THE IMPACT OF COVID-19 DISEASE ON THE PERFORMANCE OF TEACHING AND LEARNING OF MATHEMATICS IN SECONDARY SCHOOL LEVEL: A CASE OF TORORO GIRLS SCHOOL

BY

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AUGUST, 2024

DECLARATION

I, OUTA ANDREW hereby declare that this research report is my original work and has not been presented for any academic award to any other university or college.

Signature.....

Date.....

APPROVAL

This report has been under my supervision and it has my approval for submission in fulfillment for the award of the Bachelors of Science Education of Busitema University.

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DEDICATION

This work is dedicated to my beloved parents OKOBIO RAYMOND and KATIAKE DINNAH plus all my beloved sisters NAMUKOSE JULIET, BAIDI MONICA for the great effort they have struggled for paying my tuitions.

ACKNOWLEDGEMENT

First and foremost, my gratitude goes to none other than the Almighty God for giving me the grace to endure all the challenges faced during my study period.

I wish to extend gratitude to my supervisor Dr. FULGENSIA KAMUGISHA MBABAZI for the cumulative effort in guiding giving instructions as to the writing of this research report.

Special thanks go to my family for their understanding, patience and support during my study period.

Glory to God.

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ABSTRACT

The purpose of this research was to examine the impact of the COVID-19 disease on the performance in mathematics in secondary schools in Tororo District. Tororo Girls' School was selected for this study. Analytical survey research design was applied in this investigation. 125 respondents were selected at random for the research. These included students, teachers and a Headteacher. Information was collected with the use of the Promotional Mathematics Performance Score Sheet (PMPSS). Results revealed that students' performance in mathematics was very high before the COVID-19 disease but dropped drastically during the pandemic and slightly improved after the pandemic. There was a significant difference in students' performance in mathematics before and during the COVID-19 disease but there was no such difference in performance during and after the outbreak. In addition, there was no obvious difference in performance between the gender during the pandemic. The study recommended among others that Mathematics teachers should work harder in instructional delivery and also employ diagnostic and remedial instructional strategy to improve the performance of students which has been negatively impacted by the COVID-19 disease.

KEY WORDS: COVID-19 disease; Performance; Online; Pandemic; Teaching; Learning.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

According to the World Health Organization (2020), a new strain of coronavirus called COVID-19 is to blame for this disease. The word “corona” and “virus” are represented by letters CO and VI respectively(Khan, Naushad, Fahad, Faisal, & Muhammad, 2020). Once known as “2019 novel coronavirus”, this condition is now caused by COVID-19, a new virus that is related to the same viral family that causes SARS and several strains of the common. Fever, Coughing and difficulty breathing were all the symptoms of COVID-19. Pneumonia and other breathing difficulties are possible complications of any infections. Occasionally, the disease might be fatal. These symptoms are similar to those of the influenza virus and the common cold, both of which are much more prevalent than COVID-19. Therefore, testing is required to confirm the presence of COVID-19. The first case of COVID-19 was reported in December 2019 in Wuhum, China(Ghebremichael, Tewolde, Andegiorgish, & Pan, 2023).

The COVID-19 disease has caused widespread uncertainty in many sectors of national and international society, including the educational system. The spread of COVID-19 disease has had a detrimental impact on the teaching and learning of mathematics. It’s devastating effects on education and daily life forced fundamental changes in our culture. In schools, the traditional approach of teaching them online students one-on-one must be given way to the more convenient and modern approach of teaching them online(Xiang et al., 2021). Including educational School children in approximately 192 countries experienced disruption of their schedules due to the temporary closures of the schools (UNESCO 2020). Due to the severity of the COVID-19 disease threat, the entire planet was placed on lockdown instead of few countries like South Africa, Tanzania & Kenya at large with the public gathering like commercial transactions, organization activities , all connected social and religious gatherings, and schools were closed for several month in the attempt to control the spread of the corona virus, children had to learn from home, with schooling provided the variety of ways ranging from self- study on provided worksheet to online schooling by video call. (Kraaijeveld, 2021) supposed to start moving starting from 6:00 AM - 12:00PM and the imposed heavy short-term cost on the economy since people could no longer work. with vaccination becoming widely available in the hospital are lowering down to the peak level.

One of the nations impacted by COVID-19 was Uganda, where students were expected to complete their coursework online. Uganda's education system is centered on traditional, in-person classroom instruction, and it mandates daily attendance for students. These incidents occurred not just in Uganda but also in France, Germany, and Italy. Schools in the Tororo District were closed as a result of the COVID-19 outbreak, which also affected other districts. In addition to providing reading materials, the Ugandan government, through the ministry of education and sports, pushed online learning by utilizing televisions instead of radios. (Smeby & Smeby, 2021).

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1.2. Statement of the Problem

Diverse perspectives on education emphasize that knowledge acquisition necessitates social interaction and experiences. Virtual classrooms were substituted for traditional face-to-face classrooms during the COVID-19 pandemic due to control measures such school lockdowns and social isolation, which made it challenging for kids to learn using the established platform. A public health emergency has caused a school to close due to the new coronavirus, which has had an unparalleled impact on instructors and children worldwide. Given the significant barriers to virtual learning in a developing country like Uganda without suitable e-learning application adoption in schools, what impact has the COVID-19 pandemic's unanticipated emergence had on students' math performance? Is there a connection between the spread of C0VID-19 and a drop in secondary school students' mathematical proficiency?

Research Objectives

The following are the research objectives

The main Objectives

To determine the impact of COVID-19 disease on the performance of teaching and learning of mathematics during the COVID-19 pandemic

Specific objectives of research

i. To find out how home finances have affected teaching and learning during COVID-19 pandemic.
ii. To find out how technology has affected teaching and learning during COVID-19 pandemic.
iii. To find out how the environment has affected teaching and learning during COVID-19 pandemic.

Research questions and their relevancies

What is the relationship between the income level with teaching and learning during Covid-19 pandemic in study?

What is the relationship between learning environment with teaching and learning during Covid-19 pandemic in study?

What is the relationship between technology with teaching and learning during Covid-19 pandemic in study?

Scope of the study

This comprised of the time scope, content, and geographical scope

Content scope

The study is on the Impact of COVID-19 on teaching and learning in mathematics during and after lockdown. The study concentrated on the effects of COVID-19 on students' performance in mathematics during and after lockdown.

Geographical Scope

The study was conducted at Tororo Girls' School located in Tororo district located approximately 3 kilometers from Tororo town along Tororo-Malaba highway.

Significance of the study

This study was useful in the following ways;

I. Administrators

The study worked as an evaluation platform for the online study in Tororo district during the COVID-19 pandemic, using questionnaires, responses from students were gathered to find out which platform is most appropriate to conduct the study, for instance smartphones, on radio stations, television stations.

II. Teachers

The study was beneficial to teachers in the process of assessment, this was done through giving learners tests and assignments.

III. Learners

The study was important to learners as it educated them to know the impact on the performance of teaching and learning during COVID-19 disease and they used them to find out the possible solution.

IV. Government

The study was very crucial for the government to find out ways on how it can support the learners in future providing protective measures like Standard operating Procedures (SOPS), encouraging people to go for medication among others, through financing networks that can enable learners to access the internet for free hence enhancing learning.

