FACULTY OF SCIENCE AND EDUCATION

DEPARTMENT OF MATHEMATICS

FINAL YEAR PROJECT REPORT

A COMPARATIVE STUDY OF BLENDED LEARNING AND TRADITIONAL FACE TO FACE INSTRUCTION IN MATHEMATICS AT BUSITEMA UNIVERSITY, NAGONGERA CAMPUS

By

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THIS FINAL YEAR PROJECT REPORT IS SUBMITTED TO THE DEPARTMENT OF MATHEMATICS IN PARTIAL FULFILLMENT OF THE REQUIREMENT

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DECLARATION

I Kibet Enock, declare that this my original work and it has never been submitted in any University for any award.

KIBET ENOCK

BU/UP/2023/1689

DATE **31-07-2026**

APPROVAL

This research project has been submitted for examination with the approval of my supervisor:

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Signature: 

Date: 31-07-2026

DEDICATION

This work is dedicated to my brother Chelangat Elijah, my sister Chekwemoi Dorcus and my mother Yapchemusto Agnes

ACKNOWLEDGEMENT

This work has been successful due to the assistance and cooperation of so many personalities. First, I thank the almighty God, whose wisdom, ability and divine provision has enabled me to complete my studies. May his name be glorified forever? Special thanks go to my supervisor! Dr. Nalule Rebecca Muhumuza for all the support, guidance, encouragement and important ideas which have made this research report have the value it is worth

Another vote of thanks goes to all my course mates and friends who through teamwork supported me academically, socially, spiritually. My parents and my brothers whose financial support, cooperation and love keeps me moving amidst all rough and smooth worlds.

Special thanks also go to all members of staff and students of Busitema University, Nagongera campus whose cooperation and input enabled me to get the information that has made this report have the value its worth. Particularly, my sincere appreciation goes to my parents; yapchemusto agnes and Mr muneria paul, whose support in the research process was invaluable. Many people deserve to be acknowledged, but I only ask the almighty God to bless them wherever they are. May God bless you!!

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ABSTRACT

This study compared the effectiveness of blended learning and traditional face-to-face instruction in Mathematics at Busitema University, Nagongera Campus. The increasing integration of educational technologies in higher education has encouraged the adoption of blended learning approaches that combine conventional classroom instruction with online learning platforms. Although blended learning had gained popularity worldwide and widely adopted during the COVID-19 pandemic, its effectiveness in improving mathematics learning within the Ugandan university context remained inadequately understood. The study employed a descriptive survey research design to investigate students' experiences and perceptions of blended learning and traditional face-to-face instruction. A sample of 80 undergraduate students was selected from Busitema University, Nagongera Campus, using appropriate sampling techniques. Data were collected through structured questionnaires and mathematics performance records to assess students' academic performance, engagement, participation, and attitudes toward the two instructional approaches.

Quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the data, while inferential statistics, including the independent samples t-test, were employed to determine whether significant differences existed in academic performance between students exposed to blended learning and those taught through traditional face-to-face instruction. The study was guided by Constructivist Learning Theory and the Technology Acceptance Model (TAM), which provided a theoretical foundation for understanding how active learning and technology acceptance influence students' learning outcomes.

The findings provide empirical evidence on the comparative effectiveness of blended learning and traditional face-to-face instruction in Mathematics. The study contributes to improving instructional practices, enhancing students' learning experiences, and informing policy and institutional decisions regarding the integration of educational technologies at Busitema University and other higher education institutions in Uganda.

CHAPTER ONE:

1.0 INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Mathematics education has traditionally been delivered through face-to-face classroom instruction where lecturers and students interact physically during teaching and learning activities. This conventional approach has long been considered effective because it allows direct explanation of concept, immediate feedback, and structured learning environment(Middleton et al., 2023). However, rapid advancements in educational technology have introduced new instructional methods that integrate digital tools into teaching and learning processes(Hodgen et al., 2024)

Blended earning has emerged as one of the most prominent modern instructional approaches in higher education(Graham et al., 2019). Blended learning combines traditional classroom instruction with online learning components such as digital learning materials, virtual discussions, learning management systems, and online assessments(*Mind the Gap : Fostering Motivation and Autonomy in Turkish University Students A Dissertation Submitted to The University of Manchester for the Degree of Master of Arts in the Faculty of Humanities 2012 Andrew Bosson School of Education List of Contents*, 2012). This approach aims to combine the strengths of both face-to-face teaching and technology-mediated learning in order to enhance student engagement, flexibility, and academic performance

Globally, universities have increasingly adopted blended learning in response to technological development and the need for flexible learning environments(Şimşek, 2022). Research has shown that blended learning can improve students' understanding of mathematical concepts, promote independent learning, and increase academic achievement when effectively implemented(Matematika & Syukri, 2001).

In many African universities, the adoption of blended learning accelerated during the COVID-19 pandemic when institutions were forced to shift to online or hybrid teaching modes(Adarkwah, 2021). However, the effectiveness of blended learning in these contexts has often been influenced by infrastructural challenges such as limited connectivity, high data costs, and inadequate access to digital devices(Niyibizi & Teachers, 2024).

In Ugandan, universities including Busitema University adopted blended learning strategies to ensure continuity of teaching during the pandemic period. At Nagongera Campus, mathematics courses incorporate online platforms such as zoom together with traditional classroom instruction. Although this approach enabled teaching to continue during disruptions, students encountered several challenges including unstable internet connectivity, limited digital skills, and high costs of accessing online learning platforms(Akugizibwe, 2020)

Despite the increased adoption of blended learning in higher education, there is limited empirical evidence comparing its effectiveness with traditional face-to-face instruction in mathematics at Busitema University. Therefore, this study seeks to investigate the comparison between blended learning and traditional classroom instruction in order to determine their impact on students' academic performance, engagement, and attitudes toward mathematics learning

1.2 PROBLEM STATEMENT

Although blended learning has gained global recognition as an innovative instructional approach in higher education(Graham et al., 2019), its effectiveness in mathematics education within many Ugandan universities remain uncertain. At Busitema University, Nagongera Campus, blended learning was introduced during the COVID-19 pandemic as a strategy to maintain teaching and learning traditional face-to-face instruction(Adarkwah, 2021)?

However, many students experienced challenges including poor internet connectivity, high data costs, and limited digital literacy(Niyibizi & Teachers, 2024). Previous studies conducted at the University have mainly focused on students' perceptions of blended learning rather than providing empirical comparisons of academic performance under blende learning and traditional face-to-face instruction(Akugizibwe, 2020).

