching mathematics encourages students self-learning.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	1.6	1.6	1.6
	Disagree	2	3.1	3.1	4.7
	Undecided	4	6.3	6.3	10.9
	Agree	33	51.6	51.6	62.5
	Strongly agree	24	37.5	37.5	100.0
	Total	64	100.0	100.0	

The table above indicates that 33 out of 64 respondents agreed that using technology in teaching mathematics encourages students self-learning, that is about 51.6%, 1 out of 64 respondents strongly agree that using technology in teaching mathematics encourages students self-learning, which is 1.6%, 2 out of 64 respondents disagree that is 3.1% and 24 of out 64 respondents strongly disagree which is 37.5%, while 4 out of 64 respondents undecided, that is about 6.3%.

Figure 4.1.4

A bar chart showing the percentage of respondent that, Using Technology in Teaching Mathematics Encourages Students Self-learning.

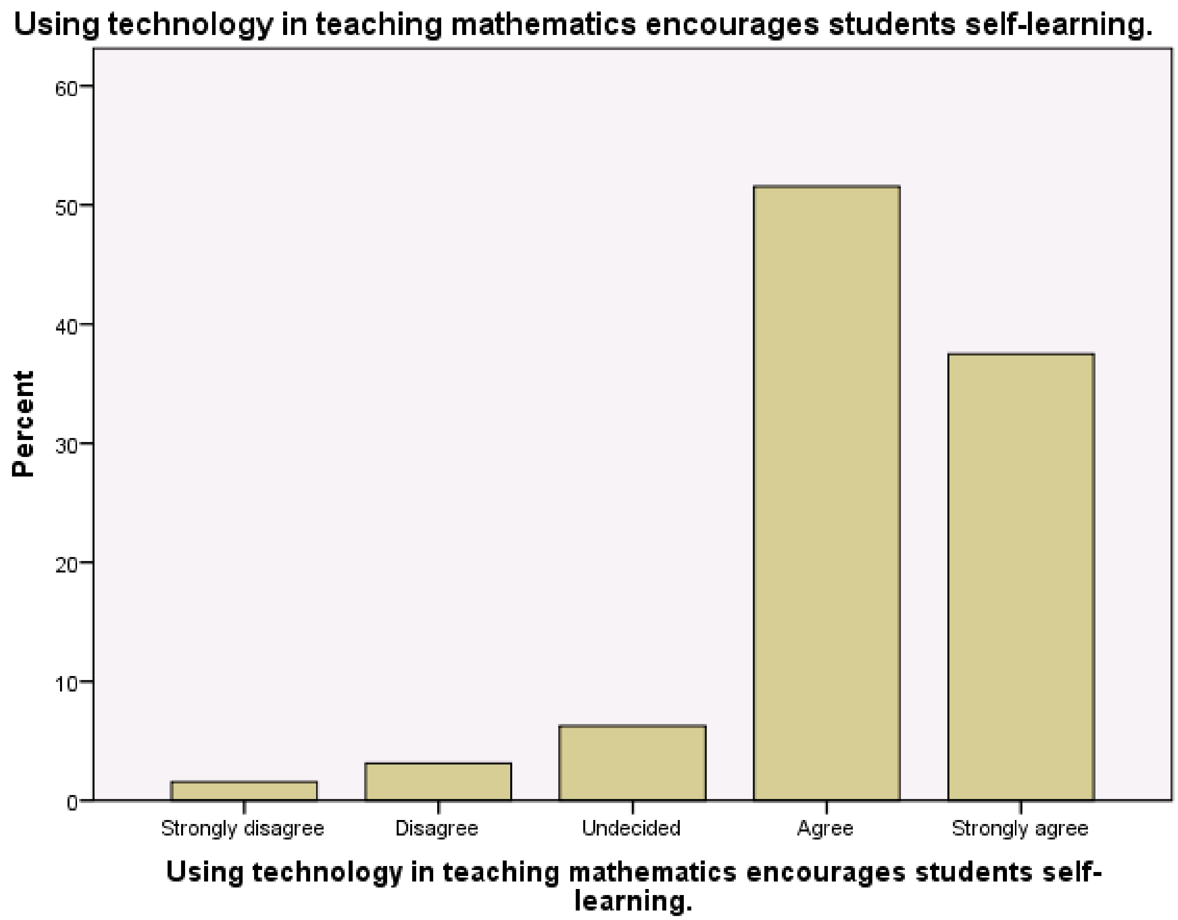


Table 4.5 Shows that using technology in teaching mathematics demonstrates the mathematics concepts to students.

Using technology in teaching mathematics demonstrates the mathematics concepts to students.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	3.1	3.1	3.1
	Undecided	7	10.9	10.9	14.1
	Agree	40	62.5	62.5	76.6
	Strongly agree	15	23.4	23.4	100.0
	Total	64	100.0	100.0	

The above table shows that, 40 respondents agreed that using technology in teaching mathematics demonstrates the mathematics concepts to students, that is about 62.5%, 15 respondents strongly agreed that using technology in teaching mathematics demonstrates the mathematics concepts to students which is 23.4%, 2 respondents disagreed and 7 respondents undecided that using technology in teaching mathematics demonstrates the mathematics concepts to students that is 3.1% and 10.9% respectively.

Figure 4.1.5

A bar chart showing the percentage of respondent that, using technology in teaching mathematics demonstrates the mathematics concepts to students.

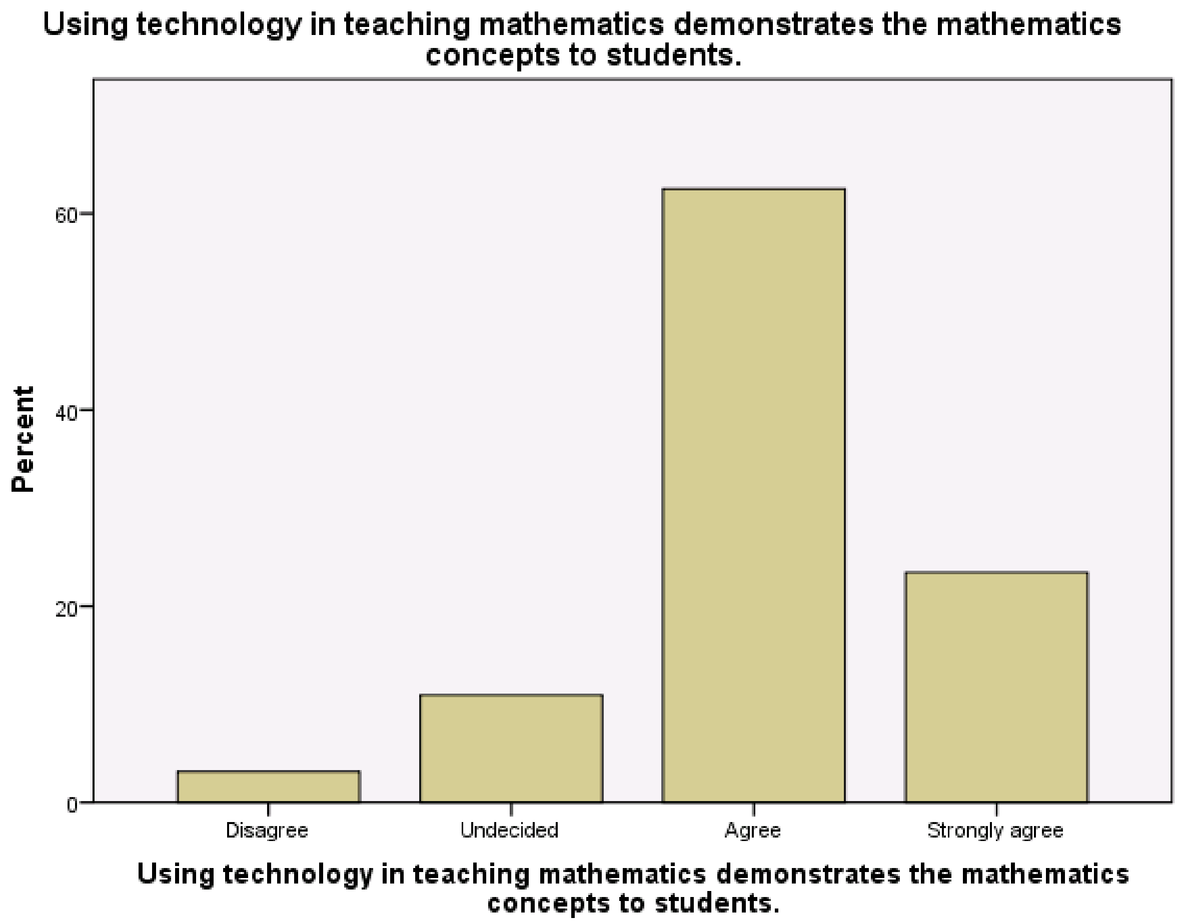


Table 4.6 shows that I have the willingness to use technology in teaching mathematics.

I have the willingness to use technology in teaching mathematics.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	1.6	1.6	1.6
	Disagree	1	1.6	1.6	3.1
	Undecided	7	10.9	10.9	14.1
	Agree	26	40.6	40.6	54.7
	Strongly agree	29	45.3	45.3	100.0
	Total	64	100.0	100.0	

The above table shows that, 26 respondents agreed that they the willingness to use technology in teaching mathematics, that is about 40.6%, 29 respondents strongly agreed that they the willingness to use technology in teaching mathematics which is 45.3%, while 1 respondent disagreed and strongly disagree, which is 1.6% respectively and 7 respondents undecided which is about 10.9%.

Figure 4.1.6

A bar chart showing the percentage of respondent that, teachers have the willingness to use technology in teaching mathematics.

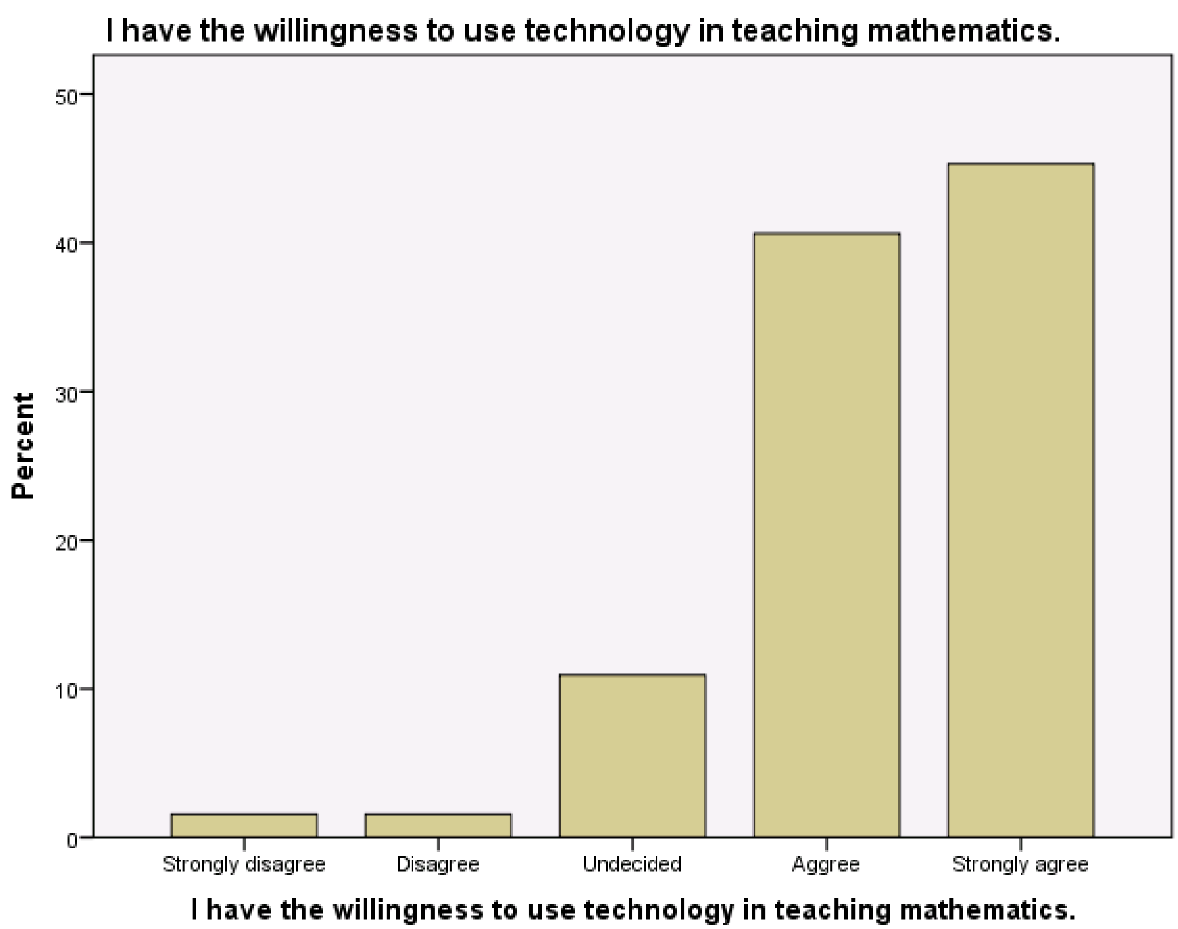


Table 4.7 shows that I have the intention to use technology in teaching mathematics.