Definition of the terms

I. Coronavirus

Coronaviruses are a large family of viruses that can cause illness in animals or humans. There are several different types of coronaviruses, including some that cause common cold symptoms and others that can lead to more severe respiratory illnesses, such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome(SARS). The SARS-CoV-2 virus is the most recent example of a coronavirus that has caused a pandemic.

II. Academic Performance

Academic performance refers to the level of success that a student achieves in their academic studies. This can be measured in various ways, including grades, test scores, and other assessments. During the COVID-19 pandemic, academic performance has been

affected by school closures, remote learning, and other disruptions to the traditional educational environment.

III. Pandemic Disease

A pandemic is an epidemic that has spread across multiple countries or continents, affecting a large number of people. A pandemic disease is a disease that has become a pandemic, such as COVID-19. Pandemics can have significant social, economic, and health impacts on individuals and communities around the world.

IV. Mathematics

Mathematics is the study of numbers, shapes, and structures. It is a fundamental subject that is taught in schools around the world. During the COVID-19 pandemic, mathematics has been used to model the spread of the virus, predict its future trajectory, and evaluate the effectiveness of various interventions.

V. Standard Operating Procedure (SOP)

A standard operating procedure (SOP) is a set of step-by-step instructions that describe how to perform a specific task or process. SOPs are used in a variety of settings, including healthcare, manufacturing, and education(Johnson, Rickel, & Lester, 2000). The SARS-CoV-2 virus is a type of virus that causes COVID-19. Viruses can be spread through respiratory droplets, contact with infected surfaces, or other means of transmission.

CHAPTER TWO: LITERATURE REVIEW

Introduction

This chapter presents related literature and is presented in themes namely relationship of income level with teaching and learning during COVID-19 pandemic in Tororo district, the relationship between how environmental factors and teaching and learning during COVID-19 pandemic in Tororo district and the relationship of technology with teaching and learning in Tororo district.

Relationship of income level with teaching and learning during COVID-19 pandemic on the performance of teaching and learning mathematics.

The COVID-19 pandemic highlighted the profound effects of income level on the performance of teaching and learning mathematics. During the pandemic, students from lower-income families faced significant obstacles that adversely impacted their educational outcomes. Limited access to essential resources such as technology and stable internet connections made online learning challenging, contributing to widening educational disparities(Van Lancker & Parolin, 2020).

Research has shown that lower-income students experienced greater learning losses compared to their higher-income peers due to these barriers(Kuhfeld, Soland, & Lewis, 2020).

Students lacked cell phones or laptops that are commonly used during online teaching or learning processes. Motivation or enthusiasm from the ministry of education and sports provides comfort to a teacher so that learning can take place smoothly(Karpman, et al, 2020).

The pandemic's shift to remote education thus underscored the critical role of socioeconomic factors in shaping educational experiences and outcomes, revealing a need for targeted interventions to support disadvantaged students and address the inequities exposed by the crisis.

Relationship of home environment with teaching and learning during COVID-19 pandemic on the performance of mathematics

The home environment played a critical role in shaping the effectiveness of teaching and learning during the COVID-19 pandemic, particularly impacting students' performance in mathematics. The abrupt shift to online learning highlighted stark differences in the quality of home learning environments. Students from supportive and resource-rich home environments generally had better access to necessary tools and a conducive space for learning, which facilitated their academic success(Cleveland-Innes & Campbell, 2021). In contrast, those from less supportive

environments faced numerous challenges, such as inadequate study spaces, lack of quiet areas for concentration, and limited parental support, which negatively affected their performance in mathematics(Garbe, Steger, & Shelton, 2020). The absence of a structured and supportive home environment often led to lower engagement and achievement levels among students, underscoring the importance of a stable and resourceful home setting for effective online education(Huisman & Smits, 2021).

Teachers are less enthusiastic with distance learning than with face-to-face learning. Some Teachers were not in position to use the electronic tools to teach the students online, poor network during the teaching which affected both the teachers and the students so they cannot gauge the understanding of learners when learning online(Hargreaves, 2000).

This disparity in home learning conditions has contributed to the widening achievement gap observed during the pandemic.

Relationship of technology and teaching with learning during COVID-19 pandemic in the performance of mathematics

The emphasis on the duties and obligations of learners in teaching during online study, and the ability of learners to understand ICT have impacted the success of online learning during online study. Students who do not have online teaching experience or have difficulty running technology and information tools will usually find it challenging to carry out online learning because online study forces learners to master a variety of applications (Conrad & Donaldson, 2011). Even learners who have learning experience can find it difficult to run applications. This condition becomes a burden for learners in implementing instruction, so learning is not optimal. For learners who master applications, technology tools, and computers, online learning can be an effective instructional method to use during online learning. So far, some learners have never been taught online, but because they have to learn online, they find it challenging to implement it because they

lack knowledge of technology (Ko & Rossen, 2017). Not all parents have cell phones/laptops, and Internet signals are poor, especially in the suburbs. The challenges that these obstacles present determine the instructional activities that can take place. Problems can arise if these technical obstacles cannot be overcome and mean that student participation in learning is not optimal. As a result, some students cannot follow the lessons and experience delays in completing an assignment that the teacher gives. These technical obstacles often occur for students with a low economic

level. This condition is explained as difficulties in setting up online systems that are too complex or because of poor networks (Watson & Webster, 2020). Some students don't have cell phones or laptops, their difficulty in online learning is that to be able to take part in students' lessons, a lot of resources are required.

The diagram below is showing Teachers' Challenges in Teaching Online during online study.