As a result, there is limited evidence on whether blended learning actually improves mathematics learning outcomes compared to traditional instructional methods within the context of Busitema University. Therefore, this study seeks to compare blended learning and traditional face-to-face instruction in mathematics at Busitema University, Nagongera Campus

1.3 RESEARCH OBJECTIVES

The study did follow the research objectives

1.3.1 GENERAL OBJECTIVE OF STUDY

To compare the effectiveness of blended learning and traditional face-to-face instruction on students' mathematics learning outcomes at Busitema University, Nagongera Campus

1.3.2 SPECIFIC OBJECTIVES OF STUDY

1. To compare students' academic performance in mathematics under blended learning and traditional instruction
2. To examine students' engagement and participation in blended learning and traditional instruction
3. To analyze students' attitudes towards blended learning and traditional teaching methods in mathematics

1.4 RESEARCH QUESTIONS

1. Which difference exists in mathematics academic performance between students taught using blended learning and those taught using traditional learning methods
2. How do students engage and participate under blended learning and traditional?
3. What are students' attitudes towards blended learning and traditional face-to-face instruction in mathematics?

1.5 RESEARCH HYPOTHESES

H0: There is no significant difference in mathematics academic performance between students taught using blended learning and those taught using traditional face-to-face instruction.

H1: There is a significant difference in mathematics academic performance between students taught using blended learning and those taught using traditional face-to-face instruction.

1.6 SIGNIFICANCE OF THE STUDY

The study provided useful insights for students, lecturers, and University administrators regarding the effectiveness of blended learning in mathematics education. The findings may help lecturer's select appropriate teaching methods and enhance student engagement and academic performance. Additionally, the study may inform university administrators when planning investments in digital infrastructure and educational technology.

1.7 SCOPE OF THE STUDY

The study investigated the comparison between blended learning and traditional face-to-face instruction in mathematics at Busitema University, Nagongera Campus. The study will specifically examine students' academic performance, engagement, and attitudes toward the two instructional methods. The research will involve undergraduate students enrolled in mathematics courses during the 2025/2026 academic year.

1.8 OPERATIONAL DEFINITION

Blended Learning

Blended learning refers to an instructional approach that combines traditional face-to-face classroom teaching with online learning components such as virtual lectures, digital assignments, discussion forums, and video conferencing tools (e.g., zoom)(Zhang, 2020).

Traditional Face-to-Face Instruction

Traditional face-to-face instruction refers to a conventional teaching method in which lecturers and students interact physically in a classroom without structured online instructional component(Rycroft-smith et al., n.d.).

Mathematics Achievement (Academic Performance)

Mathematics achievement refers to students' measurable performance in mathematics courses, as determined by test scores, coursework marks, examinations, or overall course grades.(Naidoo & Resource, 2017)

Student Engagement

Student engagement refers to the level of students' active involvement, participation, attention, and commitment during mathematics learning activities.(*Exploring Students ' Experiences of Engagement and Cognitive Congruence in Student Mentors and Faculty Mentors : A Qualitative Analysis Annika L . Klugmann Department of Psychology , University of Groningen PSB3E-BT15 : Bachelor Thesis Group 2223 _ 2a _ 2*, 2023)

Student Attitudes and Perceptions

Student attitudes and perceptions refer to learners' feelings, beliefs, opinions, and levels of acceptance regarding blended learning and traditional face-to-face instruction in mathematics(Kibuku et al., 2020)

Instructional Challenges

Instructional challenges refer to difficulties encountered by students and lecturers when implementing or participating in blended or traditional mathematics instruction(Kibuku et al., 2020)

Comparative Study

A comparative study refers to a research design that systematically examines differences and similarities between two or more instructional approaches—in this case, blended learning and traditional face-to-face instruction—in order to determine their relative effectiveness

Higher Education

Higher education refers to post-secondary education offered at universities and other tertiary institutions. In this study, it specifically refers to undergraduate mathematics programs at Busitema University, Nagongera Campus.(Altbach et al., 2009)

CHAPTER TWO

2.0 LITERATURE REVIEW

This chapter reviews literature related to blended learning and traditional face-to-face instruction in mathematics, with specific attention to studies conducted at Busitema University, particularly Nagongera Campus. The review examines empirical studies conducted locally and internationally, theoretical foundations underpinning blended learning, the conceptual framework guiding the study, and the research gaps identified.

2.1 CONCEPT OF BLENDED LEARNING

Blended learning is an instructional approach that combines traditional face-to-face classroom teaching with online learning activities to enhance the teaching and learning process. According to (Graham et al., 2019), it integrates classroom instruction with technology-mediated learning, providing students with greater flexibility and access to digital learning resources. Common tools used in blended learning include Learning Management Systems (LMS), video lectures, online discussions, and digital assessments. In mathematics education, blended learning promotes active participation, independent learning, and improved conceptual understanding through interactive digital resources. However, its implementation in developing countries is often constrained by inadequate technological infrastructure, limited internet access, and insufficient digital skills, highlighting the need for context-specific approaches.

2.2 TRADITIONAL FACE-TO-FACE INSTRUCTION

Traditional face-to-face instruction involves direct interaction between lecturers and students in a physical classroom. It enables immediate feedback, classroom discussions, and prompt clarification of mathematical concepts, making it effective for teaching mathematics(Simon et al., 2022). Although this approach provides structured learning and close teacher supervision, it offers limited flexibility compared to blended learning. Previous studies have reported mixed findings regarding the effectiveness of blended learning and traditional instruction, while few studies have compared the two approaches in mathematics education within Ugandan universities. This demonstrates the need for further comparative research at Busitema University, Nagongera Campus.

2.3 EMPIRICAL REVIEW ON BLENDED LEARNING

Empirical studies indicate that blended learning can improve students' academic performance, engagement, and participation in mathematics compared to traditional teaching methods. Studies conducted during the COVID-19 pandemic also showed that blended learning supported continuity of education and improved learning outcomes(Kibuku et al., 2020). However, challenges such as poor internet connectivity, limited access to digital devices, and inadequate technological infrastructure continue to hinder its implementation, especially in rural universities. Furthermore, there is limited empirical evidence comparing blended learning and traditional face-to-face instruction in mathematics at Busitema University, Nagongera Campus. Therefore, this study seeks to fill this gap by comparing the effectiveness of the two instructional approaches in terms of students' academic performance, engagement, participation, and attitudes.

2.4 THEORETICAL FRAMEWORK

This study is guided by Constructivist Learning Theory and the Technology Acceptance Model (TAM). Constructivism theory suggests that students construct knowledge through active learning experience, while the Technology Acceptance Model explains how perceived usefulness and ease of use influence technology adoption in education.

The Technology Acceptance Model (TAM), developed by Davis (1989), explains how users come to accept and use technology. It emphasizes two key factors: perceived usefulness and perceived ease of use. In this study, TAM helps explain how students' attitudes toward technology influence their engagement with blended learning platforms.

2.5 CONCEPTUAL FRAMEWORK

The conceptual framework for this study focuses on comparing the effectiveness of two teaching methods on student outcomes, influenced by intervening variables.

The conceptual framework for this study focuses on comparing the effectiveness of two teaching methods on student outcomes, influenced by intervening variables.