I have the intention to use technology in teaching mathematics.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	3.1	3.1	3.1
	Undecided	7	10.9	10.9	14.1
	Agree	31	48.4	48.4	62.5
	Strongly agree	24	37.5	37.5	100.0
	Total	64	100.0	100.0	

The above table shows that, 31 respondents agreed that they have the intention to use technology in teaching mathematics, that is about 48.5%, 24 respondents strongly agreed that they have the intention to use technology in teaching mathematics which is 37.5%, while 2 respondents disagreed, which is 3.1% respectively and 7 respondents undecided which is about 10.9%.

Figure 4.1.7

A bar chart showing the percentage of respondent that, teachers have the intention to use technology in teaching mathematics.

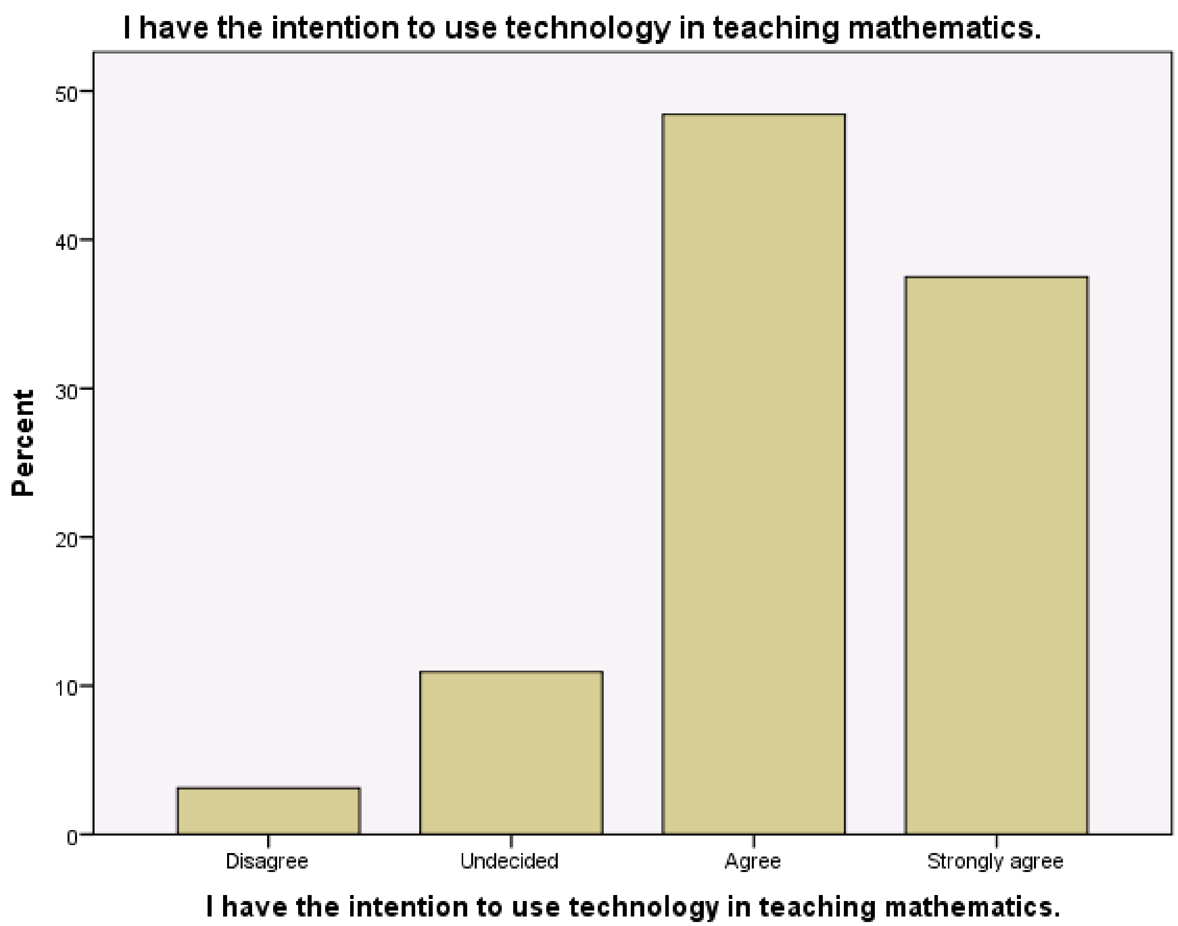


Table 4.8 shows that the teachers plan to use technology in teaching mathematics.

I plan to use technology in teaching mathematics.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	4.7	4.7	4.7
	Disagree	3	4.7	4.7	9.4
	Undecided	11	17.2	17.2	26.6
	Agree	36	56.3	56.3	82.8
	Strongly agree	11	17.2	17.2	100.0
	Total	64	100.0	100.0	

The above table shows that, 36 respondents agreed that they plan to use technology in teaching mathematics, that is about 56.3%, 11 respondents strongly agreed and undecided that they plan to use technology in teaching mathematics which is 17.2% respectively, while 3 respondents disagreed and strongly disagree, which is 4.7% respectively.

Figure 4.1.8

A bar chart showing the percentage of respondent that, teachers plan to use technology in teaching mathematics.

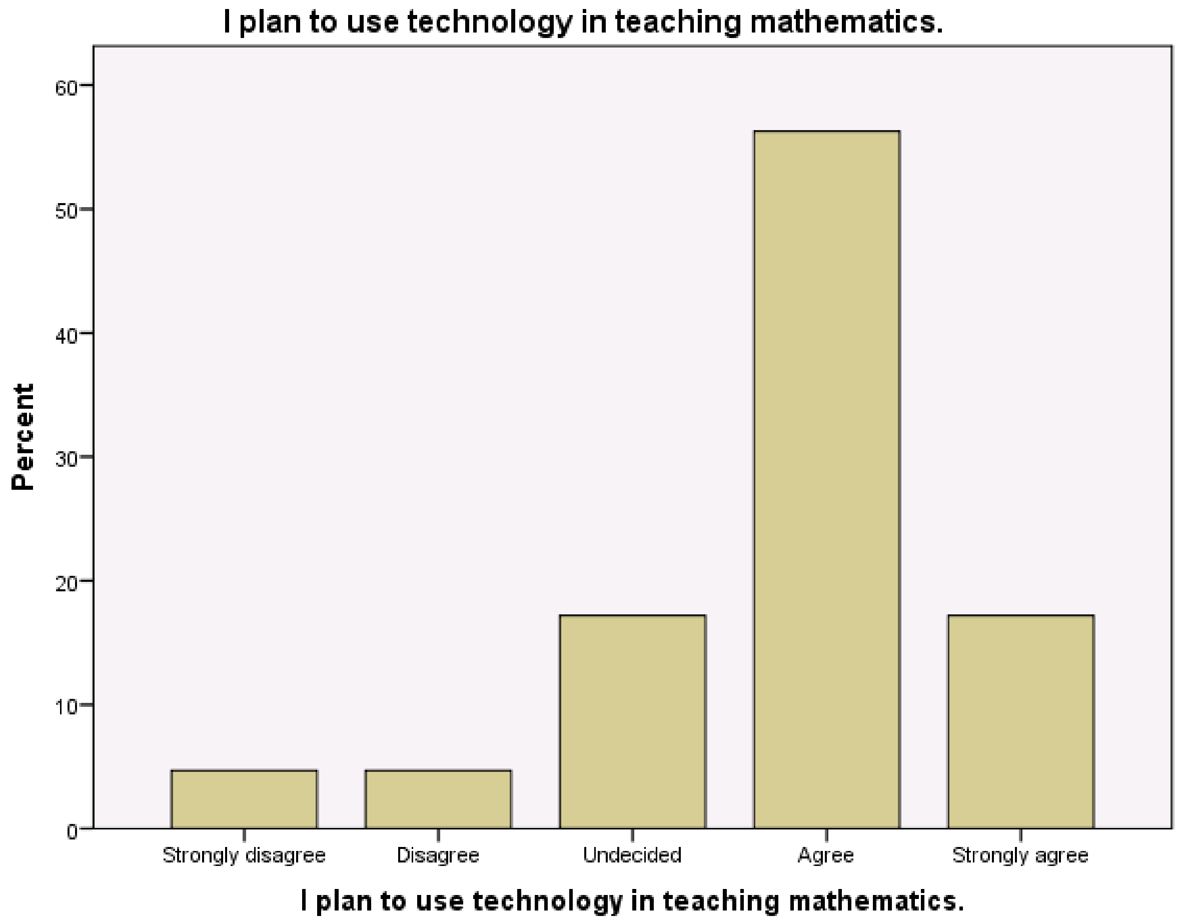


Table 4.9 shows that engaging with technology make teachers feel frustrated.

Engaging with technology makes me feel frustrated.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	35	54.7	54.7	54.7
	Disagree	6	9.4	9.4	64.1
	Undecided	7	10.9	10.9	75.0
	Agree	8	12.5	12.5	87.5
	Strongly agree	8	12.5	12.5	100.0
	Total	64	100.0	100.0	

The above table shows that, 8 respondents agreed and strongly agreed that engaging with technology make them feel frustrated, that is about 12.5% respectively, 6 respondents disagreed that engaging with technology make them feel frustrated and 7 respondents undecided, which is 10.5% respectively, while 35 strongly disagreed, which is about 54.7%.

Figure 4.1.9

A bar chart showing the percentage of respondent

that engaging with technology make teachers feel frustrated.

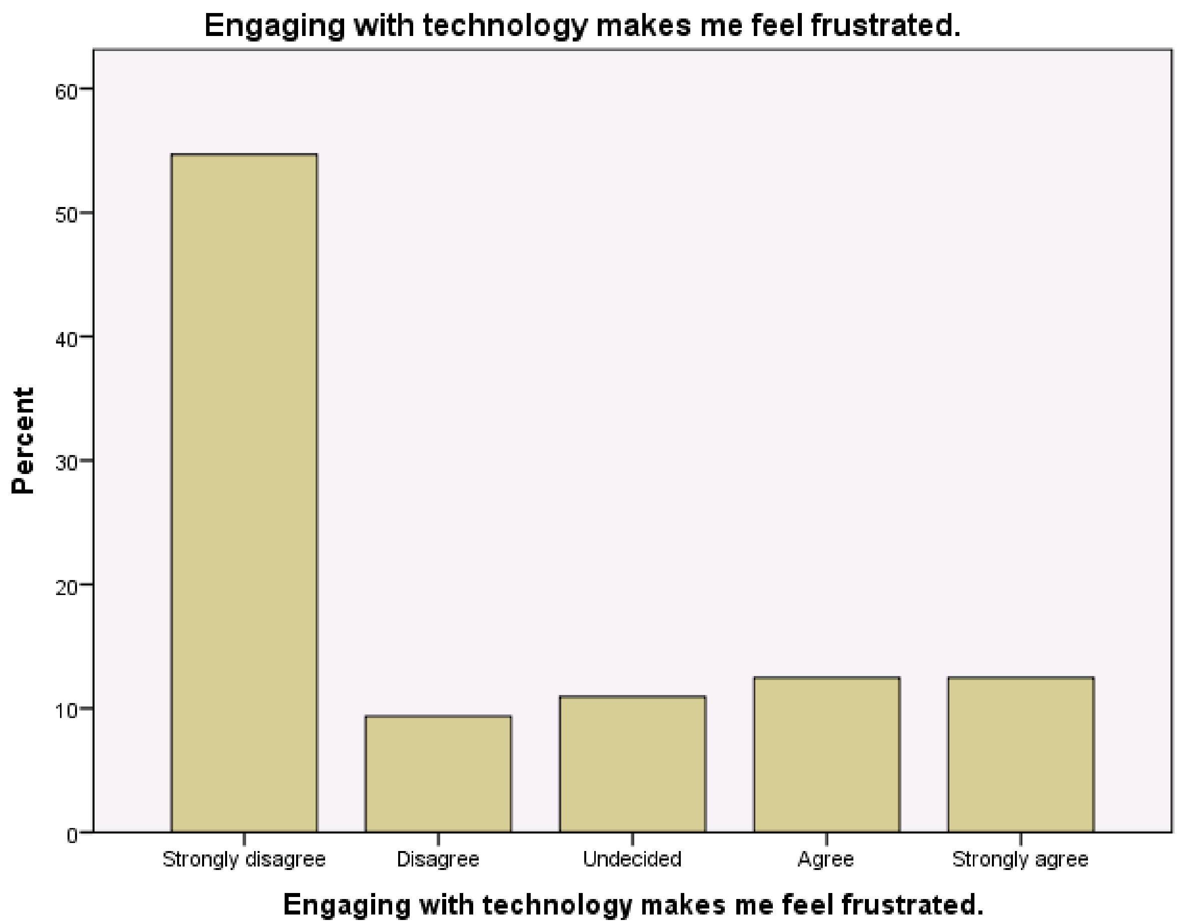


Table 4.1.1 shows that using technology in teaching mathematics is pleasant

Using technology in teaching mathematics is pleasant.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	1.6	1.6	1.6
	Disagree	1	1.6	1.6	3.1
	Undecided	10	15.6	15.6	18.8
	Agree	34	53.1	53.1	71.9
	Strongly agree	18	28.1	28.1	100.0
	Total	64	100.0	100.0	

The above table shows that, 34 respondents agreed that using technology in teaching mathematics is pleasant, that is about 53.1%, 18 respondents strongly agreed that using technology in teaching mathematics is pleasant, which is about 28.1%, 10 respondents undecided that using technology in teaching mathematics is pleasant which is 15.6%, while 1 respondent disagreed and strongly disagree, which is 1.6% respectively.