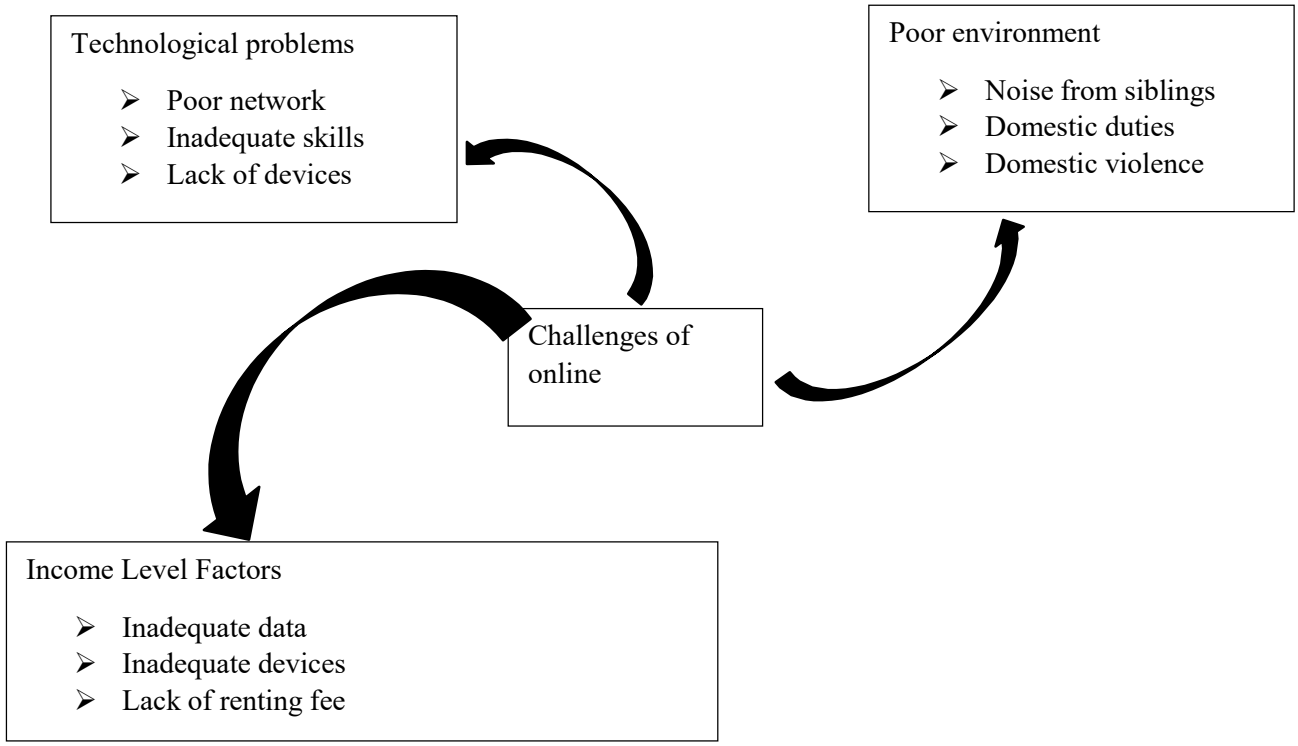

Figure 1: Teachers' Challenges in Teaching Online during online study.

Research gaps

I. The Shift to Online Learning

The COVID-19 pandemic has significantly impacted education worldwide, leading to the widespread closure of schools and the shift to online learning. This sudden transition has exposed various challenges in teaching and learning mathematics, particularly in secondary schools (Sonnenschein, 2021). Research on the effectiveness of online learning in mathematics education is still emerging, with some studies suggesting that it may not be as effective as traditional face-to-face instruction (Khlaif, Salha, & Alghazo, 2021). However, there is a lack of research on the specific impact of COVID-19 on mathematics teaching and learning in secondary schools.

II. Impact on Mathematics Achievement

Studies have shown that the pandemic has had a negative impact on student achievement in mathematics. In a study of over 1.6 million students in Uganda (Kuhfeld et al, 2020) found that students were on average five months behind the syllabus in mathematics due to the pandemic. However, there is a lack of research on the specific impact of COVID-19 on mathematics achievement in secondary schools.

III. Equity and Access

The pandemic has also highlighted existing equity and access issues in mathematics education. Students from low-income families and those with limited access to technology have been disproportionately affected by the shift on online learning. However, there is limited research on the specific impact of COVID-19 on equity and access in mathematics education at the secondary school level.

IV. Teacher Preparedness

The pandemic has also revealed gaps in teacher preparedness for online teaching and learning in mathematics education. Teachers have reported feeling unprepared and overwhelmed by the sudden shift to online instruction (Schleicher, 2020). However, there is a lack of research on the specific impact of COVID-19 on teacher preparedness for online teaching and learning in mathematics at the secondary school level.

V. Mental Health and Well-Being

The pandemic has had a significant impact on student mental health and wellbeing, including increased anxiety and depression (Loades et al., 2020). This may have implications for mathematics teaching and learning at the secondary school level, but there is limited research on this specific impact.

In conclusion, while there is emerging research on the impact of COVID-19 on education, there are still significant gaps in our understanding of the specific impact of the pandemic on mathematics teaching and learning in secondary schools. Further research is needed to address these gaps and inform policy and practice**.**

Conclusion

E-learning during the COVID-19 Pandemic has impacted the educational systems of all countries across the globe significantly. In response to this crisis, countries have applied different rules and methods for dealing with changes in the learning system. Within a few months, national educational systems turned to solutions like online methods (using online applications, TV, radio and offline methods including printed books and modules. Along with these changes, alterations have been necessary for instructional strategies, technological readiness to implement online learning and providing support and motivation to all concerned parties. While the great hope is that the situation soon returns to normal, in the meantime, changes in national curricula must be made to increase flexibility, and technological readiness must be accelerated. Lastly, education must be viewed as a collaborative community effort among government, teachers, parents, and schools to increase the efficacy of teaching-and-learning methods that have been adversely affected and ensure that students do not fall behind.

CHAPTER THREE: METHODOLOGY

Introduction

Methodology refers to systematic study of methods that are, can be, or have been applied within a discipline therefore, this chapter presents various methods and procedures that will be used by the researcher during the research process. It consists of research design, population of the study, sample size, sampling techniques, data collection methods, data collection tools, types of data (primary and secondary data), research procedure and data analysis techniques.

Research design

Research design is the framework of research methods and techniques chosen by a researcher. The design allows researchers to hone in on research methods that are suitable for the subject matter and set their studies up for success.

This study employed both survey and descriptive-correlation design that involved quantitative approach in establishing the relationship on the performance in mathematics during the COVID-19 pandemic disease in a study at Tororo Girls Secondary School, quantitative approach involved use of descriptive statistics that was generated in form of frequency tables. The design of a research topic explains the type of research (experimental, survey, correlational, semi-experimental, review) and also its sub-type (experimental design, research problem, and descriptive case-study). There are three main types of designs for research: Data collection, measurement, and analysis. The type of research problem an organization is facing determines the research design and not vice-versa. The design phase of a study determines which tools to use and how they are used. A modified target instrument for academic study scale was used where some items were to be adopted and will be divided into two parts; the first part will require participants demographic information for example gender, age, level of education.

Data collection.

During the process of data collection, a questionnaire method was used to collect data from the respondents. A self-administered questionnaire (questioning) is a major tool that was used in data collection under questionnaire method. Questionnaires were administered to the teachers, students, and the administration of Tororo Girls school. This helped the researcher to get both quantitative

and qualitative information on the impact of COVID- 19 on the performance of teaching and learning of mathematics in Tororo District. The questionnaires consisted of both close-ended and open-ended questions that were formulated by the researcher. The advantage of using questionnaire methods is that it saves time, the respondents to be dealt with are able to read and write, data collected using questionnaires can be easily analyzed and interpreted by the researcher. The sample Questionnaire on the Impact of Covid-19 disease on the performance of teaching and learning of mathematics in secondary school level is attached to this study as appendix.

Types of Data

Primary data

Primary data is data that is collected fresh and for the first time and is mostly original in character (Kothari, 2008). In this study, the researcher used various data collection tools to collect primary data and these include; self-administered questionnaires and interviews. The primary data for example age, gender, marital status and their levels of education were based on the research questions of the study.

Secondary data

Secondary data refers to the data that already exists in published reports, books and the internet (Saunders et al, 2010). Secondary data consists of already available compendia and already compiled statistical annual reports that data may be used by researchers for their studies (Krishnaswamy & Ranagnathan, 2014). In this study, the secondary data such as list of Learners, their attendance, and length of employment was obtained from reviewing existing school reports on teachers' performance.

Population of the Study

A study population is an aggregation of elements from which a sample is actually selected (Babbie, 2020).

Tororo Girls Secondary School is a government owned school which is located along Tororo-Malaba highway, 3km from Tororo town and has both O' level and A level offering both science and Art subjects which is a single sex school with only female gender.

The study population consisted of 180 in total consisting of 1 Headteacher, 30 Teachers and 149 students.