Independent Variable

The independent variable is the factor that the researcher manipulates, changes, or selects to see how it affects the outcome. In this study, if is the cause of the change in learning results

Teaching methodology (mode of instruction) the study is comparing the two distinct methods

Blended learning: a mix of in-person classroom instruction and online learning platforms

Traditional face-to-face instruction: conventional, in-person classroom teaching only

Dependent Variables

The dependent variable is the outcome being measured. Its value depends on the changes made to the independent

In this study: Students' Academic Performance in Mathematics (or Achievement Scores)

Intervening Variables (The Mediator/Link)

Intervening Variables (also known as mediating variables) are factors that come between the independent and dependent variables they help explain why/how the teaching method affects performance which include the following

Student engagement/motivation: blended learning might increase motivation, which then leads to higher scores, whereas traditional methods might not.

Access to technology/internet connectivity: students at Busitema University might have varying success in blended learning based on their ability to access computers or internet data

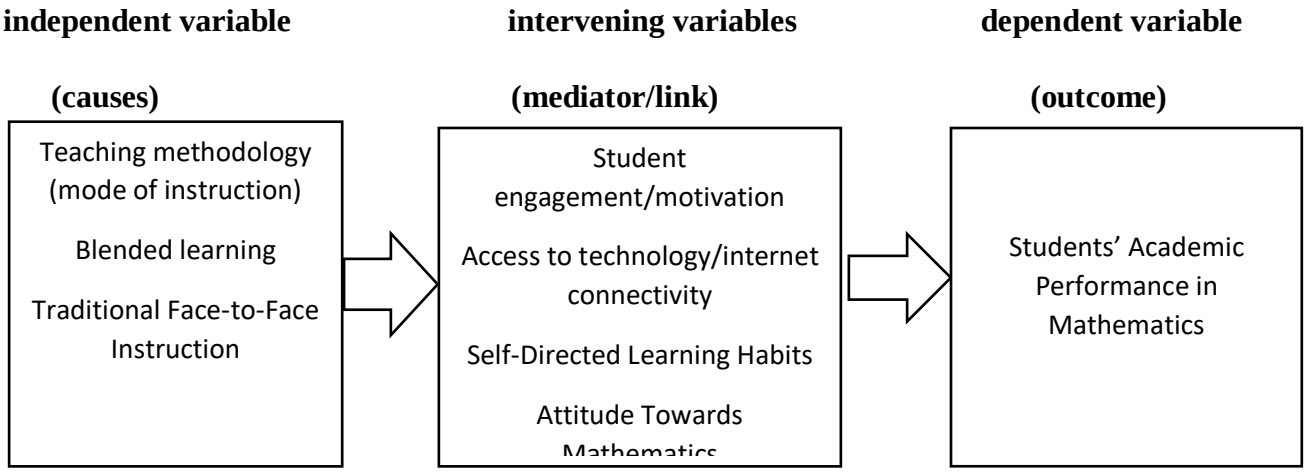
Self-directed learning habits: blended learning requires students to manage their own time, which can influence their final performance

Attitude towards mathematics: students' willingness to engage with material

Table showing independent, Dependent and intervening variables

Variable type	Variable Name	Role in study
Independent	Instructional Method	Blended and Traditional
Dependent	Math Performance	Test scores/Grades
intervening	Student Engagement/Motivation	Factors that link teaching method to performance

The diagram below illustrates the relationship between the teaching methodology (mode of instruction) and students' academic performance in mathematics, with intervening variables that influence this relationship.



2.6 RESEARCH GAP

Although several studies have examined blended learning in mathematics education globally, limited research has compared blended learning and traditional instruction in the context of Busitema University. This study therefore seeks to fill this gap. Additionally, most existing studies focus on general academic performance without adequately considering contextual factors such as access to technology, student attitudes, and institutional infrastructure in Ugandan universities. Therefore, this study seeks to fill this gap by providing empirical evidence on the comparative effectiveness of blended learning and traditional instruction in mathematics at Busitema University, while also examining the role of intervening variables.

CHAPTER THREE

3.0 TOOLS AND METHODOLOG

3.1 INTRODUCTION

This chapter presents the methodology that will be used to investigate the comparative effectiveness of blended learning and traditional face-to-face instruction in Mathematics at Busitema University, Nagongera Campus. It describes the research design, study area, target population, sample size, sampling techniques, data collection instruments, data collection procedures, validity and reliability of the instruments, ethical considerations, and data analysis methods.

3.2 RESEARCH DESIGN

The study adopted a descriptive survey research design. A descriptive survey design is appropriate because it enables the researcher to collect information from respondents regarding their experiences, perceptions, attitudes, and opinions about blended learning and traditional face-to-face instruction in Mathematics. The design allows data to be collected from a representative sample at one point in time without manipulating any variables. It is suitable for comparing students' views on academic performance, engagement, and attitudes toward the two modes of instruction.

3.3 STUDY AREA

The study was conducted at Busitema University, Nagongera Campus, located in Tororo District in Eastern Uganda. The campus offers several undergraduate programmes, including Mathematics education, and has adopted both blended learning and traditional face-to-face teaching approaches, making it suitable for this study.

3.4 TARGET POPULATION

The target population will consist of undergraduate students studying Mathematics at Busitema University, Nagongera Campus. These students have experience with both blended learning and traditional face-to-face instruction and are therefore able to provide relevant information regarding the effectiveness of the two teaching approaches.

3.5 SAMPLE SIZE

The study involved a sample of 80 undergraduate students enrolled in Mathematics courses at Busitema University, Nagongera Campus. The sample size is considered adequate to provide reliable information for the study objectives. The sample is divided as follows:

Experimental Group: 45 students (exposed to blended learning)

Control Group: 35 students (exposed to traditional learning)

Total Students: 80

3.6 SAMPLING TECHNIQUES

The study used both purposive and simple random sampling techniques. Purposive sampling will be used to select the mathematics classes because they have experienced both blended learning and traditional face-to-face instruction. Simple random sampling will then be used to select 80 students from the identified classes. This technique gives every student an equal chance of participating in the study and minimizes selection bias.

3.7 DATA COLLECTION INSTRUMENTS

The study used a structured questionnaire as the primary instrument for data collection. The questionnaire will consist of four sections:

Section A: Demographic information of respondents.

Section B: Questions on academic performance under blended learning and traditional face-to-face instruction.

Section C: Questions measuring student engagement and participation using a five-point Likert scale.

Section D: Questions assessing students' attitudes toward blended learning and traditional face-to-face instruction using a five-point Likert scale.

The questionnaire will contain both closed-ended and a few open-ended questions to enable respondents to provide additional opinions where necessary.

3.8 VALIDITY AND RELIABILITY OF THE INSTRUMENTS

The questionnaire will be reviewed by the research supervisor and other experts in educational research to ensure content validity. Their comments and recommendations will be used to improve the instrument before data collection.