Figure 4.1.10

A bar chart showing the percentage of respondent using technology in teaching mathematics is pleasant

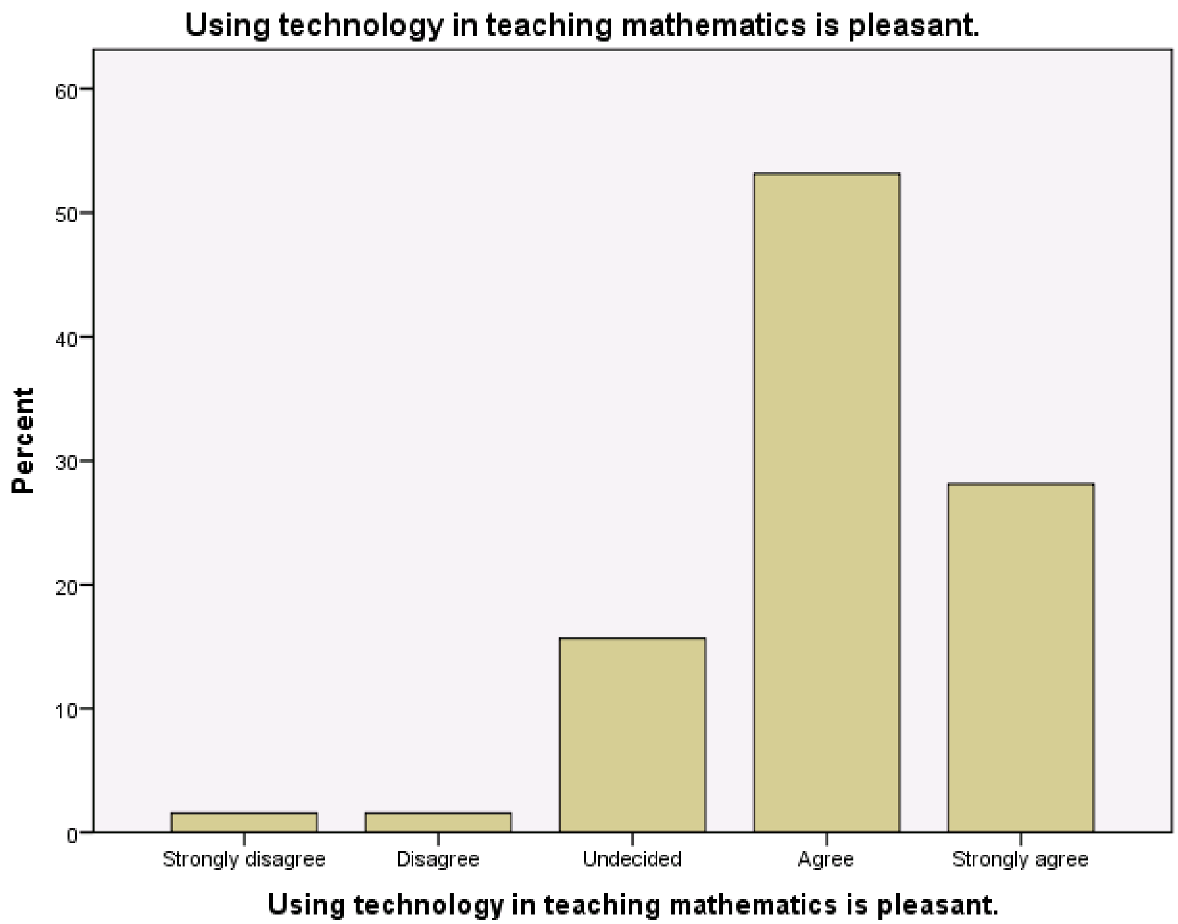


Table 4.1.2 shows that they have the necessary efficient to deal with technology in teaching mathematics

I have the necessary efficiency to deal with technology in teaching mathematics.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	6	9.4	9.4	9.4
	Undecided	10	15.6	15.6	25.0
	Agree	41	64.1	64.1	89.1
	Strongly agree	7	10.9	10.9	100.0
	Total	64	100.0	100.0	

The above table shows that, 41 respondents agreed that they have the necessary efficient to deal with technology in teaching mathematics, that is about 64.1%, 7 respondents strongly agreed that they have the necessary efficient to deal with technology in teaching mathematics which is 10.9%, while 6 respondents disagreed, which is 9.4% and 10 respondents undecided which is about 15.6%.

Figure 4.1.11

A bar chart showing the percentage of respondent teachers have the necessary efficient to deal with technology in teaching mathematics.

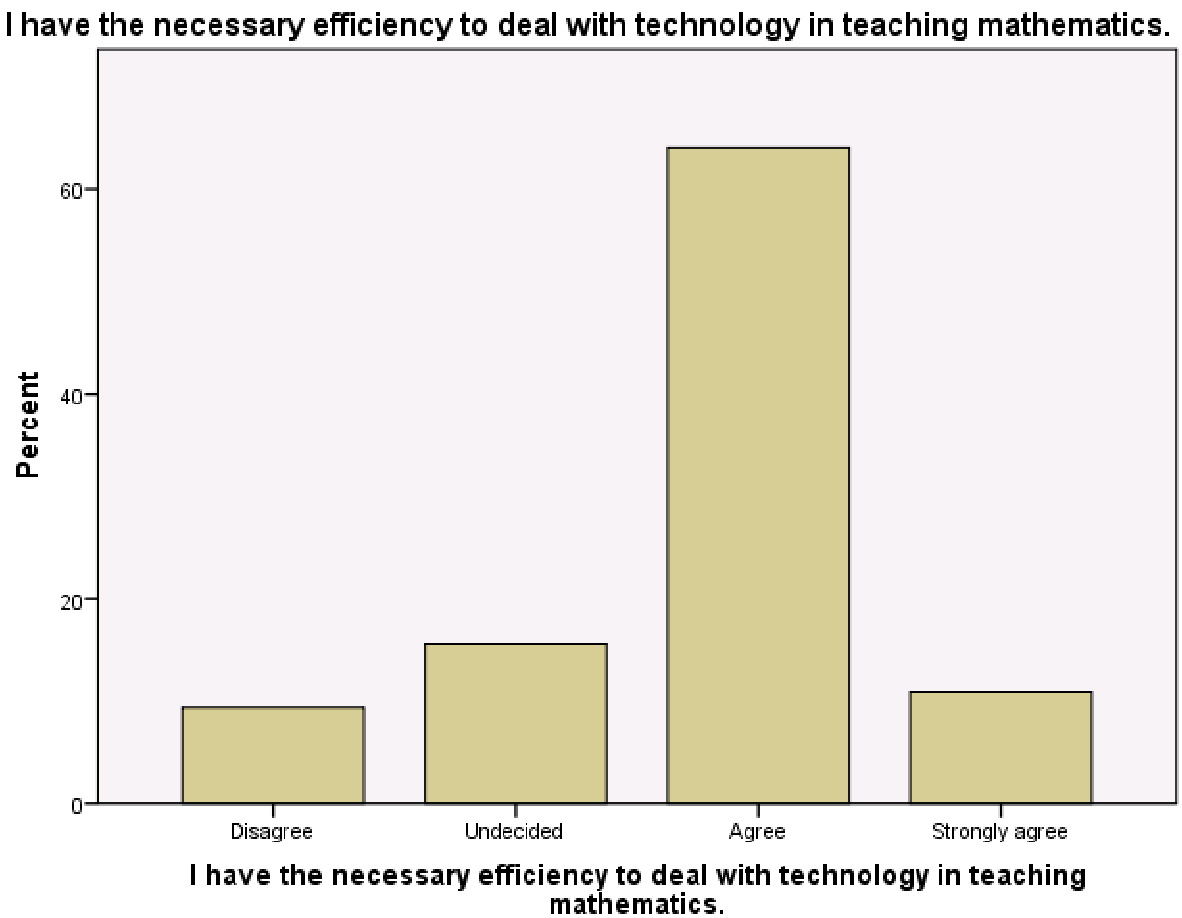


Table 4.1.2 shows that mathematics teachers have the skills to use appropriate technology tools in teaching different mathematics topics

I have the skills to use appropriate technology tools in teaching different mathematics topics.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	4.7	4.7	4.7
	Agree	9	14.1	14.1	18.8
	Undecided	7	10.9	10.9	29.7
	Agree	33	51.6	51.6	81.3
	Strongly agree	12	18.8	18.8	100.0
	Total	64	100.0	100.0	

The table above indicates that 33 out of 64 respondents agreed that they have the skills to use appropriate technology tools in teaching different mathematics topics, that is about 51.6%, 12 out of 64 respondents strongly agree that they have the skills to use appropriate technology tools in teaching different mathematics topics, which is 18.5%, 3 of out 64 respondents strongly disagree which is 4.7%, while 7 out of 64 respondents undecided, that is about 10.9%.

Figure 4.1.12

A bar chart showing the percentage of respondent teachers have the skills to use appropriate technology tools in teaching different mathematics topics.

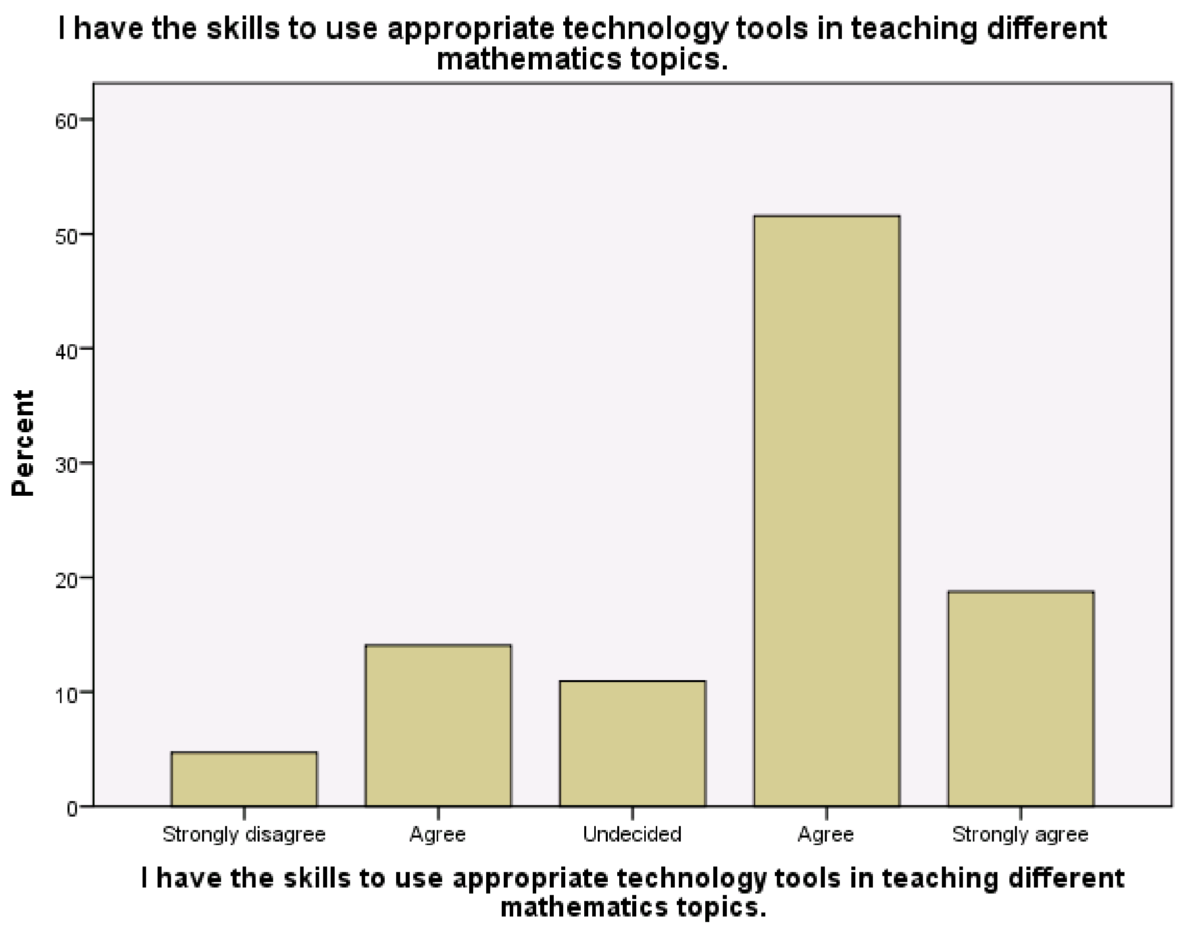


Table 4.1.3 shows that engaging with technology is so difficult

Engaging with technology is so difficult.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	17	26.6	26.6	26.6
	Disagree	23	35.9	35.9	62.5
	Undecided	7	10.9	10.9	73.4
	Agree	15	23.4	23.4	96.9
	Strongly agree	2	3.1	3.1	100.0
	Total	64	100.0	100.0	