Table 1: Population of the Study of size/Number in target population

S/N	Category of respondents	Population size
1.	Teachers	30
2.	Students	149
3.	Headteacher	1
	TOTAL	180

Sample Size and Sampling Technique

Sample Size

A sample constitutes a population that is representative of the entire population. Sampling is a way of gathering statistical information using a few elements chosen out of the study population to represent the whole population.

The sample size of 125 respondents was selected from the target population of 180 respondents. These consisted of 12 male respondents and 113 female respondents. The 125 respondents were distributed to the number of respondents in each category, the sample size was got using Slovin's formula illustrated below.

$$n = \frac{N}{1 + N(e^2)}$$

whereas: n = no. of samples

N = total population

e = error margin / margin of error

n = $\frac{180}{1+180(0.05)^2}$

n = 125

Sampling Technique

The researcher under this study used both purposive and simple random sampling techniques during the process of data collection from the study respondents. The researcher used purposive sampling technique on the secondary level, students, and teachers because they provide very useful

and relevant information and their involvement and participation in administration is responsible for the learners' performance.

The simple random sampling technique was used on learner's performance who are expected to be the majority in the teaching profession and therefore their views, feelings, aspirations, attitudes and opinions are of great importance. All the respondents were given equal opportunity and independent chance of being selected.

Table 2: Sampling Techniques

Sampling Method	**Respondents**	**Population Size**	**Sample size**	**Reason for the choice**
Purposive	Headteacher	1	1	Possess professional skills
Purposive	Teachers	30	24	Possess professional skills
Simple random	Students	149	100	Convenient for large population
	Total	180	125	

Research Procedure

To facilitate adequate coverage at research, the letter was received from the Head of department, mathematics, Tororo Girls Secondary School so as to be introduced to the mathematics department that participated in the study after being directed by the teachers to do so. The researcher upon the permission that was granted first took time to visit respective respondent parties and then proceed to collect data by using various methods including face-to-face interviews and questionnaires in collecting data from the primary source

The collected data was presented in the form of tables, charts, graphs among others. I proceeded to analyze the collected data and interpret the analyzed findings. I then proceeded to do the summary of findings, conclude, make recommendations and submit the dissertation to the Department of Mathematics.

Data Analysis

Data from semi-structured interviews were entered in a computer, and a statistical package for social scientists (SPSS) program was used to analyze it. The percentage number of respondents according to variables such as; sex, age, current status, from the impact of COVID-19 disease on the performance of teaching and learning mathematics in secondary level and so was computed and presented using tables. Qualitative data was organized according to themes identified from research questions and was analyzed.

Ethical Consideration

Both written and verbal consent was obtained from the sample used for the study, a letter of consent was attached to the instrument of data collection given to the samples and the researcher obtained verbal approval from the samples. The researchers explained the process of the research to the samples and the anonymity of the information provided was assured.

CHAPTER FOUR: PRESENTATION, INTERPRETATION, ANALYSIS AND DISCUSSION OF FINDINGS

Introduction

This chapter presents the findings of the study in accordance with the study objectives beginning with the demographic data of the respondents.

Demographic Data of Respondents

Table 3: Gender Distribution of the Respondents

Gender	**Frequency**
Male	12
Female	113
Total	**125**

Source: Primary data (2024)

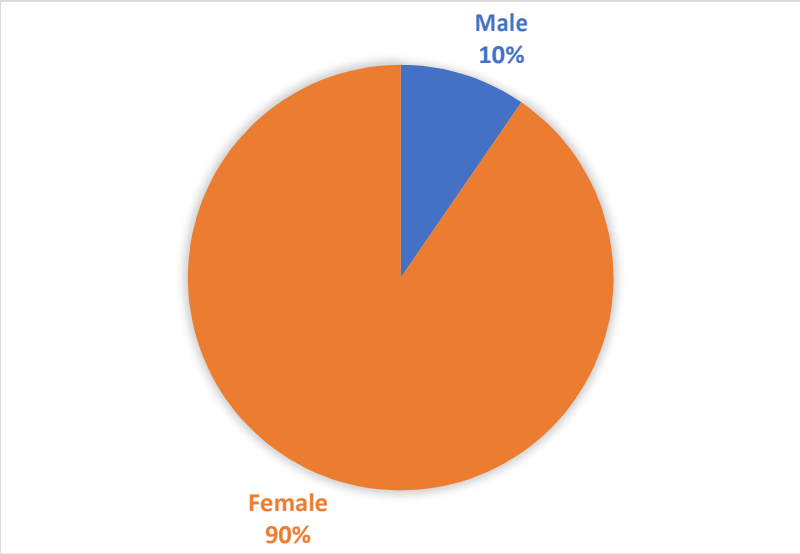

Figure 2: Gender Distribution of the Respondents

From Figure 2, It can be seen that 12(10%) of the respondents were male and 113 (90%) were female. The reason for the high number of female respondents is because the school (Tororo Girls) where the study was conducted is a girls' school and also the students who are only females were the highest number of respondents. The small number of male respondents represents the male teachers that participated in the study.

Table 4: Age Distribution of the Respondents

Age brackets (years)	Frequency
20 years below	**65**
21-25 years	**35**
26-30 years	**3**
31 years above	**27**
Total	**125**

Source: Primary data (2024)

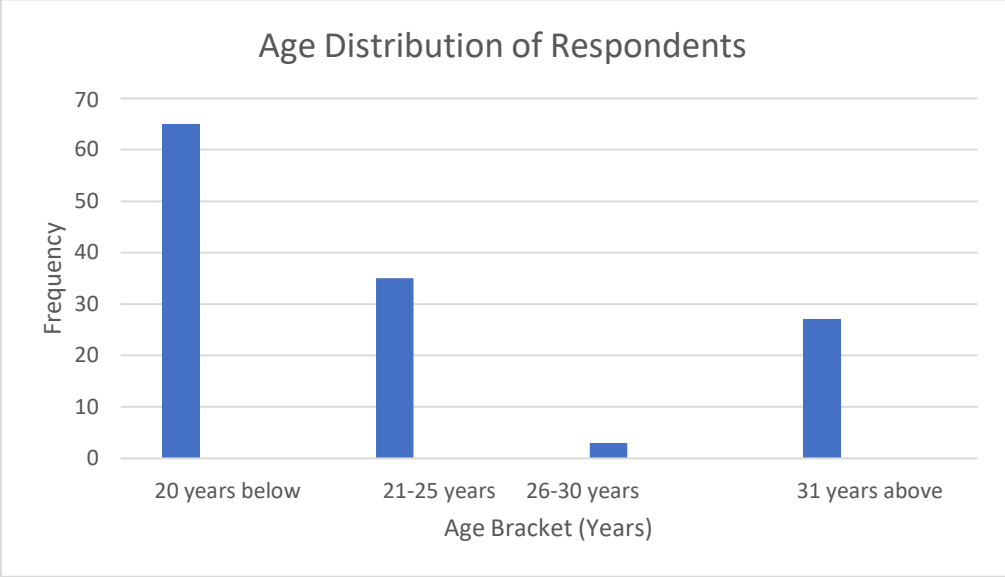

Figure 3: Age Distribution of the Respondents

From Figure 3, it can be observed that the highest number of the respondents were 20 years below. This consists of students only who had the highest number. Next were those in the age bracket of 21-25 years of age and lastly 31 years and above who were teachers.

Effects of covid-19 on Learners' Performance in Mathematics during the lockdown.