A pilot study was conducted among a small group of students who will not participate in the final study. Reliability of the questionnaire will be determined using Cronbach's Alpha, and a reliability coefficient of 0.80 or above will be considered acceptable.

3.9 DATA COLLECTION PROCEDURE

An introductory letter will be obtained from the university authorizing the researcher to conduct the study. Permission will then be sought from the administration of Busitema University, Nagongera Campus.

After obtaining permission, the researcher will administer questionnaires to the selected respondents. The purpose of the study will be explained, and respondents will be assured that the information collected will be treated confidentially and used only for academic purposes. Completed questionnaires will be collected immediately or within an agreed period.

3.10 DATA ANALYSIS

The quantitative data collected will be coded, entered, cleaned, and analyzed using the Statistical Package for Social Sciences (SPSS).

Descriptive statistics, including frequencies, percentages, means, and standard deviations, will be used to summarize the responses. The findings will be presented using tables, charts, and graphs where appropriate to facilitate interpretation.

Table 3.1: Data Analysis Plan

Study Objective	Data Type	Data Collection Instrument	Data Analysis Method
Compare students' perceptions of academic performance under blended learning and traditional face-to-face instruction	Quantitative	Questionnaire	Frequencies, percentages, mean and standard deviation
Assess student engagement and participation in blended learning and traditional face-to-face instruction	Quantitative	Questionnaire (Likert Scale)	Mean, standard deviation, frequencies and percentages
Examine students' attitudes toward blended learning and traditional face-to-face instruction	Quantitative	Questionnaire (Likert Scale)	Frequencies, percentages, mean and standard deviation

3.11 ETHICAL CONSIDERATIONS

Participation in the study will be voluntary.

Respondents will be informed about the purpose of the research before completing the questionnaire

Confidentiality and anonymity will be maintained by ensuring that respondents' names are not recorded on the questionnaires.

The collected data will be used strictly for academic purposes, and respondents will be free to withdraw from the study at any stage without any penalty.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF RESULTS

4.0 INTRODUCTION

This study is aimed at assessing a comparative of blended learning and traditional face-to-face instruction: a case of Busitema University, Nagongera Campus. The focus was in three independent variables, namely: academic performance under blended learning and traditional teaching methods, engagement and participation in blended learning and traditional teaching methods, and attitudes towards blended learning and traditional teaching methods in order to accomplish the above, two hypotheses were formulated and the results are presented in this chapter. The chapter is divided into three sections, namely: section one deals with the demographic characteristics of the respondents, section two presents the descriptive statistics of the items relating to particular objectives and section three presents the study's findings according to the hypothesis cited in chapter one

In this study, a number of 80 students were sampled 45 students for Experimental Group and 35 students for Control Group giving the total of 80 questionnaires that were distributed. A total of 59(84.2%) fully completed questionnaires were returned of which 37(82.2%) and 22(73.3%) were filled by experimental group and control group respectively of the target population

This gave a response rate of 84.2% as illustrated in table below

Table 4.1: questionnaire return rate

Respondent category	Number issued out	Number returned	percentage
Experimental Group	45	37	82.2%
Control Group	35	22	73.3%
Total	80	59	84.2%

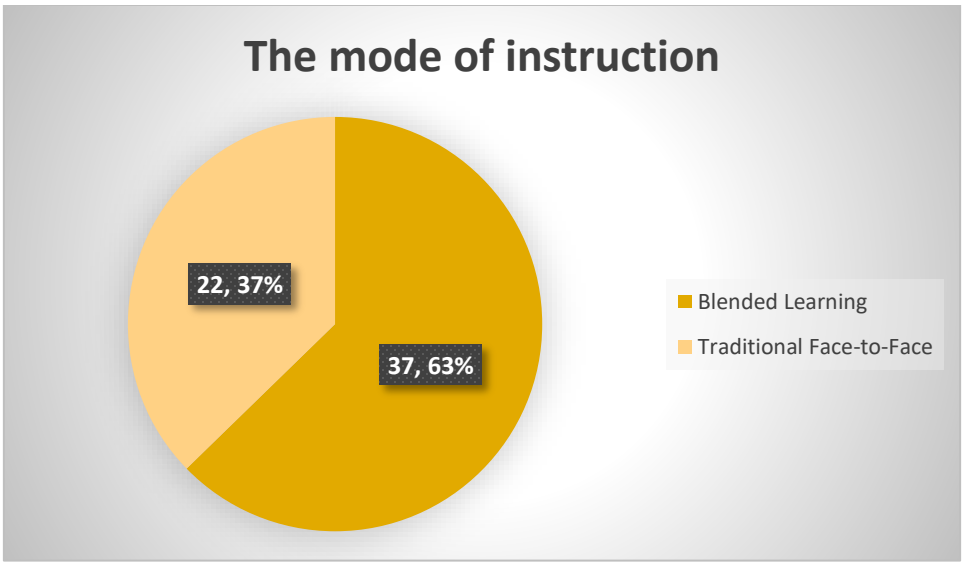


Figure 1

4.1: SECTION ONE: BACKGROUND INFORMATION OF RESPONDENTS

4.1.1: DEMOGRAPHIC INFORMATION

The demographic characteristics illustrates the distribution of respondents' categories in relation to Age, Gender and Year of study as described in the table below

Table 4.2: Distribution of respondents according to Gender, Age and Year of study

	Attributes	Category	Count	Percentage
	Gender	Male	36	61%
		Female	23	39%
Total			59	100%
	Age	<20 years	1	1.7%
		20-25 years	52	88.1%
		26-30 years	6	10.2%
		>30 years	0	0%
Total			59	100%
	Year of Study	First	15	25.4%
		Second	22	37.3%

		Third	22	37.3%
Total			59	100%

The findings in Table 4.2 show that most of the respondents (36, 61%) were males while only (23, 39%) of them were females. This scenario is associated with the fact that, in Busitema University, Nagongera Campus where this study was conducted, female education is still low and this was clearly translating in their enrolment at university level. This is further supported by the National Council of Higher Education (NCHE, 2005) which shows higher enrolment among male than female students in Uganda's Public Universities