The table above indicates that 15 out of 64 respondents agreed that engaging with technology is so difficult, that is about 23.4%, 2 out of 64 respondents strongly agree that engaging with technology is so difficult, which is 3.1%, 17 of out 64 respondents strongly disagree which is 26.5%, 23 out of 64 respondents disagreed that engaging with technology is so difficult, which is about 35.9% while 7 out of 64 respondents undecided, that is about 10.9%.

Figure 4.1.13

A bar chart showing the percentage of respondent that engaging with technology is so difficult.

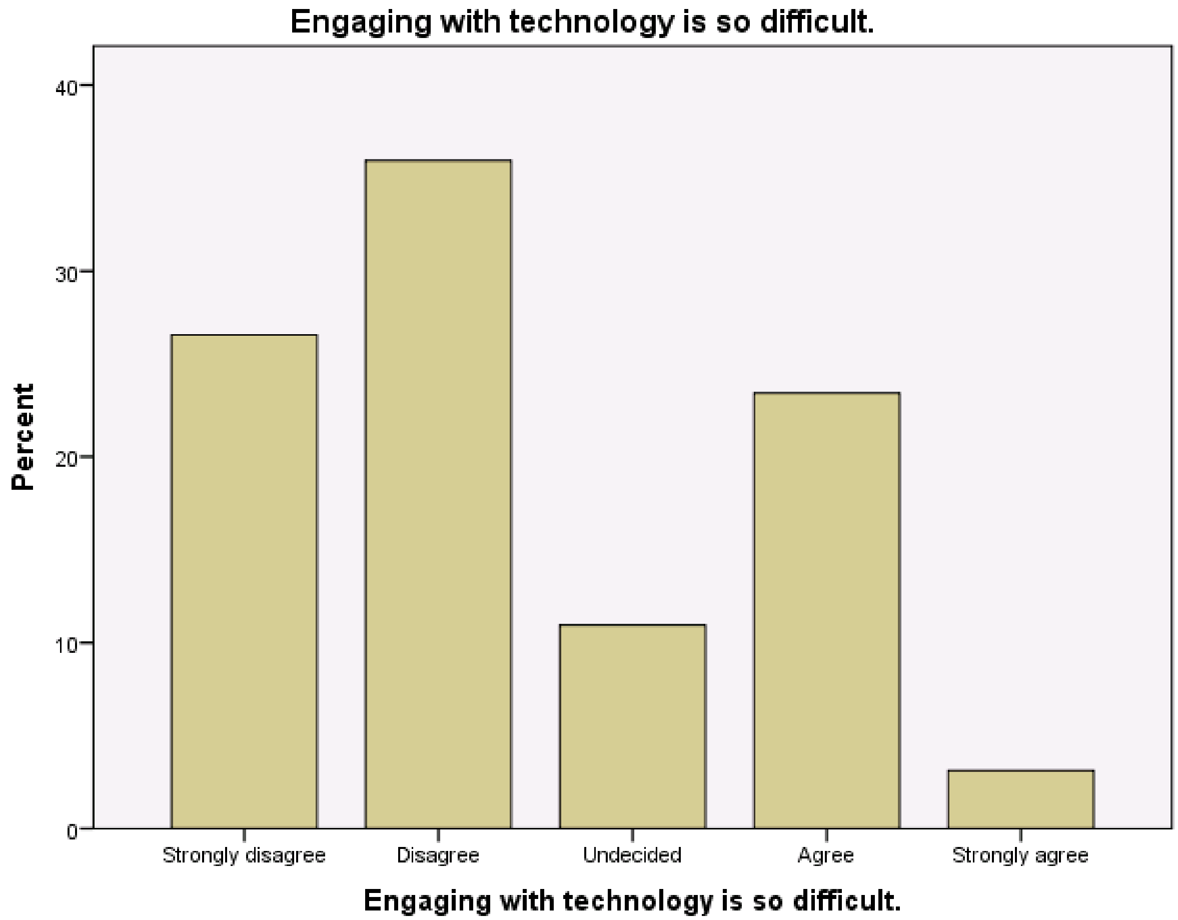


Table 4.1.4 shows that if they want, they can engage successfully with technology at all levels of education.

If I want, I can engage successfully with technology at all levels of education.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	1.6	1.6	1.6
	Disagree	6	9.4	9.4	10.9
	Undecided	7	10.9	10.9	21.9
	Agree	38	59.4	59.4	81.3
	Strongly agree	12	18.8	18.8	100.0
	Total	64	100.0	100.0	

The table above indicates that 38 out of 64 respondents agreed that if they want, they can engage successfully with technology at all levels of education, that is about 59.4%, 12 out of 64 respondents strongly agree that if they want, they can engage successfully with technology at all levels of education, which is 18.8%, 1 out of 64 respondents strongly disagreed which is 1.6%, 6 out of 64 respondents disagreed that if they want, they can engage successfully with technology at all levels of education, which is about 9.4% while 7 out of 64 respondents undecided, that is about 10.9%.

Figure 4.1.14

A bar chart showing the percentage of respondent that if teachers want, they can engage successfully with technology at all levels of education.

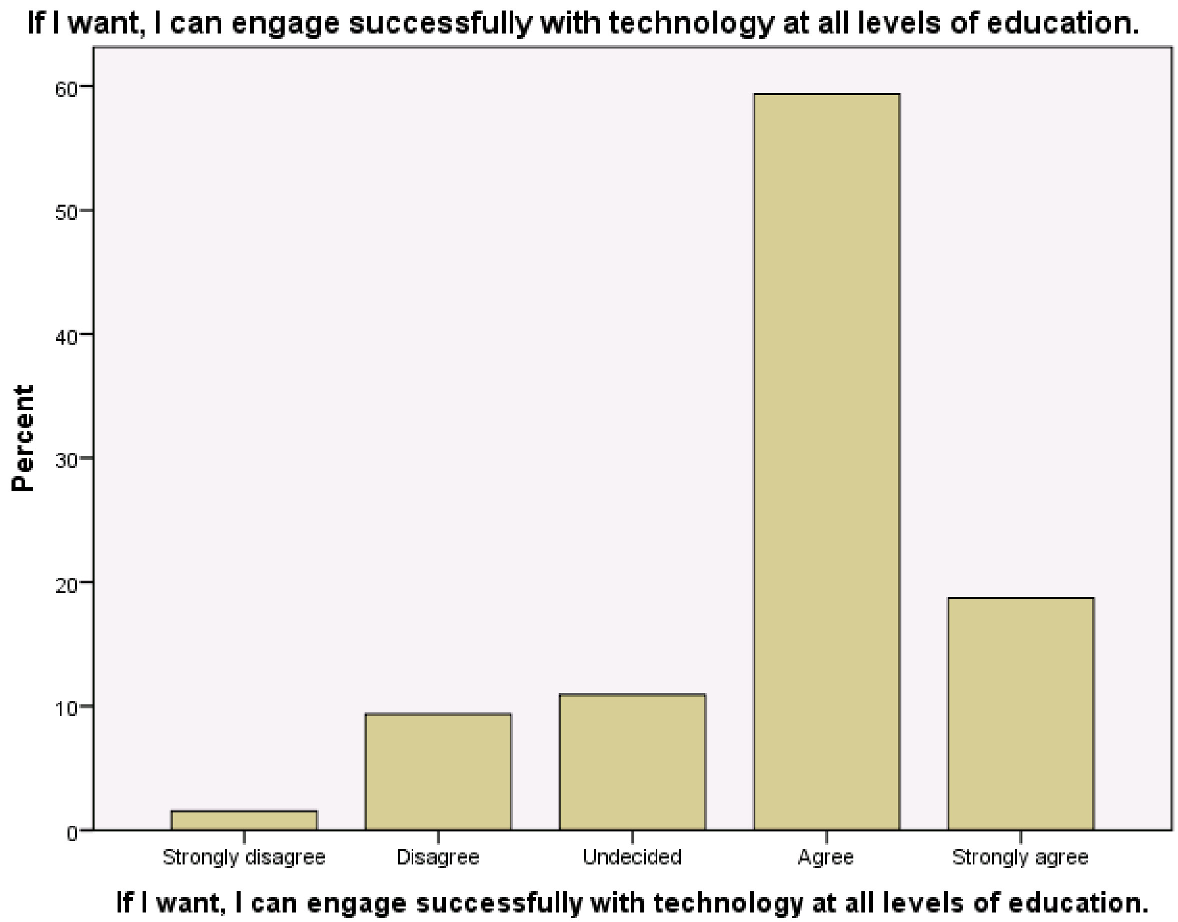


Table 4.1.5 shows that they have the necessary skills to use technology in teaching mathematics

I have the necessary skills to use technology in teaching mathematics.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	4.7	4.7	4.7
	Disagree	3	4.7	4.7	9.4
	Undecided	11	17.2	17.2	26.6
	Agree	30	46.9	46.9	73.4
	Strongly agree	17	26.6	26.6	100.0
	Total	64	100.0	100.0	

The above table shows that, 30 respondents agreed that they have the necessary skills to use technology in teaching mathematics, that is about 46.9%, 17 respondents strongly agreed that they have the necessary skills to use technology in teaching mathematics, which is about 26.6%, 11 respondents undecided that they have the necessary skills to use technology in teaching mathematics which is 17.2%, while 3 respondents disagreed and strongly disagree, which is 4.7% respectively.

Figure 4.1.15

A bar chart showing the percentage of respondent that have the necessary skills to use technology in teaching mathematics.