Table 5: Responses as to whether COVID-19 led to online teaching which lacks the practical exposure of mathematics.

Response Mode	Frequency
Strongly Disagree	**33**
Undecided	**5**
Agree	**20**
Strongly Agree	**67**
Total	**125**

Source: Primary data (2024)

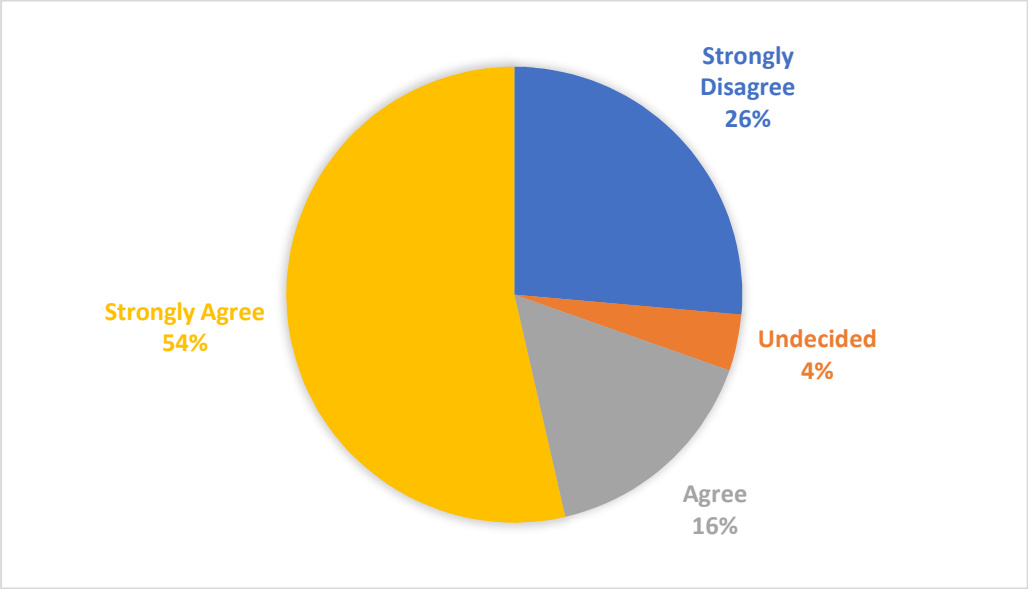

Figure 4: Responses as to whether COVID-19 led to online teaching which lacks the practical exposure of mathematics.

From Figure 4, It can be observed that 33(26%) strongly disagreed, 5(4%) of them were undecided, 20(16%) agreed and 67(54%) strongly agreed. Since the majority of the respondents strongly agreed, it implies that COVID-19 led to online teaching which lacks the practical exposure of mathematics. Online teaching does not give learners ample time to interact amongst themselves and also with the teachers.

Table 6: Covid-19 led to the closure of schools and learning came to a standstill yet mathematics needs continuous practice.

Response mode	Frequency
Strongly Disagree	**15**
Disagree	**29**
Undecided	**1**
Agree	**30**
Strongly Agree	**50**
Total	**125**

Source: Primary Data, (2024)

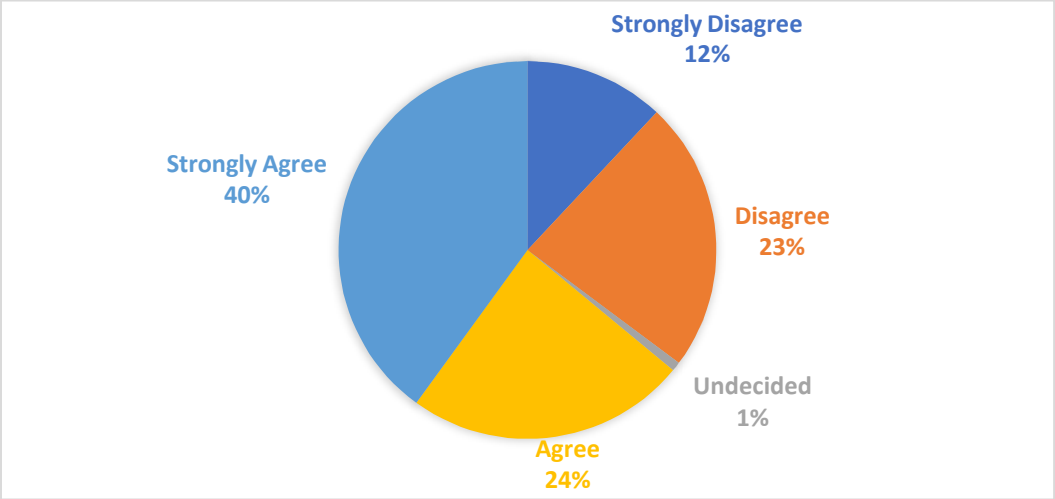

Figure 5: Covid-19 led to the closure of schools and learning came to a standstill yet mathematics needs continuous practice.

From Figure 5, It can be observed that 15(12%) strongly disagreed, 29(23%) disagreed, 1(1%) were undecided, 30(24%) agreed and 50(40%) of the respondents strongly agreed. Majority of respondents being of the agreement COVID-19 led to the closure of schools and learning came to a standstill yet mathematics needs continuous practice. The closing of schools resulted in long stays at home, thus there was not enough time for learners to continue practicing mathematics. Mathematic being a practical subject it needs a lot of practice, however when COVID-19 broke out schools were closed and learners were sent home for a long holiday, the majority of the learners did not get enough time or assistance to continue learning and practicing mathematics.

Table 7: During covid-19 teachers and parents became less supportive towards learners and this affected their performance

Response mode	Frequency
Strongly Disagree	**12**
Disagree	**28**
Undecided	**4**
Agree	**36**
Strongly Agree	**45**
Total	**125**

Source: Primary data (2024)

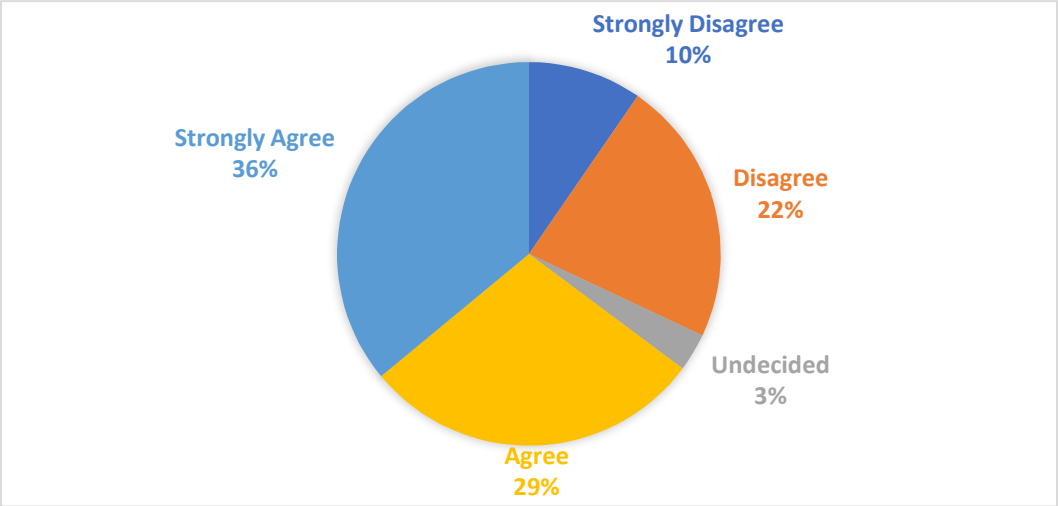

Figure 6:During covid-19 teachers and parents became less supportive towards learners and this affected their performance

Figure 6 shows that 12(10%) of the respondents strongly disagreed, 28(22%) disagreed, only 4(3%) were undecided, 36(29%) agreed and 45(36%) strongly agreed. The majority of the respondents being in agreement imply that during COVID-19 teachers and parents became less supportive towards learners and this affected their performance. Since teachers and parents were not so supportive towards their children during the lockdown, learners also became reluctant on books and this has affected their performance after resuming back at school.