A graph showing the number of respondents for both male and female

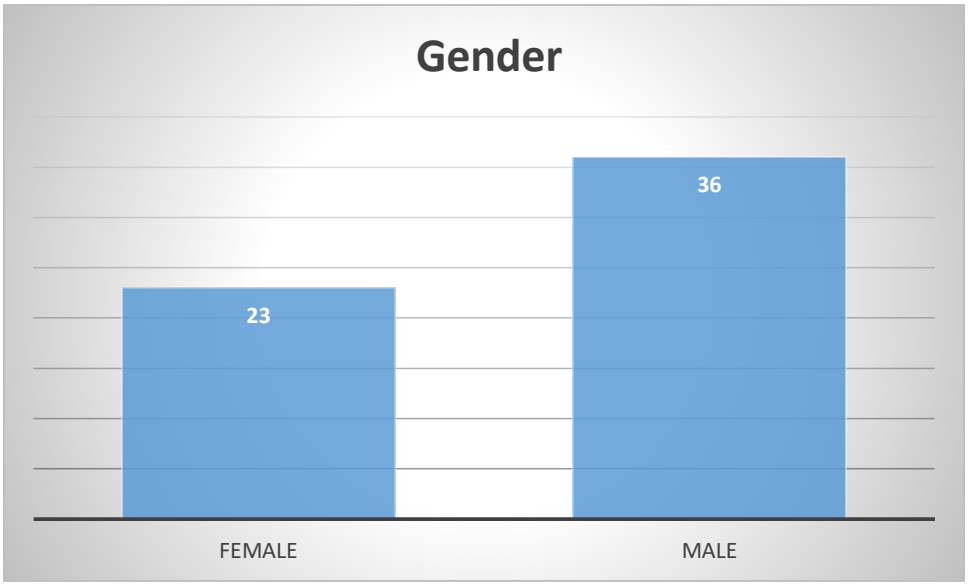


Figure 2

From table 4.2, it can also be noted that majority of the respondents (88.1%) were aged between 20-25 years. This is associated with the fact that greater sections of the University population are directed entrants from A-Level About 10.2% and 1.7% were aged between25-30 and below 20 years respectively.

A graph showing age

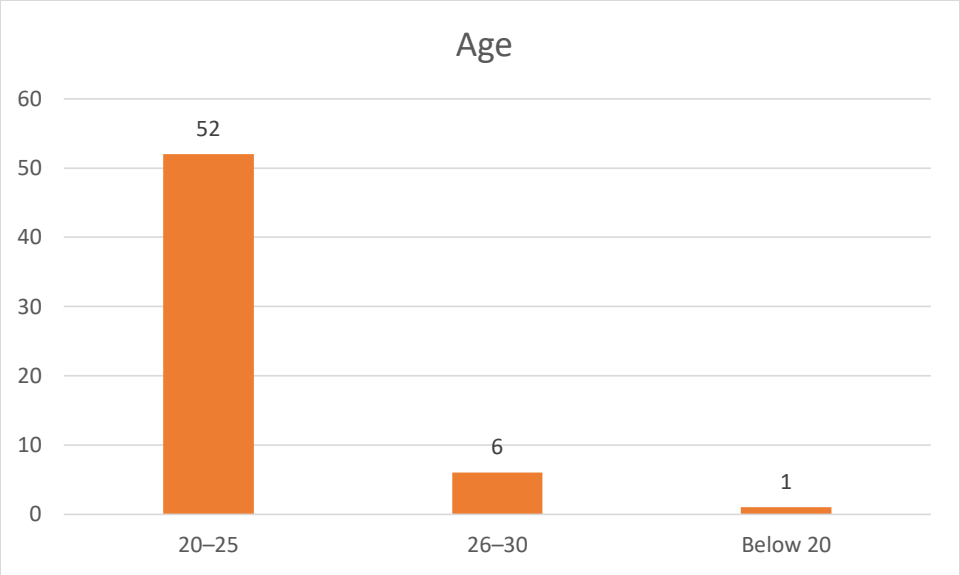


Figure 3

About 37.3% of the respondents have spent less than two years and are equally big number of 37.3% have spent more than three years in the University and 25.4% have just joined Campus

A graph showing the year of study

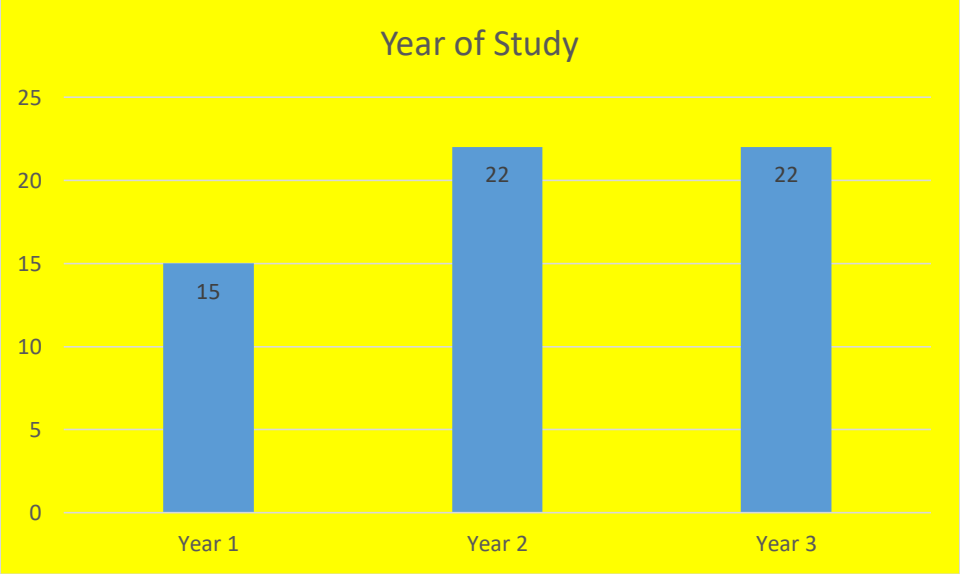


Figure 4

4.1.2: DESCRIPTION OF RESPONDENTS' OPINION IN THE MATHEMATICS LEARNING EXPERIENCE

Table 4.3: Distribution of respondents according to Blended learning, traditional Face-To-Face and Attending mathematics classes (Always, Often, Sometimes, and Rarely

	Attributes	Category	Count	Percentage
	Mode of Instruction	Blended learning	37	62.7%
		Traditional Face-To-Face	22	37.3%
Total			59	100%
	Attending mathematics classes	Always	49	83.1%
		Often	4	6.8%
		Sometimes	5	8%
		Rarely	1	1.7%
Total			59	100%