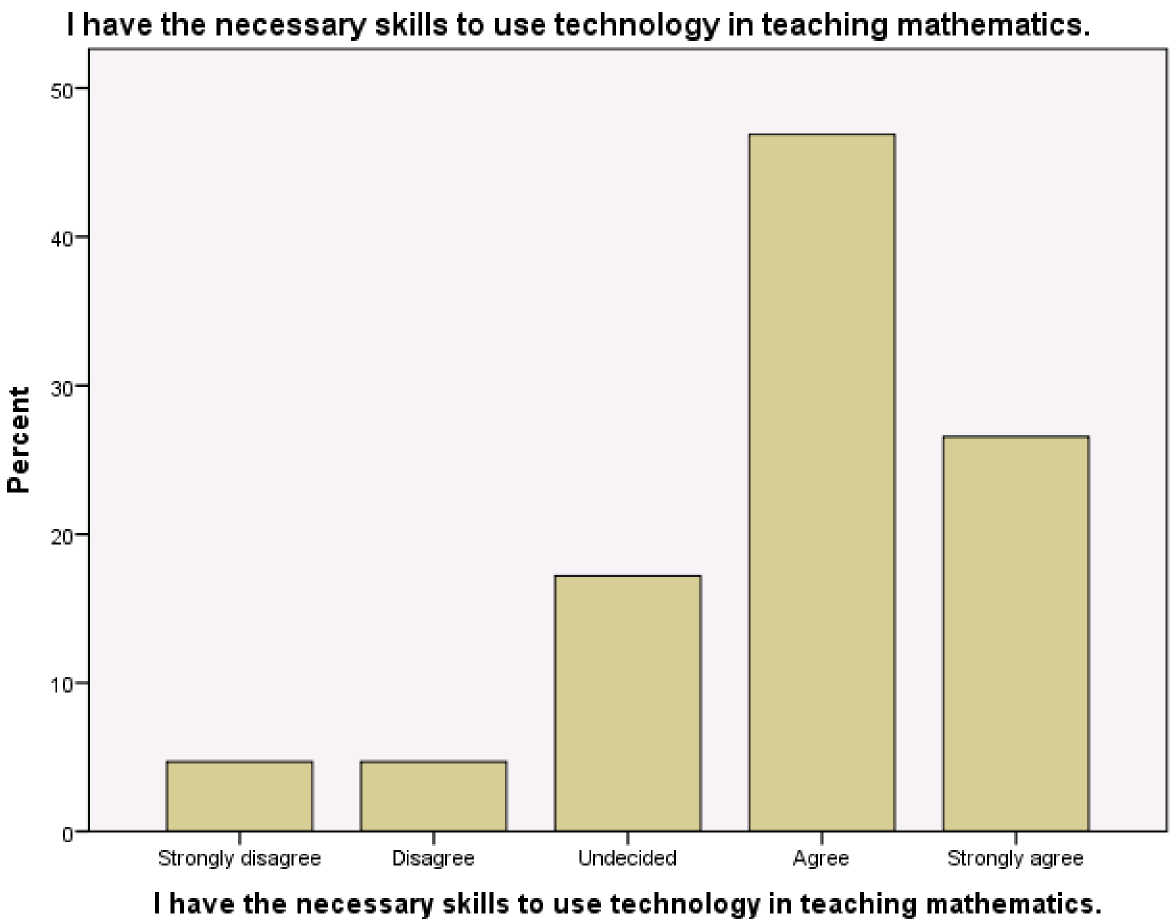


Table 4.1.6 shows that Poor infrastructure, inadequate technology and lack of sufficient technological tools are the factors that serve as barrier for integration of technology in mathematics.

Poor infrastructure, inadequate technology and lack of sufficient technological tools.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	7.8	7.8	7.8
	Disagree	9	14.1	14.1	21.9
	Undecided	4	6.3	6.3	28.1
	Agree	27	42.2	42.2	70.3
	Strongly agree	19	29.7	29.7	100.0
	Total	64	100.0	100.0	

The above table shows that, 27 respondents agreed that Poor infrastructure, inadequate technology and lack of sufficient technological tools are the factors that serve as barrier for integration of technology in mathematics, that is about 42.2%, 19 respondents strongly agreed that Poor infrastructure, inadequate technology and lack of sufficient technological tools are the factors that serve as barrier for integration of technology in mathematics, which is about 29.7%, 4 respondents undecided that Poor infrastructure, inadequate technology and lack of sufficient technological tools are the factors that serve as barrier for integration of technology in mathematics which is 6.3%, while 9 respondents disagreed which is about 14.1% and 5 respondents strongly disagree, which is 7.8% respectively.

Figure 4.1.16

A bar chart showing the percentage of respondent that Poor infrastructure, inadequate technology and lack of sufficient technological tools are the factors that serve as barrier for integration of technology in mathematics.

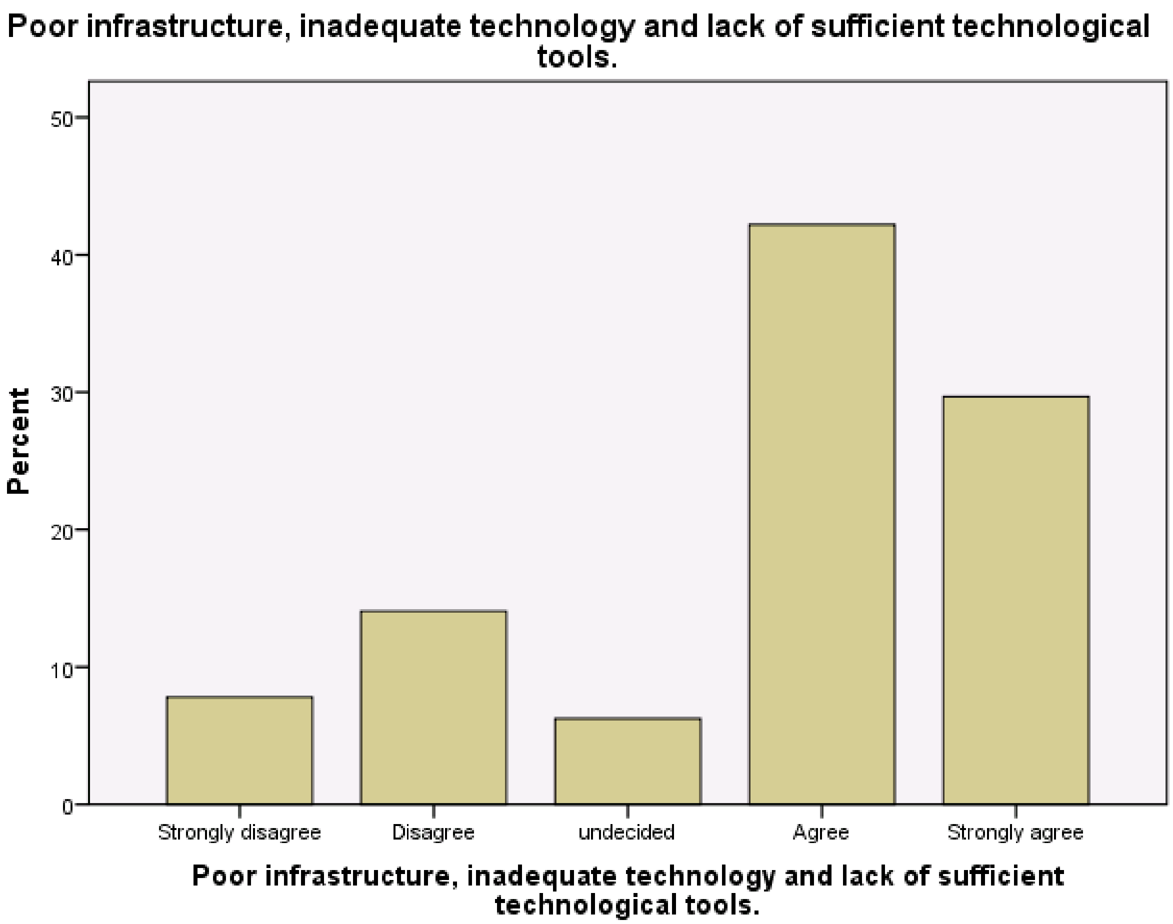


Table 4.1.7 shows that lack of resources, including time, access to equipment, teaching and administrative support serve as barrier for hinders the integration of technology in mathematics.

Lack of resources, including time, access to equipment, teaching and administrative support.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	6.3	6.3	6.3
	Disagree	5	7.8	7.8	14.1
	Agree	28	43.8	43.8	57.8
	Strongly agree	27	42.2	42.2	100.0
	Total	64	100.0	100.0	

The above table shows that, 28 respondents agreed that lack of resources, including time, access to equipment, teaching and administrative support serve as barrier for hinders the integration of technology in mathematics, that is about 43.8%, 27 respondents strongly agreed that lack of resources, including time, access to equipment, teaching and administrative support serve as barrier for hinders the integration of technology in mathematics which is 42.2%, while 5 respondents disagreed, which is 7.8% and 4 respondents strongly disagreed which is about 6.3%.

Figure 4.1.17

A bar chart showing the percentage of respondent that lack of resources, including time, access to equipment, teaching and administrative support serve as barrier for hinders the integration of technology in mathematics.

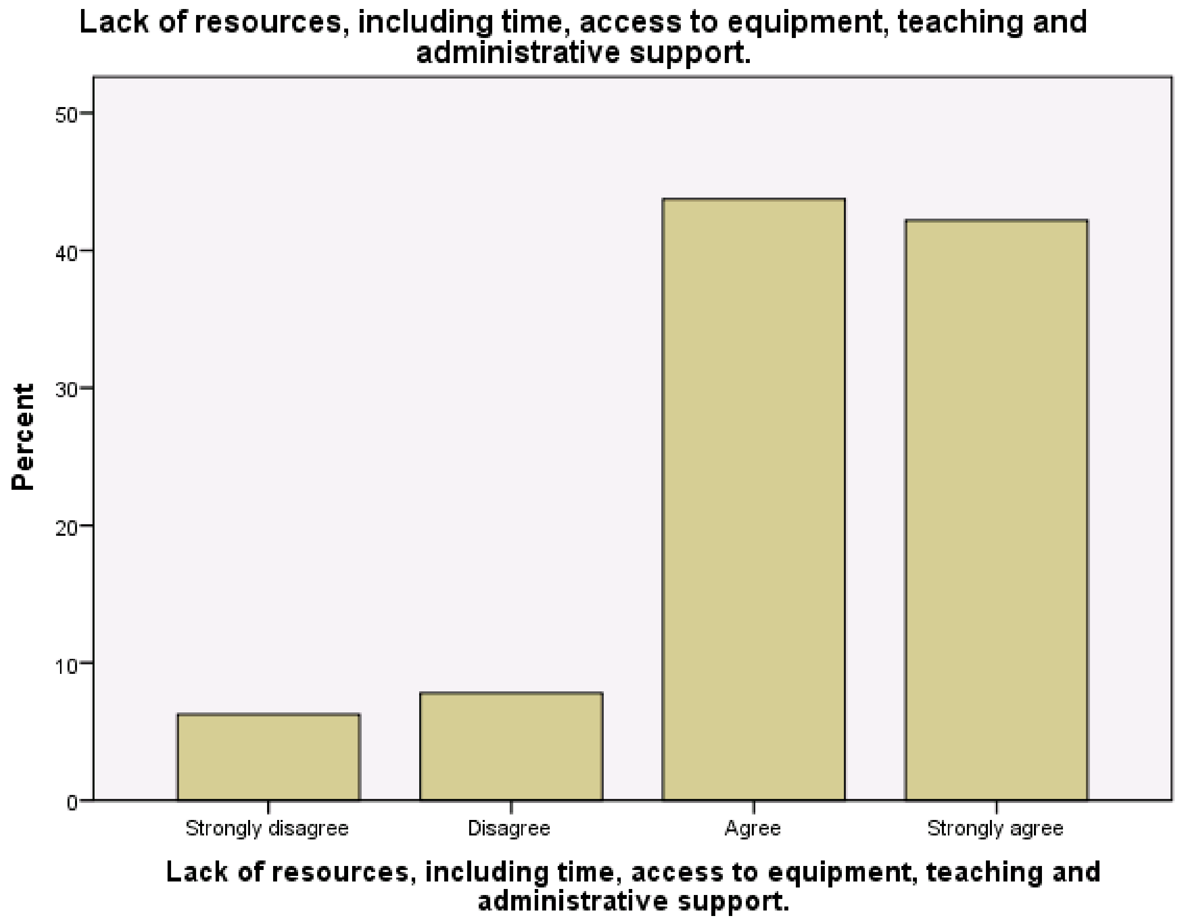


Table 4.1.8 shows that lack of technology skills and knowledge, specifically in pedagogy and classroom management are the factors that hinders the integration of technology into mathematics instruction.

Lack of technology skills and knowledge, specifically in pedagogy and classroom management.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	6	9.4	9.4	9.4
	Disagree	11	17.2	17.2	26.6
	Undecided	3	4.7	4.7	31.3
	Agree	26	40.6	40.6	71.9
	Strongly agree	18	28.1	28.1	100.0
	Total	64	100.0	100.0	

The above table shows that, 26 respondents agreed that lack of technology skills and knowledge, specifically in pedagogy and classroom management are the factors that hinders the integration of technology into mathematics instruction, that is about 40.6%, 18 respondents strongly agreed that lack of technology skills and knowledge, specifically in pedagogy and classroom management are the factors that hinders the integration of technology into mathematics instruction, which is about 28.1%, 3 respondents undecided that lack of technology skills and knowledge, specifically in pedagogy and classroom management are the factors that hinders the integration of technology into mathematics instruction which is 4.7%, while 11 respondents disagreed which is about 17.2% and 6 respondents strongly disagree, which is 9.4%.

Figure 4.1.18

A bar chart showing the percentage of respondent that lack of technology skills and knowledge, specifically in pedagogy and classroom management are the factors that hinders the integration of technology into mathematics instruction.