Table 8: COVID-19 led to the introduction of different delivery methods of learning and yet some of the methods were not suitable for Mathematics

Response Mode	Frequency
Disagree	**20**
Undecided	**12**
Agree	**49**
Strongly Agree	**44**
Total	**125**

Source: Primary data (2024)

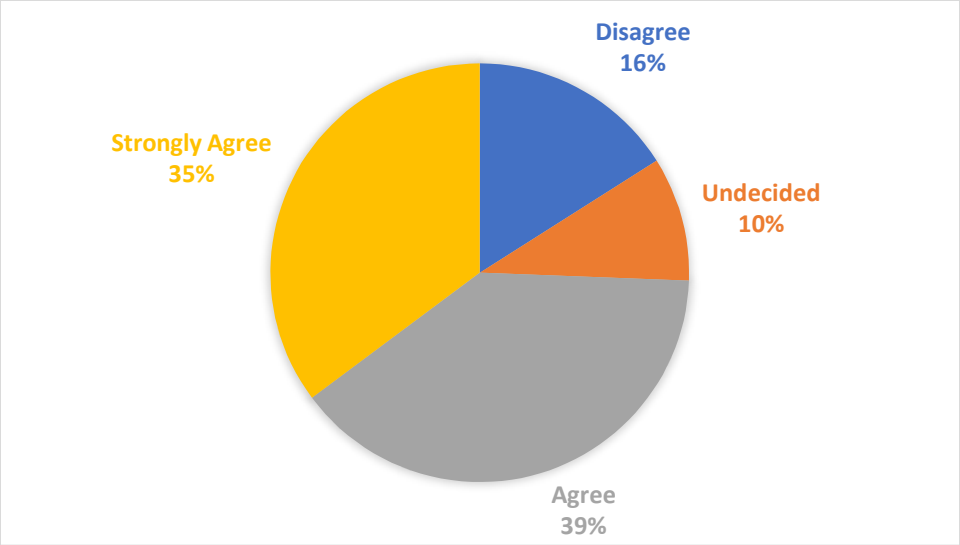

Figure 7: COVID-19 led to the introduction of different delivery methods of learning and yet some of the methods were not suitable for Mathematics

According to the findings in Figure 7, it can be observed that 20(16%) disagreed, 12(10%) of them were undecided, 49(39%) however agreed, and 44(35%) strongly agreed. Since the majority of the respondents were in agreement this may imply that COVID-19 led to the introduction of different delivery methods of learning and yet some of the methods were not suitable for Mathematics. COVID-19 led to the introduction of various emergency learning platforms like TV, radios, Smart phones among others. However, learning platforms like radios were not appropriate for learning mathematics hence mathematics was not effective taught and learnt during the lockdown

Table 9: COVID-19 affected students' overall concentration in learning since they were on and off school.

Response Mode	Frequency
Disagree	**10**
Undecided	**3**
Agree	**65**
Strongly Agree	**47**
Total	**125**

Source: Primary data (2024)

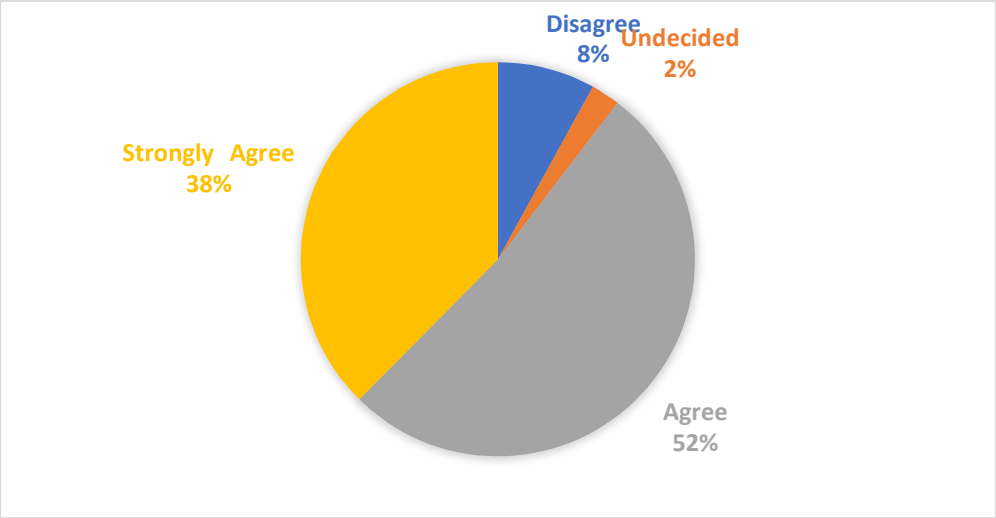

Figure 8: COVID-19 affected students' overall concentration in learning since they were on and off school.

From Figure 8, it is observed that 10(8%) strongly disagreed, 3(2%) were undecided, 65(52%) agreed and 47(38%) of the respondents strongly agreed. Most respondents were in agreement with this particular question which means COVID-19 affected students' overall concentration in learning since they were on and off school. This may be an indication that COVID-19 affected students' overall concentration in learning since they were on and off school. The presence of COVID-19 led to increased death rates amongst the communities, both teachers, learners and parents were all scared of the virus and the hope of tomorrow was a chance note, this demoralized learners on concentrating on their academics since they were not even sure whether or when they will resume school.

The Effects of COVID-19 on Performance of Students in Mathematics after the Lockdown.

The second objective of the study sought to find out the effects of COVID-19 on performance of students in mathematics after the lockdown. A number of questions were asked and the responses are presented in the following tables. The following tables present the findings from each question.

Fear caused psychological distress among learners after COVID-19 affected learner's concentration in learning.