A graph showing attendance of mathematics classes

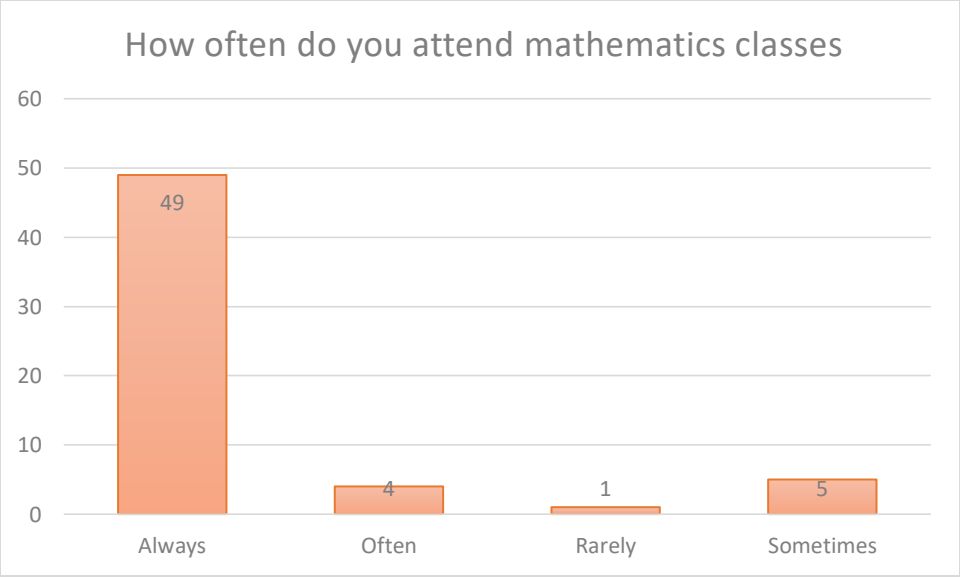


Figure 5

From table 4.3 the number of students who always attends mathematics classes are high which means there are high rate of enrolment of mathematics students at Campus

4.2 SECTION TWO: DESCRIPTION OF RESPONDENTS' OPINIONS IN RELATION TO THE INDEPENDENT VARIABLE

In this section, descriptions of respondents' opinions per the items of the questionnaire relating to the objectives of the study are presented. Respondents were requested to react to the items by ticking (checking) the option that best described their opinions on a Likert scale ranging from Strongly Disagree to Strongly Agree

Table 4.4: Distribution of respondents by opinion on Student Engagement (Likert Scale)

Statement	Status	Freq	Percent
I actively participate in mathematics lessons	Strongly Agree	28	47.5%
	Agree	22	37.3%
	Neutral	5	8.5%
	Disagree	0	0%
	Strongly Disagree	4	6.7%
Total		59	100%
I feel motivated to learn mathematics	Strongly Agree	18	30.5%
	Agree	25	42.4%
	Neutral	12	20.3%
	Disagree	2	3.4%
	Strongly Disagree	2	3.4%
Total		59	100%
I complete assignments on time	Strongly Agree	21	35.6%
	Agree	27	45.7%
	Neutral	5	8.5%
	Disagree	3	5.1%
	Strongly Disagree	3	5.1%
Total		59	100%
	Strongly Agree	18	30.5%

I ask questions during lessons when I do not understand	Agree	25	42.4%
	Neutral	12	20.3%
	Disagree	2	3.4%
	Strongly Disagree	2	3.4%
Total		59	100%
I collaborate with other students during learning	Strongly Agree	27	45.7%
	Agree	28	47.5%
	Neutral	2	3.4%
	Disagree	1	1.7%
	Strongly Disagree	1	1.7%
Total		59	100%
Online platforms increase my engagement in learning	Strongly Agree	25	42.4%
	Agree	21	35.5%
	Neutral	5	8.5%
	Disagree	4	6.8%
	Strongly Disagree	4	6.8%
Total		59	100%

As seen in table 4.4, active participation in mathematics classes seems to be one of the major concerns in Busitema University, Nagongera Campus. The findings for strongly agree (47.5%) indicates that nearly half of the respondents hold a highly extremely positive view, agree (37.3%) a solid majority find the subject acceptable, beneficial, or agreeable, even if they don't feel quite as the "strongly agree" group, neutral (8.5%) these respondents are on the fence. They neither support nor oppose the subject, strongly disagree (6.7%) a very small minority actively oppose or dislike the subject. The above findings show a highly favorable response, with a combined 84.8% of respondents viewing the subject positively. Only 6.7% expressed outright dissatisfaction, indicating strong overall acceptance or success and this suggests that with over 84.8% approval, whatever initiative, product, or policy was surveyed is performing very well while 6.7% a low percentage, it is worth digging into "strongly agree" response

The findings from Table 4.4, the findings show Strongly Agree & Agree (72.9%): A vast majority of your students are intrinsically or extrinsically motivated, meaning they generally find value, interest, or reward in learning math, Neutral (20.3%): These students are likely indifferent or lack a strong opinion. They are the critical target group because a minor change in the learning environment could drastically improve their motivation or cause them to dislike the subject, Disagree & Strongly Disagree (10.1%): A small but important minority actively struggles with motivation, potentially due to math anxiety, feeling overwhelmed, or difficulty grasping foundational concepts. From the above findings it shows an overwhelmingly positive attitude: 72.9% of respondents feel motivated to learn mathematics. However, 20.3% are neutral, representing a significant group of students who could easily swing toward engagement or disengagement depending on the teaching methods used.

The findings from Table 4.4, the findings show Positive (81.3%): Combined Strongly Agree (35.6%) and Agree (45.7%). The majority strongly identify with this good habit, Neutral (8.5%): These respondents have mixed feelings or sometimes struggle with timely submissions, Negative (10.2%): Combined Disagree (5.1%) and Strongly Disagree (5.1%). A distinct minority struggles to meet deadlines. From the above findings it shows data revealing overwhelmingly positive sentiment: 81.3% of respondents agreed or strongly agreed that they complete assignments on time. Only a small minority (10.2%) disagreed. This indicates excellent time management and compliance among your target group.

The findings from Table 4.4, shows Positive Sentiment (72.9%): A clear majority of the respondents are motivated. This combines those who strongly agree (30.5%) and agree (42.4%). Almost three-quarters of the class are proactive learners, they are comfortable interrupting or seeking clarification, which means your teaching style likely encourages open communication, Neutral Sentiment (20.3%): One in five respondents chose neutral. This means they neither strongly love nor actively dislike math. They are the "movable middle" and may just be getting by without a strong emotional connection to the subject, Negative Sentiment (6.8%): A very small minority actively dislike math, combining the disagree (3.4%) and strongly disagree (3.4%) categories. From the above findings it shows High Engagement: The strong positive numbers (over 72.9%) indicate that the majority of learners have an intrinsic drive to tackle math concepts. They are receptive to lessons and likely willing to put in the required effort. Minority Struggle: The

small negative group (6.8%) may need targeted interventions. These individuals might have math anxiety or feel overwhelmed by complex topics. The 20.3% Opportunity: The neutral group is critical. With engaging teaching methods, practical applications, or better support, these students can easily be shifted into the highly motivated category.

The findings from Table 4.4, the findings show Strongly Agree (45.7%): Nearly half of the participants have a definitively strong sense that they collaborate with others. This represents a highly engaged group that thrives on peer-to-peer learning, agree (47.5%): This is the largest single group. Combined with those who "strongly agree," an overwhelming majority of the respondents actively participate in collaborative learning, Neutral (3.4%): A very small minority neither agree nor disagree. These students may collaborate occasionally, prefer independent study, or have mixed experiences, disagree (1.7%): This represents a negligible fraction of students who feel they do not collaborate, Strongly Disagree (1.7%): Similarly, almost no students strongly feel that they do not collaborate with peers. The data shows an overwhelmingly positive trend. A combined 93.2% of respondents agree or strongly agree that they collaborate with peers, indicating a highly collaborative learning culture. Only 3.4% disagree or strongly disagree, while 3.4% are neutral.