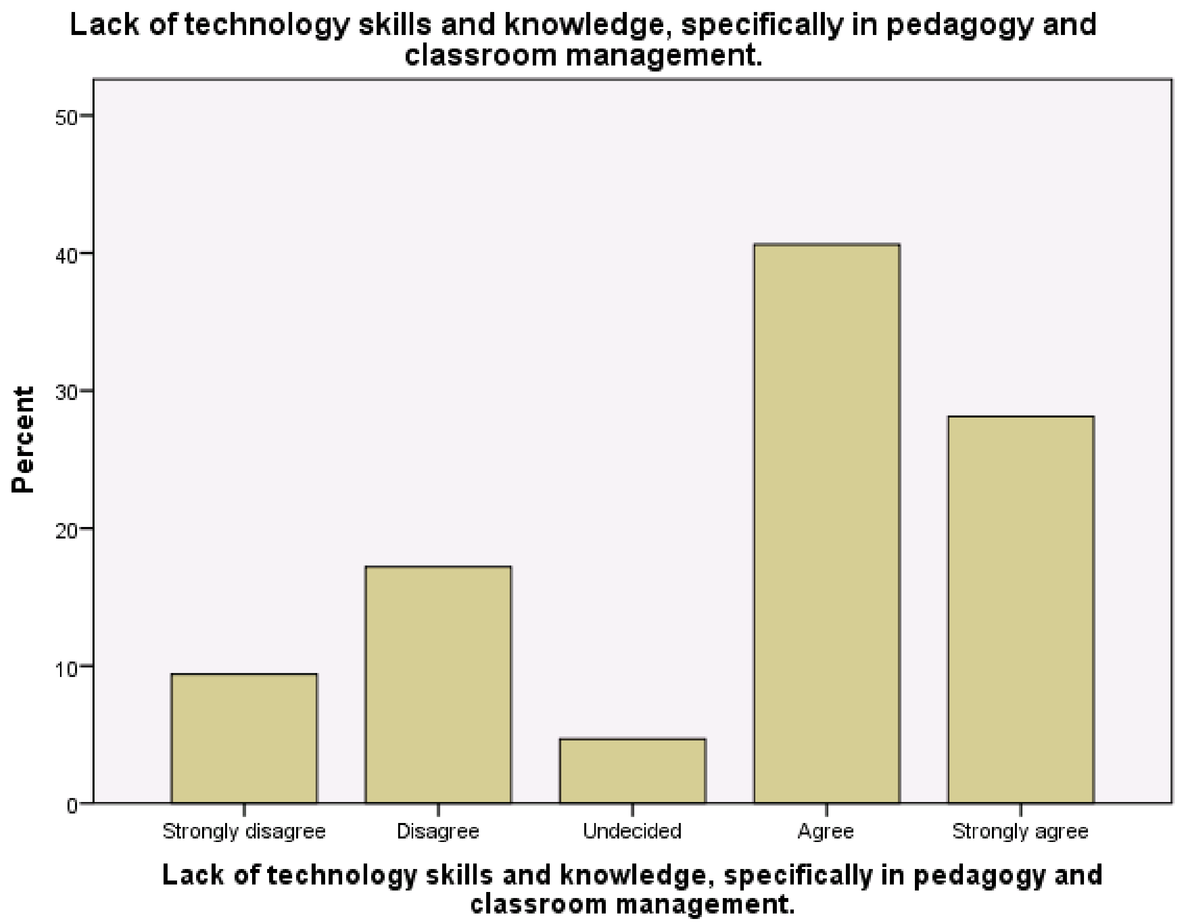


Table 4.1.9 shows that Institutional barriers, including leaderships, class scheduling and school planning are the factors that hinder the integration of technology in mathematics.

Institutional barriers, including leaderships, class scheduling and school planning.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	7.8	7.8	7.8
	Disagree	6	9.4	9.4	17.2
	Undecided	14	21.9	21.9	39.1
	Agree	25	39.1	39.1	78.1
	Strongly agree	14	21.9	21.9	100.0
	Total	64	100.0	100.0	

The above table shows that, 25 respondents agreed that institutional barriers, including leaderships, class scheduling and school planning are the factors that hinder the integration of technology in mathematics, that is about 39.1%, 14 respondents strongly agreed that institutional barriers, including leaderships, class scheduling and school planning are the factors that hinder the integration of technology in mathematics, which is about 21.9%, 14 respondents undecided that institutional barriers, including leaderships, class scheduling and school planning are the factors that hinder the integration of technology in mathematics, which is 21.9%, while 6 respondents disagreed which is about 9.4% and 5 respondents strongly disagree, which is 7.8%.

Figure 4.1.19

A bar chart showing the percentage of respondent Institutional barriers, including leaderships, class scheduling and school planning are the factors that hinder the integration of technology in mathematics.

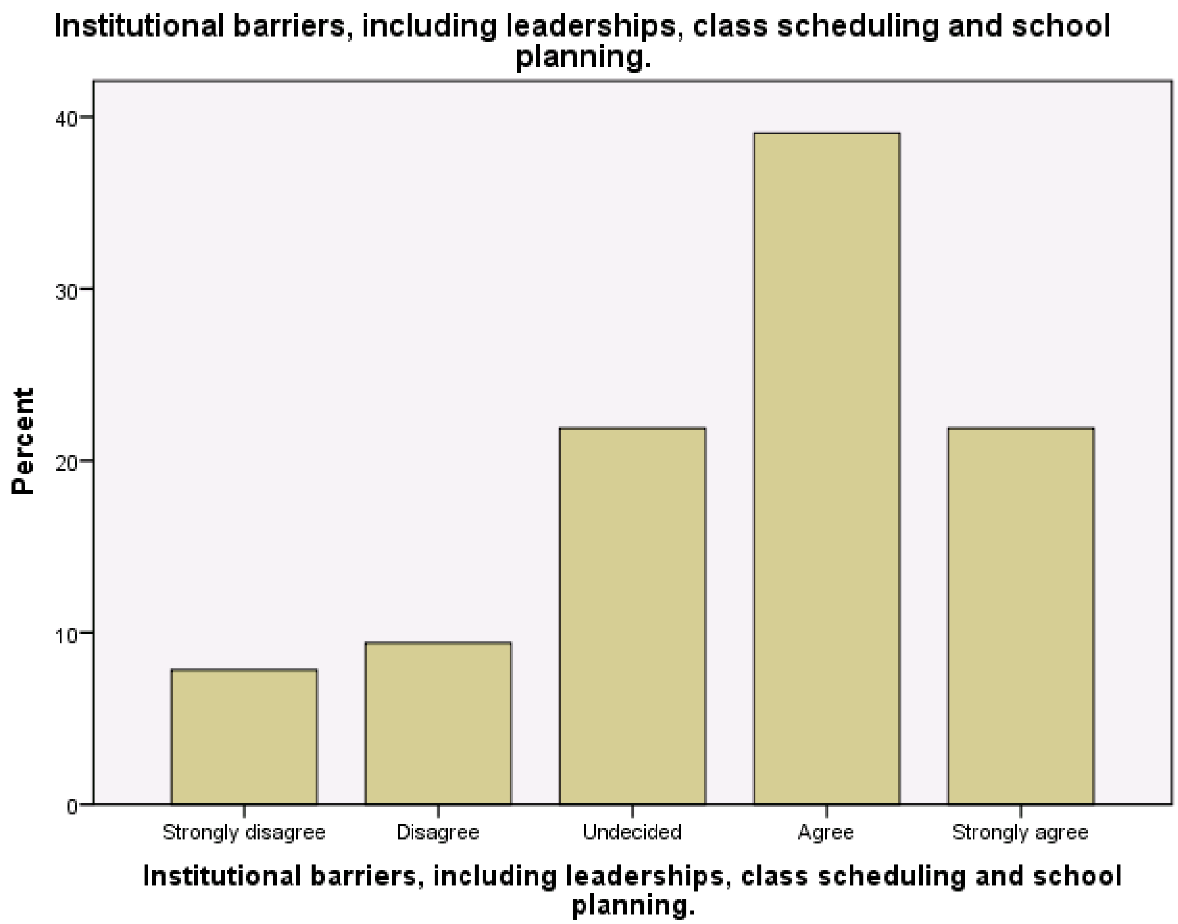


Table 4.1.10 shows that teachers' attitudes and beliefs about technology's benefits and relevance hinder the integration of technology in mathematics.

Teachers' attitudes and beliefs about technology's benefits and relevance.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	4.7	4.7	4.7
	Disagree	12	18.8	18.8	23.4
	undecided	14	21.9	21.9	45.3
	Agree	24	37.5	37.5	82.8
	Strongly agree	11	17.2	17.2	100.0
	Total	64	100.0	100.0	

The above table shows that, 24 respondents agreed that teachers' attitudes and beliefs about technology's benefits and relevance hinder the integration of technology in mathematics, that is about 37.5%, 11 respondents strongly agreed that teachers' attitudes and beliefs about technology's benefits and relevance hinder the integration of technology in mathematics, which is about 17.2%, 14 respondents undecided that teachers' attitudes and beliefs about technology's benefits and relevance hinder the integration of technology in mathematics, which is 21.9%, while 12 respondents disagreed which is about 18.8% and 3 respondents strongly disagree, which is 4.7%.

Figure 4.1.20

A bar chart showing the percentage of respondent that teachers' attitudes and beliefs about technology's benefits and relevance hinder the integration of technology in mathematics.

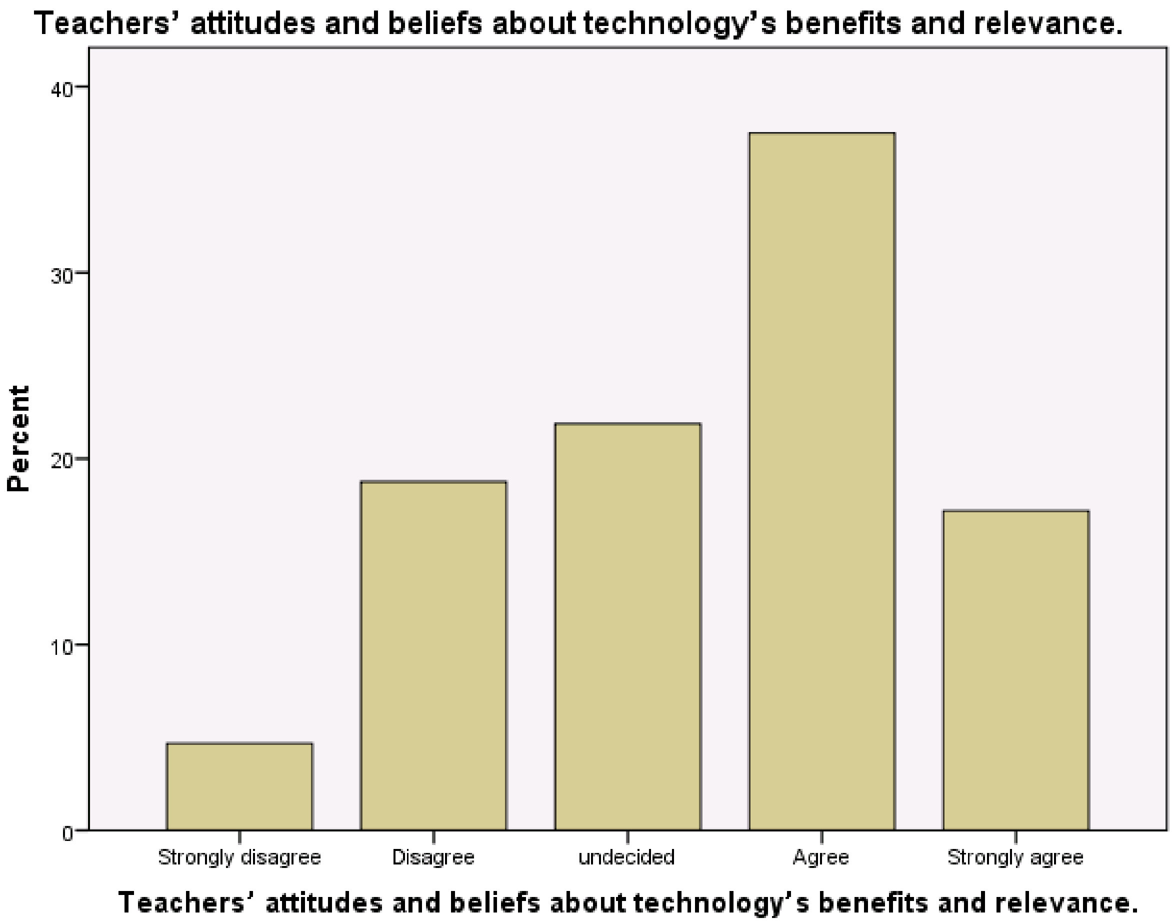


Table 4.1.11 shows that expose students to goggle classroom by giving everyone edit access to a goggle slide deck is the one of the ways by which mathematic can be taught by using technology.