Table 10: Fear caused psychological distress among learners after covid-19 affected the learner's concentration in learning

Response mode	Frequency
Strongly Disagree	**14**
Disagree	**19**
Undecided	**7**
Agree	**53**
Strongly Agree	**32**
Total	**125**

Source: Primary data (2024)

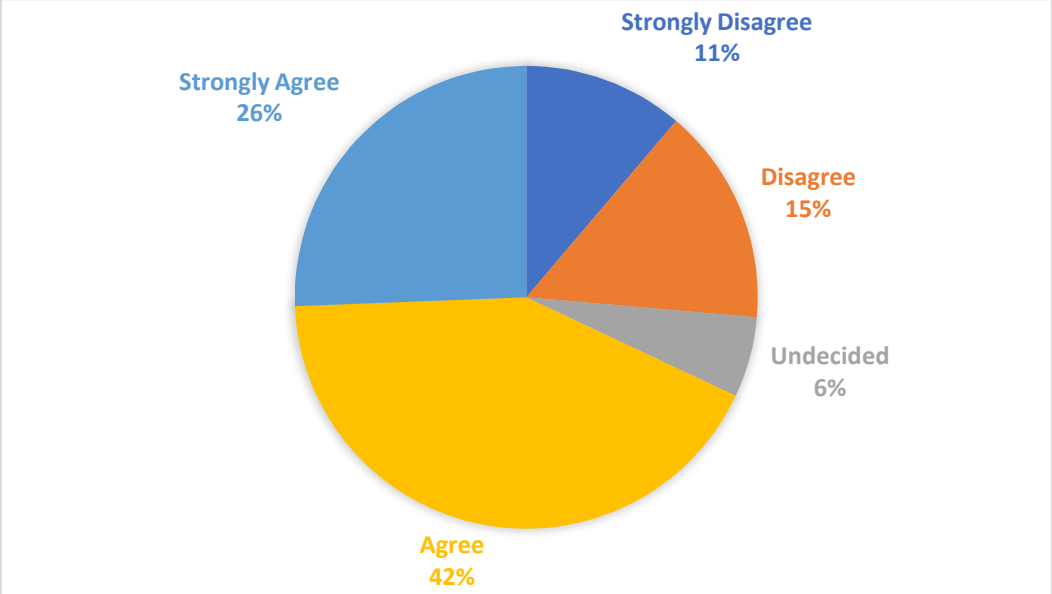

Figure 9: Fear caused psychological distress among learners after covid-19 affected learner's concentration in learning

The findings from Figure 9 indicate that, 14(11%) of the respondents strongly disagreed, 19(15%) disagreed, 7(6%) were undecided, 53(42%) of them agreed and 32(26%) strongly agreed. Since majority agreed this may imply that fear caused psychological distress among learners after COVID-19 affected learner's concentration in learning. COVID-19 threatened people's lives and this led to a lot of fear amongst the people that they even feared to be near their own relatives. This fear affected learners from concentrating on their education even after the lockdown since they were still living amidst the virus.

COVID-19 led to a change in the teaching and learning methods that does not support effective learning of mathematics.

Table 11: COVID-19 led to a change in the teaching and learning methods that does not support effective learning of mathematics.

Response Mode	**Frequency**
Strongly Disagree	**2**
Disagree	**11**
Undecided	**16**
Agree	**70**
Strongly Agree	**26**
Total	**125**

Source: Primary data (2024)

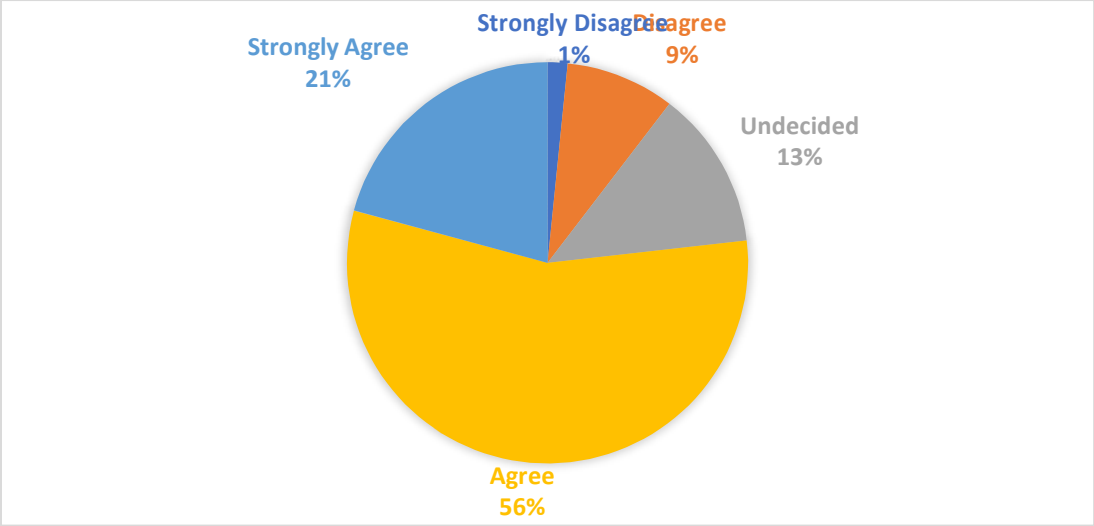

Figure 10: COVID-19 led to a change in the teaching and learning methods that does not support effective learning of mathematics.

From Figure 10 it can be observed that, 2(1%) of the respondents strongly disagreed, 11(9%) disagreed, 16(13%) were undecided, 70(56%) agreed and 26(21%) strongly agreed. From the findings it can be observed that the majority of the respondents were of the agreement that COVID-19 led to a change in the teaching and learning methods that does not support effective learning of mathematics. During and after COVID-19 a lot of learning methods were introduced and somewhere not suitable for learning mathematics like radios, TVs among others since mathematics is a practical subject that needs a lot of interaction and practice and yet the methods would not provide such an opportunity.

Covid-19 led to transfers of teaching from face-to-face interaction to online learning yet schools were not ready for it.

Table 12: Covid-19 led to transfers of teaching from face-to-face interaction to online learning yet schools were not ready for it.

Response Mode	Frequency
Strongly Disagree	**0**
Disagree	**11**
Undecided	**10**
Agree	**54**
Strongly Agree	**35**
Total	**125**

Source: Primary data (2024)

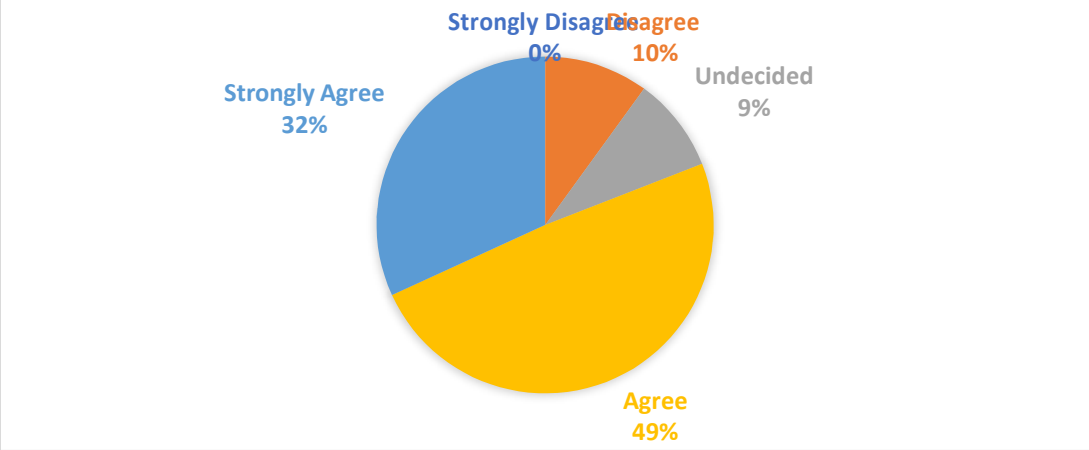

Figure 11: Covid-19 led to transfers of teaching from face-to-face interaction to online learning yet schools were not ready for it.