The findings from Table 4.4, the findings show Overwhelmingly Positive Sentiment (77.9%): Combining "strongly agree" and "agree" yields. This proves that the integration of online platforms is generally successful and meets the needs of most learners, Minority Dissatisfaction (13.6%): The respondents who disagree or strongly disagree highlight that digital learning does not work perfectly for everyone. It is important to investigate why these users are struggling—whether it stems from a lack of digital literacy, poor internet connectivity, or a preference for traditional, in-person instruction, Neutral Observations (8.5%): The neutral responses show a degree of indifference or uncertainty. These individuals might feel that online platforms offer both benefits and drawbacks equally, or they may not have used the platforms enough to form a firm opinion. A significant majority of respondents (77.9%) agree or strongly agree that online platforms increase their learning engagement. This suggests that the platforms are highly effective. The low combined negative sentiment indicates broad user acceptance, though minor technical or accessibility barriers should be addressed to optimize the experience.

4.2.1: RESPONDENTS' OPINIONS ON STUDENT ATTITUDES TOWARD LEARNING METHODS.

One of the major factors affecting the student's attitude toward learning methods is instructional/method challenge, environmental and social challenges and motivational & psychological challenges. In the view of this, respondents were requested to rate the student attitudes towards learning methods and the findings are presented in Table 4.5:

Table 4.5: Distribution of respondents with their opinions on student attitudes toward learning methods.

Statements	Status	Freq	Percent
I enjoy learning mathematics	Strongly Agree	33	56%
	Agree	24	40.6%
	Neutral	2	3.4%
	Disagree	0	
	Strongly Disagree	0	
Total		59	100%
Blended learning makes mathematics easier to understand	Strongly Agree	22	37.3%
	Agree	24	40.7%
	Neutral	7	11.8%
	Disagree	6	10.2%
	Strongly Disagree	0	
Total		59	100%
Traditional face-to-face teaching is more effective	Strongly Agree	31	52.5%
	Agree	16	27.1%
	Neutral	10	17%
	Disagree	2	3.4%
	Strongly Disagree	0	
Total		59	100%
	Strongly Agree	22	37.3%
	Agree	24	40.7%

I prefer blended learning over traditional learning	Neutral	6	10.2%
	Disagree	7	11.8%
	Strongly Disagree	0	
Total		59	100%
I feel confident when solving mathematics problems	Strongly Agree	23	39.7%
	Agree	28	48.3%
	Neutral	5	8.6%
	Disagree	2	3.4%
	Strongly Disagree	0	
Total		58	100%
Online learning tools (Zoom, Moodle) improve my learning	Strongly Agree	24	40,6%
	Agree	25	42.4%
	Neutral	6	10.2%
	Disagree	4	6.8%
	Strongly Disagree	0	
Total		59	100

Table 4.5: shows that at University students enjoy learning mathematics notably Overwhelmingly Positive: A combined 96.6% of your respondents agree or strongly agree that they enjoy the subject, indicating that your teaching style, curriculum, or the students' environment is highly effective, Zero Negativity: The complete absence of "Disagree" and "Strongly Disagree" (0%) is a massive success, meaning no students actively dislike or hate learning math, Low Neutrality: The 3.4% neutral response rate represents a tiny fraction of students who are on the fence or uninterested

The findings from Table 4.5: Overwhelming Positive Sentiment: Combining the “Strongly Agree” (37.3%) and “Agree” (40.7%) categories yield a 78% overall approval rating. This shows that a clear majority of the students find the mix of traditional classroom instruction and digital tools beneficial to their conceptual understanding of math. High Conviction: The fact that 37.3% strongly agree indicates that for a significant portion of the cohort, the blended learning format is

not just helpful, but highly impactful, The Skeptical Minority: The combined “Disagree” and “Strongly Disagree” responses stand at 10.2%. This minority likely includes students who prefer purely traditional instruction or struggle with independent online learning/technology, Undecided/Neutral: The 11.8% neutral vote represents students who are either unsure of the method's effectiveness, have mixed experiences, or perhaps haven't engaged deeply enough with both the digital and in-person components to form a firm opinion. This data demonstrates a highly positive consensus: 78% of respondents (Agree and strongly agree) believe blended learning makes mathematics easier to understand, with a majority expressing strong conviction. The intervention is very well-received, though a small segment of students faces challenges.

The findings from Table 4.5: Overwhelming Approval: The vast majority (79.6%) favor the traditional classroom model, indicating high satisfaction with physical, in-person instruction, Zero Negative Sentiment: The fact that 0% "strongly disagreed" shows there is virtually no intense opposition to the idea of face-to-face learning being highly effective, the "Neutral" Group (17.0%): A notable portion of your respondents are on the fence. These individuals may see the value in both modalities (e.g., valuing the flexibility of online learning but appreciating the hands-on benefits of physical classes). Respondents likely chose this because the traditional setup offers several proven advantages over remote learning: Immediate Feedback, Collaborative learning and so on.

The findings from Table 4.5: Positive Consensus (78%): The combined Strongly Agree (37.3%) and Agree (40.7%) form a massive majority, signaling that the learning design resonates well with the student body, Passive/Undecided (10.2%): A small fraction is Neutral, meaning they do not feel strongly one way or the other. They likely require more personalized engagement to sway them, Negative/Dissent (11.8%): This minority actively disagrees, preferring purely traditional instruction, Zero Resistance (0%): The complete absence of "Strongly Disagree" proves there is no extreme, outright rejection of this educational model. The data shows overwhelming support for blended learning, with high percentage (78%) of respondents preferring it over traditional teaching and zero students strongly disagreeing. This indicates a highly receptive target audience that values the flexibility and digital integration that blended environments offer.

The findings from Table 4.5: Strongly Agree (39.7%): A significant portion of your respondents feel absolutely assured in their abilities, Agree (48.3%): The largest overall group feels confident,

though they may occasionally need reinforcement, Middle (Neutral): 8.6% Respondents in this category may possess average confidence, experience situational anxiety (only confident on certain topics), or lack a strong opinion, Disagree (3.4%): A very small minority actively struggles with math confidence, Strongly Disagree (0%): Nobody holds deep-seated feelings of inadequacy or total lack of confidence toward the subject. This survey data reveals highly positive sentiment: 88% of respondents feel confident when solving math problems, while only 3.4% lack confidence. This overwhelmingly leans toward a strong, healthy sense of mathematical self-efficacy, which is generally a positive indicator for engagement and performance in the subject.