Expose students to goggle classroom by giving everyone edit access to a goggle slide deck.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	7.8	7.8	7.8
	Disagree	3	4.7	4.7	12.5
	undecided	11	17.2	17.2	29.7
	Agree	40	62.5	62.5	92.2
	Strongly agree	4	6.3	6.3	98.4
					100.0
	Total	64	100.0	100.0	

The above table shows that, 40 respondents agreed that expose students to goggle classroom by giving everyone edit access to a goggle slide deck is the one of the ways by which mathematic can be taught by using technology, that is about 62.5%, 4 respondents strongly agreed that expose students to goggle classroom by giving everyone edit access to a goggle slide deck is the one of the ways by which mathematic can be taught by using technology, which is about 6.3%, 11 respondents undecided that expose students to goggle classroom by giving everyone edit access to a goggle slide deck is the one of the ways by which mathematic can be taught by using technology, which is 17.2%, while 3 respondents disagreed which is about 4.7% and 5 respondents strongly disagree, which is 7.8%.

Figure 4.1.21

A bar chart showing the percentage of respondents that exposing students to goggle classroom by giving everyone edit access to a goggle slide deck is the one of the ways by which mathematic can be taught by using technology.

Expose students to goggle classroom by giving everyone edit access to a goggle slide deck.

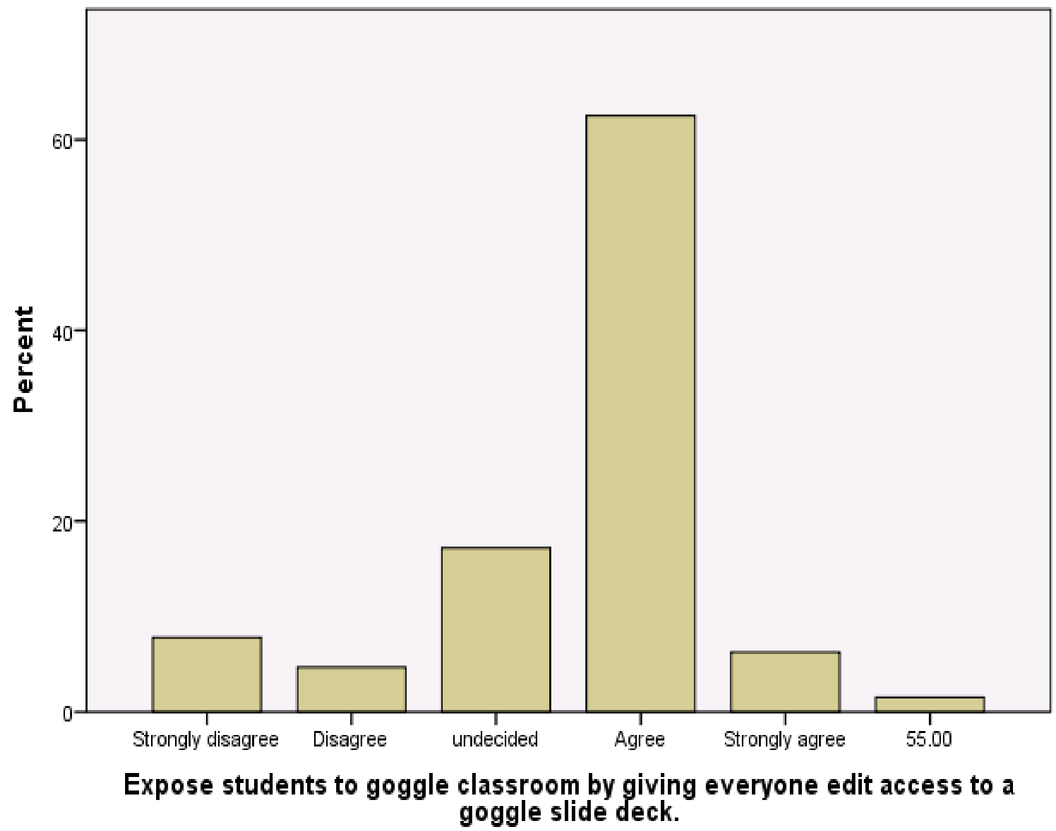


Table 4.1.11 show that curricula planner should include using of technology into mathematics curriculum.

Curricula planner should include using of technology into mathematics curriculum.

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Strongly disagree	1	1.6	1.6	1.6
	Disagree	2	3.1	3.1	4.7
	Undecided	4	6.3	6.3	10.9
	Agree	37	57.8	57.8	68.8
	Strongly agree	20	31.3	31.3	100.0
	Total	64	100.0	100.0	

The above table shows that, 37 respondents agreed that curricula planner should include using of technology into mathematics curriculum, that is about 57.8%, 4 respondents strongly agreed that curricula planner should include using of technology into mathematics curriculum, which is about 31.3%, 4 respondents undecided that curricula planner should include using of technology into mathematics curriculum, which is 6.3%, while 2 respondents disagreed which is about 3.1% and 1 respondents strongly disagree, which is 1.6%.

Figure 4.1.21

A bar chart showing the percentage of respondents that curricula planner should include using of technology into mathematics curriculum.

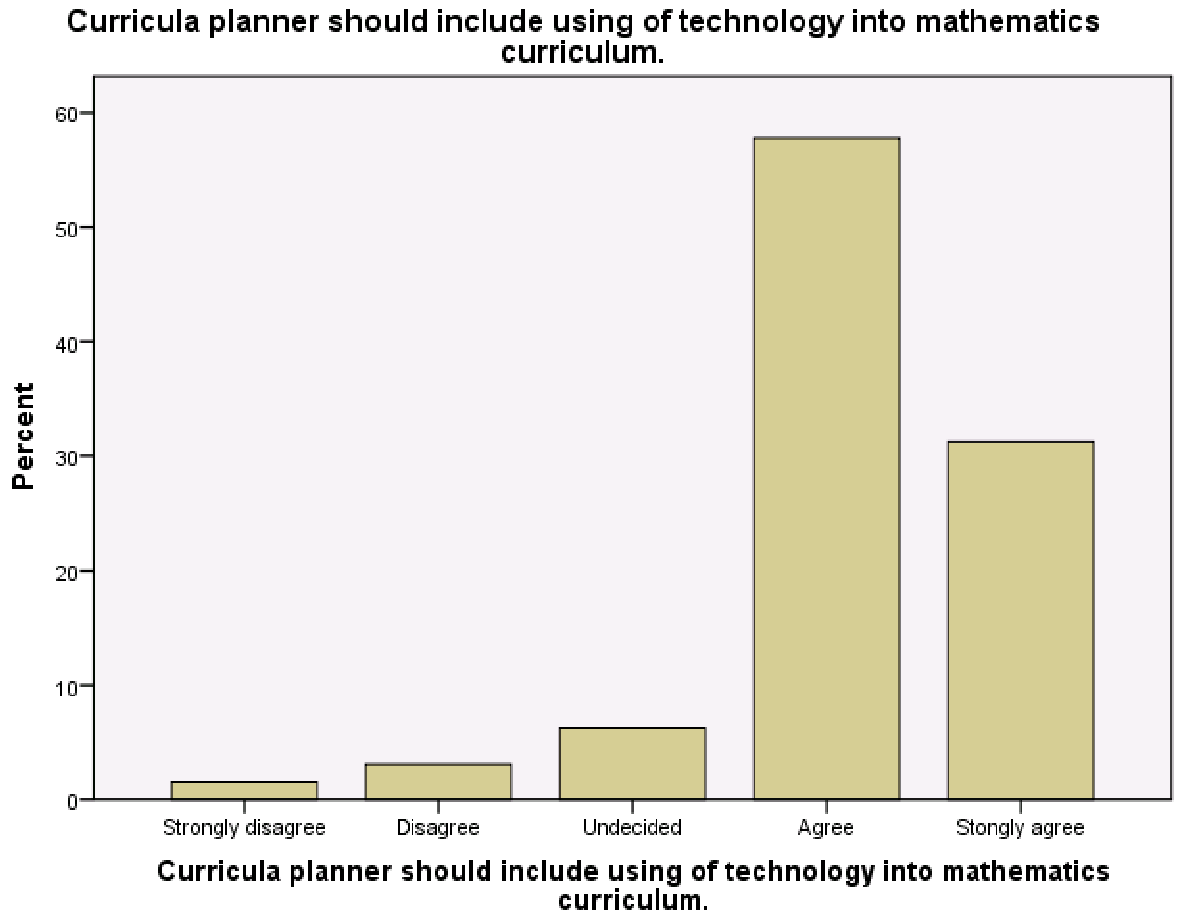


Table 4.1.12 shows that use of video, audio and text can mutually reinforce concepts and enable students to engage with the same ideas in multiple ways.

Use of video, audio and text can mutually reinforce concepts and enable students to engage with the same ideas in multiple ways.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	3.1	3.1	3.1
	Undecided	4	6.3	6.3	9.4
	Agree	25	39.1	39.1	48.4
	Strongly agree	33	51.6	51.6	100.0
	Total	64	100.0	100.0	

The above table shows that, 25 respondents agreed that use of video, audio and text can mutually reinforce concepts and enable students to engage with the same ideas in multiple ways , that is about 39.1%, 33 respondents strongly agreed that use of video, audio and text can mutually reinforce concepts and enable students to engage with the same ideas in multiple ways, which is about 51.6%, 4 respondents undecided that use of video, audio and text can mutually reinforce concepts and enable students to engage with the same ideas in multiple ways, which is 6.3%, while 2 respondents strongly disagreed, which is 3.1%.

Figure 4.1.22

A bar chart showing the percentage of respondents that use of video, audio and text can mutually reinforce concepts and enable students to engage with the same ideas in multiple ways.

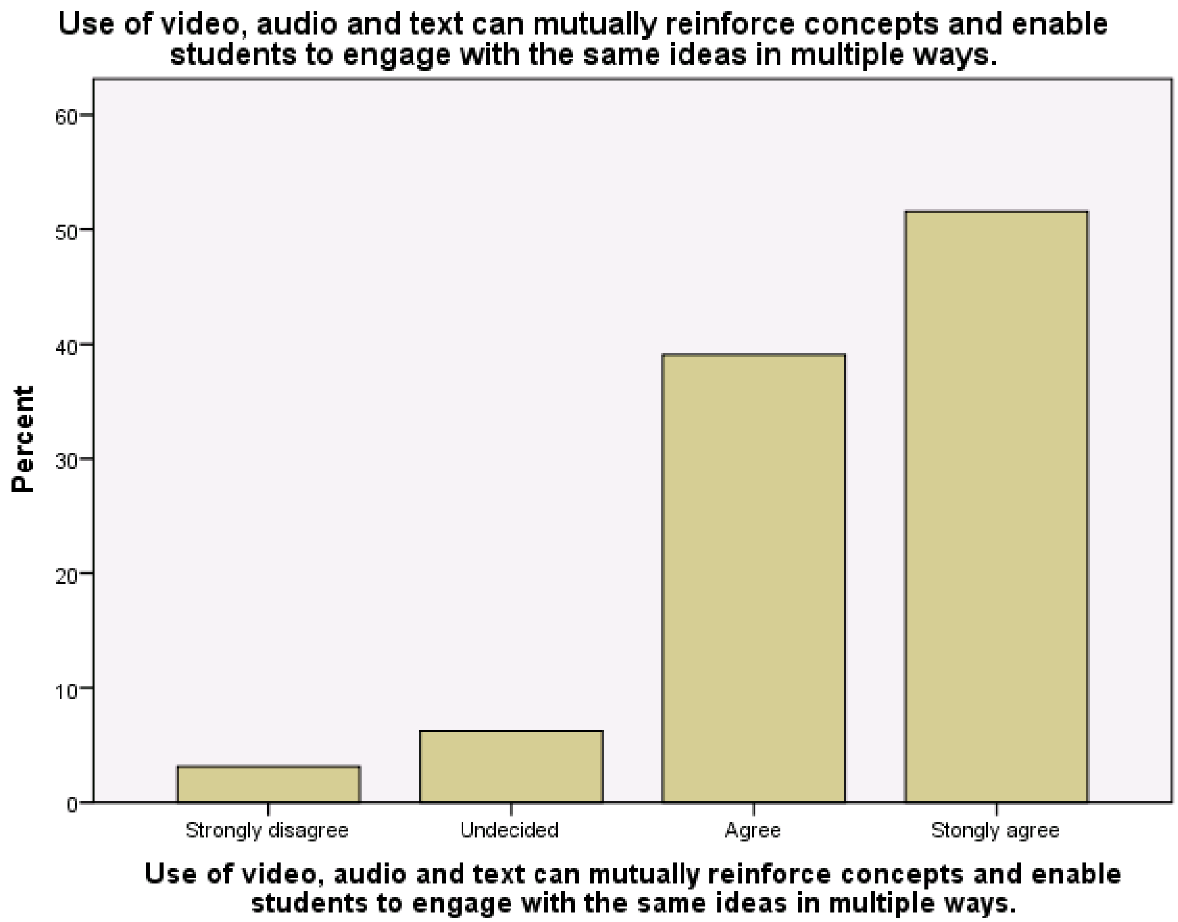


Table 4.1.13 shows that educational games can give students some new ideas about how games can help them learn.