Findings from Figure 11 indicate that none of the respondents strongly disagreed, 11(10%) of them disagreed, 10(9%) were undecided, 54(49%) agreed and 35(32%) strongly agreed. From the findings it was observed that the majority of the respondents were of the agreement that Covid-19 led to transfers of teaching from face-to-face interaction to online learning yet schools were not ready for it. During lockdown various options of learning were proposed and a number of schools and institutions concentrated on online teaching and learning, however the majority of the schools were not ready for online teaching since they lacked the necessary infrastructure.

Performance of mathematics dropped because some students lacked equipment to use to attend lessons during lockdown and this kept them behind while others were learning

Table 13: Performance of mathematics dropped because some students lacked equipment to use to attend lessons during lockdown and this kept them behind while others were learning.

Response mode	**Frequency**
Strongly Disagree	**10**
Disagree	**15**
Undecided	**5**
Agree	**60**
Strongly Agree	**35**
Total	**125**

Source: Primary data, (2024)

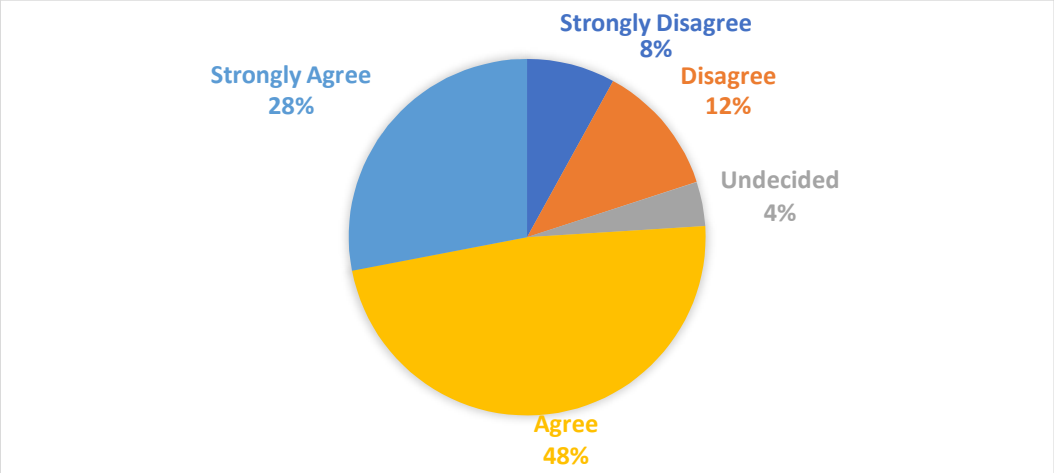

Figure 12: Performance of mathematics dropped because some students lacked equipment to use to attend lessons during lockdown and this kept them behind while others were learning.

Figure 12 indicates that 10(8%) of the respondents strongly disagreed, 15(12%) of them disagreed, 5(4%) were undecided, 60(48%) of them agreed and 35(28%) strongly agreed. Since the majority of the respondents were of the agreement this implies that Performance of mathematics dropped because some students lacked equipment to use to attend lessons during lockdown and this kept them behind while others were learning. During lockdown other students continued to learn online whereas those who lacked the equipment were just sitting home waiting for schools to reopen.

CHAPTER FIVE: SUMMARY OF RESEARCH FINDINGS, CONCLUSION AND RECOMMENDATIONS

Introduction

This chapter presents the summary of the findings that resulted from the research, conclusions that were derived from the findings and recommendations from the researcher regarding the findings and conclusions extracted from the research. It also suggests areas of further research regarding the problem.

Summary

This paragraph is not clear. What happened to the remaining 21.5%

The impact of COVID-19 on learners' performance in mathematics during the lockdown, the study was found out that 98(78.5%) of the learners were affected as well as 96(76.4%) of the learners were also affected after the lockdown meaning that 30(24%) of the learners were brought about by other factors such as poverty.

23.6%

Rephrase staement tomake meaning

Recommendations

From the study findings the following recommendations were made:

The schools should improve on their technological advancements so that learners get used to the applicability and use of the new technological equipment for their learning purposes.

The schools should allocate more time for mathematics lessons since it is a practical subject learners need to do a lot of practice so that they master the formulas.

The school should equip the mathematics department with enough resources, say the teachers and the study materials that match the current curriculum so as to enable learners' study well.

The school should encourage a learner centered way of learning so as to encourage and enable learners to learn by themselves without necessarily over depending on the teacher.

Areas for Further Research

This study suggests the following areas for further research:

- A study can be conducted on the influence of COVID-19 on a student's school dropout.
- Factors that affect student's school enrolment and retention in government schools.

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APPENDIX

QUESTIONNAIRE ON THE IMPACT OF COVID-19 DISEASE ON THE PERFORMANCE OF TEACHING AND LEARNING OF MATHEMATICS IN SECONDARY SCHOOL LEVEL

Dear respondent,

RE: REQUEST TO COMPLETE A RESEARCH QUESTIONNAIRE

I am a student of Education at Busitema University conducting research on the impact of Covid-19 on performance of teaching and learning Mathematics at Secondary school level.

You have been chosen as a suitable respondent in this study.

This is therefore to request you to fill this questionnaire with utmost honesty and sincerity as your opinion counts a lot towards the success of this study. The study is entirely for academic purposes and any information given will be treated with utmost confidentiality.

Thanks for your time and responses.

Yours Sincerely,

……

Outa Andrew

SECTION A: - BIO DATA OF THE RESPONDENT

1) Sex

a). Male ☐ b) Female ☐

2) Age

a) 20 years and below ☐ b) 21-25 years ☐ c) 26-30 years ☐

d) 31 years and above ☐

3). Education level

a) O-level ☐ b) A-level ☐ C) Diploma ☐ e) Bachelors ☐

d) Others ☐

SECTIONS: B TO C

In these sections you are required to tick (√) on a response option ranging from Strongly Disagree = 1, Disagree = 2, Undecided = 3, Agree = 4, Strongly Agree = 5 on the study topic:

SECTION B: Impact of covid-19 on learners' performance in Mathematics during the lockdown.

No.	ITEMS	1	2	3	4	5
1	COVID-19 led to online teaching which lacks the practical exposure of mathematics.					
2	Covid-19 led to the closure of schools and learning came to a standstill yet mathematics needs continuous practice.					
3	During covid-19 teachers and parents became less supportive towards learners and this affected their performance.					
4	Covid-19 led to the introduction of different delivery methods of learning and yet some of the methods were not suitable for Mathematics.					
5	Covid-19 affected students' overall concentration in learning since they were on and off school.					

SECTION C: THE EFFECTS OF COVID-19 ON PERFORMANCE OF STUDENTS IN MATHEMATICS AFTER THE LOCKDOWN.

No.	ITEMS	1	2	3	4	5
1	Fear caused psychological distress among learners after covid-19 affected learner's concentration in learning.					
2	Covid-19 led to a change in the teaching and learning methods that does not support effective learning of mathematics.					
3	Covid-19 led to less support from the teachers and parents towards learning process.					
4	Covid-19led to transfers of teaching from face-to-face interaction to online learning yet schools were not ready for it.					
5	Covid-19 brought in new technology of teaching that did not suit all subjects.					
6	Performance of mathematics dropped because some students lacked equipment to use to attend lessons during covid-19 and this kept them behind while others were learning.					