Educational games, can give students some new ideas about how games can help them learn.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	1.6	1.6	1.6
	Undecided	3	4.7	4.7	6.3
	Agree	32	50.0	50.0	56.3
	Strongly agree	28	43.8	43.8	100.0
	Total	64	100.0	100.0	

The above table shows that, 32 respondents agreed that educational games can give students some new ideas about how games can help them learn , that is about 50.0%, 28 respondents strongly agreed that educational games can give students some new ideas about how games can help them learn, which is about 43.8%, 3 respondents undecided that educational games can give students some new ideas about how games can help them learn, which is 4.7%, while 1 respondent strongly disagreed, which is 1.6%.

Figure 4.1.23

A bar chart showing the percentage of respondents that educational games can give students some new ideas about how games can help them learn.

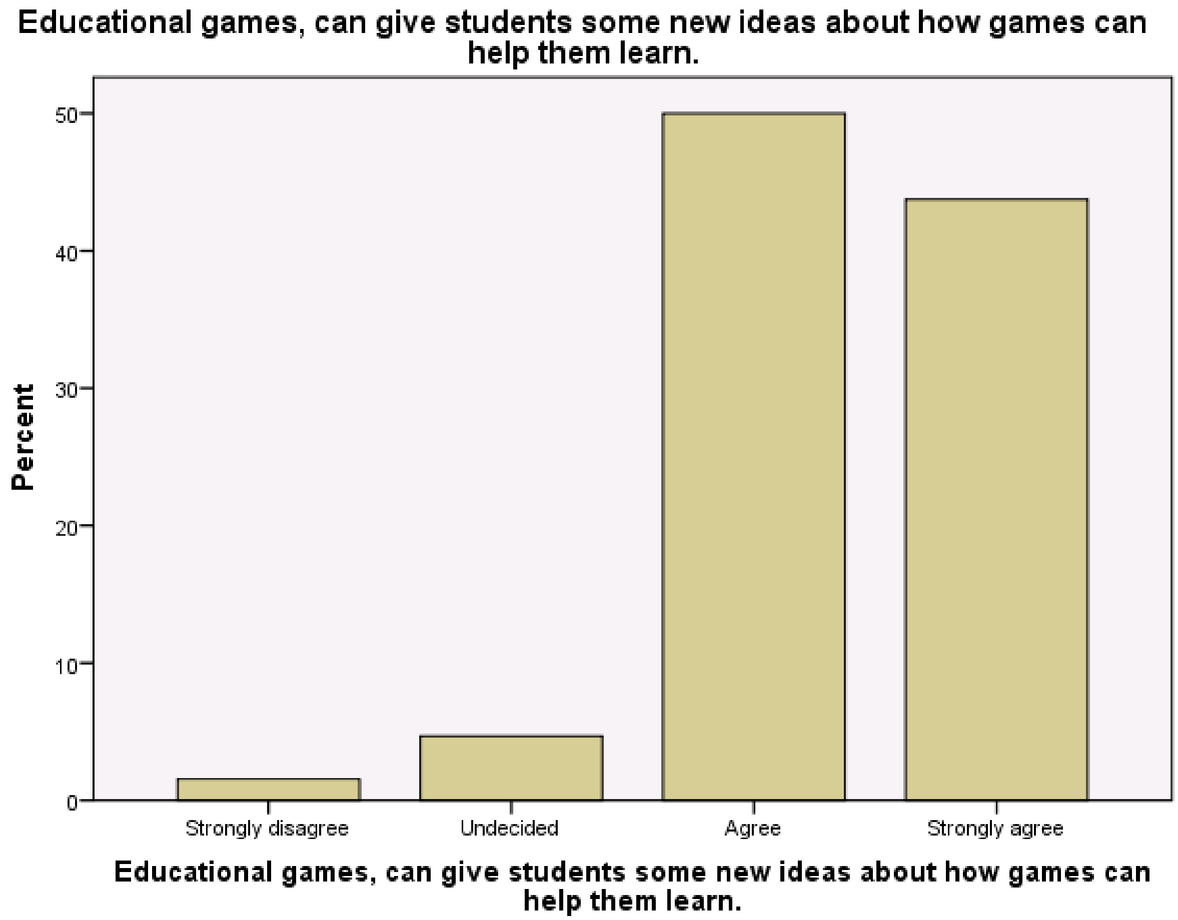


Table 4.1.14 shows that workshop, seminar should be organized for teachers so that they can be introduced to the concept of the technology pedagogy content knowledge (TPCK) frame work and learning technology by design.

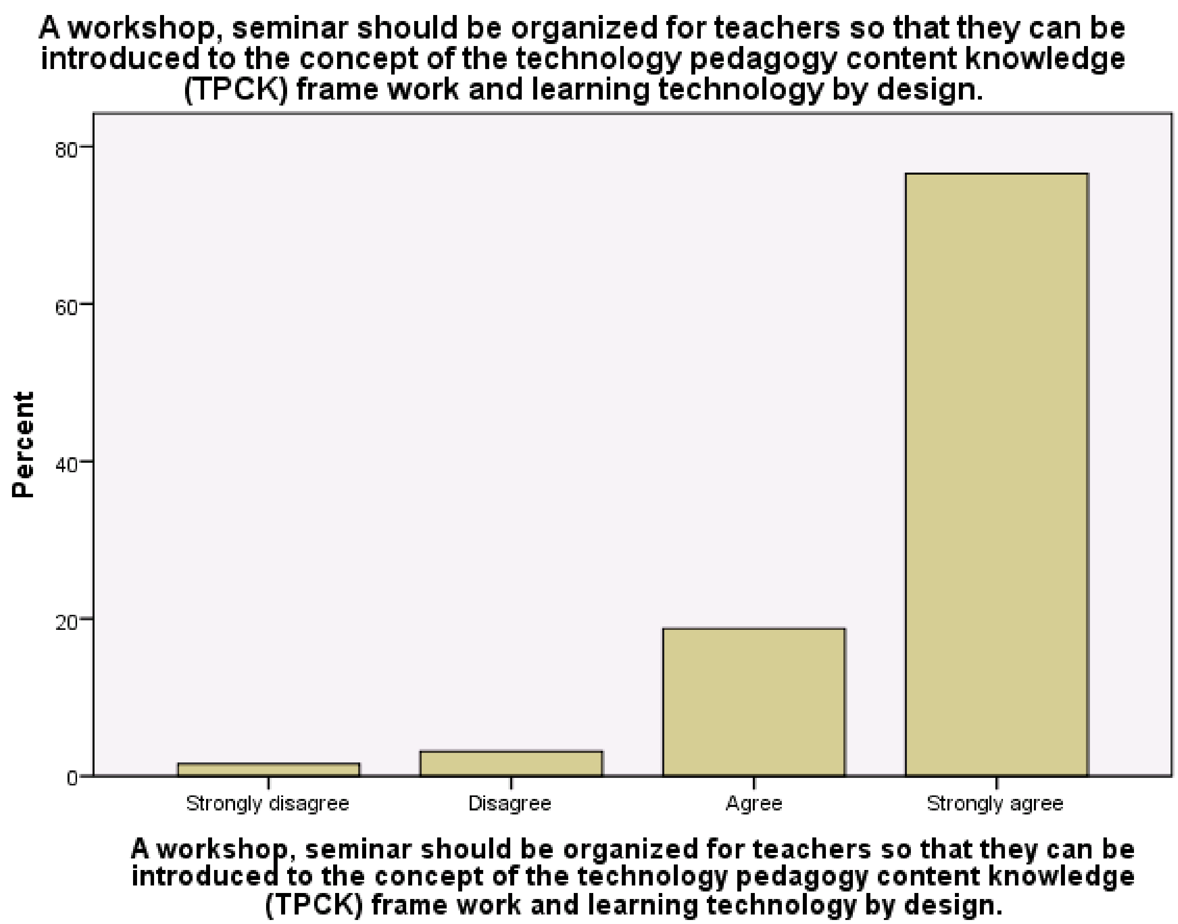
A workshop, seminar should be organized for teachers so that they can be introduced to the concept of the technology pedagogy content knowledge (TPCK) frame work and learning technology by design.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	1.6	1.6	1.6
	Disagree	2	3.1	3.1	4.7
	Agree	12	18.8	18.8	23.4
	Strongly agree	49	76.6	76.6	100.0
	Total	64	100.0	100.0	

The above table shows that, 12 respondents agreed that workshop, seminar should be organized for teachers so that they can be introduced to the concept of the technology pedagogy content knowledge (TPCK) frame work and learning technology by design, that is about 18.8%, 49 respondents strongly agreed workshop, seminar should be organized for teachers so that they can be introduced to the concept of the technology pedagogy content knowledge (TPCK) frame work and learning technology by design which is 76.6%, while 2 respondents disagreed, which is 3.1% and 1 respondent strongly disagreed which is about 1.6%.

Figure 4.1.24

A bar chart showing the percentage of respondents that workshop, seminar should be organized for teachers so that they can be introduced to the concept of the technology pedagogy content knowledge (TPCK) frame work and learning technology by design.



APPENDICES C

RELIABILITY

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KCAT5 FBHIT1 FBHIT2 FBHIT3 FBHIT4 FBHIT5 WMTT1 WMTT2 WMTT3 WMTT4 WMTT5

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/STATISTICS=DESCRIPTIVE SCALE CORR

/SUMMARY=TOTAL.

Reliability

Notes

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	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
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	Elapsed Time	00:00:00.05

Scale: Perceived Task Value

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	Excluded[a]	0	.0
	Total	20	100.0

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.702	.737	25

Item Statistics

	Mean	Std. Deviation	N
Using technology in mathematics class will make my students learn independently.	4.3000	.92338	20
Using technology in mathematics class can raise student performance.	4.0500	1.05006	20

Using technology in teaching mathematics enhance learning.	4.3000	.97872	20
Using technology in teaching mathematics encourages students self-learning.	4.1500	.93330	20
Using technology in teaching mathematics demonstrates the mathematics concepts to students.	3.8500	.98809	20
I have the willingness to use technology in teaching mathematics.	4.1500	.93330	20
I have the intention to use technology in teaching mathematics.	4.4000	.50262	20
I plan to use technology in teaching mathematics.	4.2000	.95145	20
Engaging with technology makes me feel frustrated.	2.9500	1.70062	20
Using technology in teaching mathematics is pleasant.	4.6500	.48936	20
I have the necessary efficiency to deal with technology in teaching mathematics.	3.8000	1.10501	20

I have the skills to use appropriate technology tools in teaching different mathematics topics.	2.9500	1.43178	20
Engaging with technology is so difficult.	3.1000	1.33377	20
If I want, I can engage successfully with technology at all levels of education.	3.9500	.99868	20
I have the necessary skills to use technology in teaching mathematics.	3.7500	1.25132	20
Poor infrastructure, inadequate technology and lack of sufficient technological tools.	3.8500	1.22582	20
Lack of resources, including time, access to equipment, teaching and administrative support.	4.0500	1.14593	20
Lack of technology skills and knowledge, specifically in pedagogy and classroom management.	3.8000	1.05631	20
Institutional barriers, including leaderships, class scheduling and school planning.	3.6000	1.09545	20

Teachers' attitudes and beliefs about technology's benefits and relevance.	3.6000	1.09545	20
Expose students to goggle classroom by giving everyone edit access to a goggle slide deck.	3.9000	.78807	20
Curricula planner should include using of technology into mathematics curriculum.	4.4000	.50262	20
Use of video, audio and text can mutually reinforce concepts and enable students to engage with the same ideas in multiple ways.	4.5000	.51299	20
Educational games, can give students some new ideas about how games can help them learn.	4.6500	.48936	20
A workshop, seminar should be organized for teachers so that they can be introduced to the concept of the technology pedagogy content knowledge (TPCK) frame work and learning technology by design.	4.3000	1.08094	20