The findings from Table 4.5: Strongly Agree (40.6%): A large portion of your respondents feel very strongly that the online tools have a direct positive impact on their academic progress, Agree (42.4%): This is the largest group, meaning that the majority of students generally recognize the value of Zoom and Moodle, Neutral (10.2%): These students may have mixed feelings, encounter technical or connectivity issues (which is common in rural/developing regions), or simply prefer a blended approach to learning, Disagree (6.8%): A small minority find that online learning tools do not work well for their specific learning style or may lack the necessary hardware/internet to use them effectively, Strongly Disagree (0%): This is a highly encouraging metric; not a single respondent completely rejects the value of these online platforms.

4.2.2 RESPONDENTS' OPINIONS ON ACCESS TO TECHNOLOGY AND CHALLENGES

The respondents were asked do you have reliable internet access in various locations in the University and the results are given in the Table 4.6

Table 4.6: Distribution of respondents by opinions on reliable internet access

Statements	Status	Freq	Percent
do you have reliable internet access	Yes	31	52.5%
	no	28	47.5%
Total		59	100%

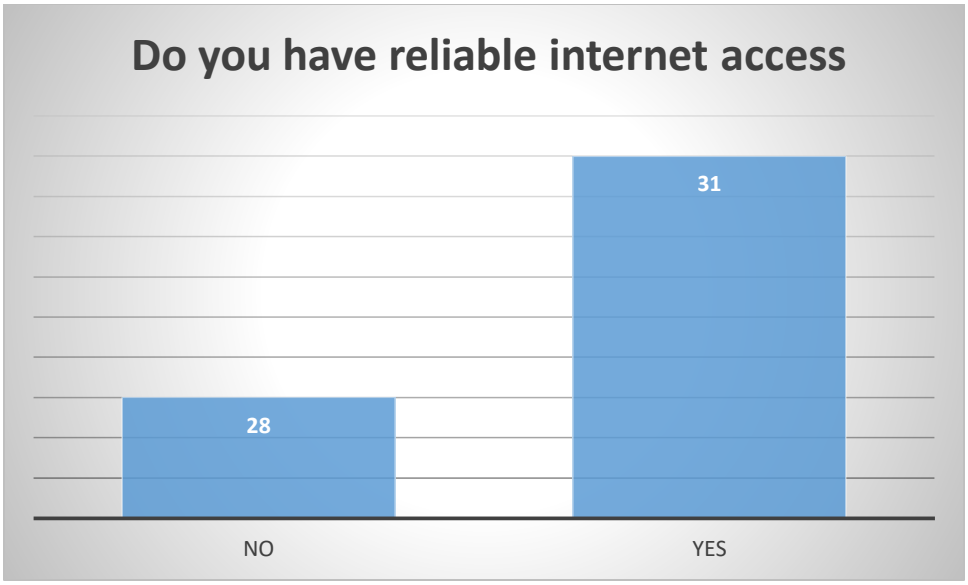


Figure 6

The findings from table 4.6: A 52.5% "Yes" and 47.5% "No" indicates a deeply polarized participant base. For a question about reliable internet access, this narrow divide reveals that digital inequality is highly prominent in your surveyed community—leaving almost half without the dependable connectivity required for modern tasks. High Risk of Digital Exclusion: With 47.5% lacking reliable access, any online services, remote work, or digital communication planned for this group will fail to reach nearly half of the target audience.

The respondents were also asked what device do you mainly use for online learning in Nagongera Campus and the results are given in table 4.7:

Table 4.7: Distribution of respondents by opinions on what device do you mainly use for online learning?

Statements	Status	Freq	Percent
what device do you mainly use for online learning	Smartphone	54	91.5%
	Laptop	5	8.5%
	Tablet	0	
	None	0	
Total		59	100%

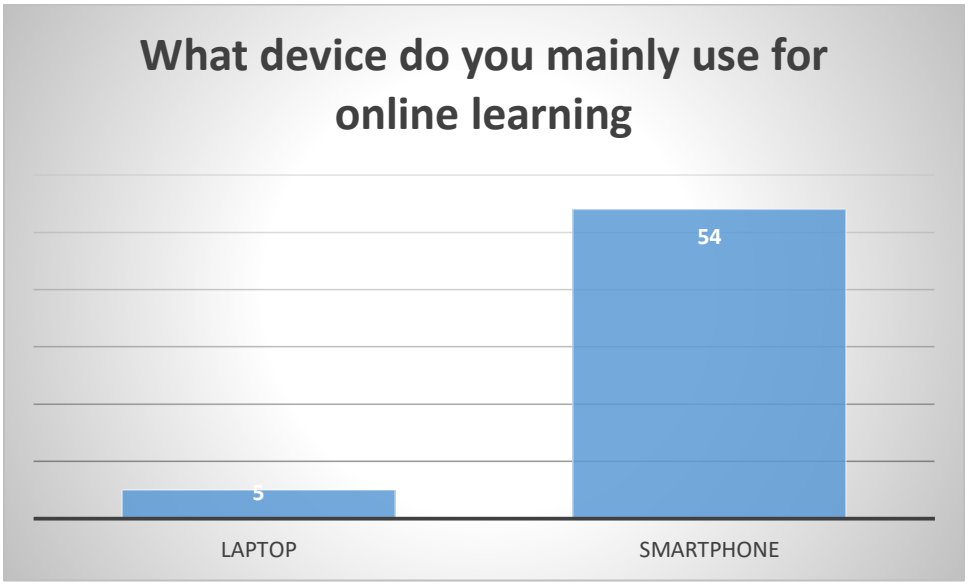


Figure 7

The findings from table 4.7: High Smartphone Dominance (91.5%). Why it happens is that smartphones are far more affordable, portable, and accessible than desktop computers or laptops. They act as a "computer in the pocket," allowing students to learn without needing a fixed electrical outlet or a dedicated workspace.

The challenge: While highly convenient, studying on a small screen can cause eye strain and make writing long essays or creating complex documents very difficult. Additionally, switching between apps (like Zoom and WhatsApp) can cause frustration on lower-end smartphone models. Moderate Laptop Usage (8.5%). The reality of the 8.5%: Only a tiny fraction of your respondents has access to a laptop. These devices are likely the most effective for online learning since they offer physical keyboards, larger screens, and support for heavy educational software.

The educational divide: This low percentage indicates a severe technological gap. Students who rely on smartphones are at a disadvantage when it comes to completing in-depth research or viewing large, text-heavy PDFs compared to their peers with laptops.

The respondents were also asked challenges they face in Nagongera Campus and the results are given in table 4.8:

Table 4.8: Distribution of respondents by opinions on which methods help you understand mathematics better

Statement	Status	Freq	Percentage
Which method helps you understand mathematics better	Blended Learning	24	40.7%
	Traditional Face-To-Face	17	28.8%
	Both equally	18	30.5%
Total		59	100%

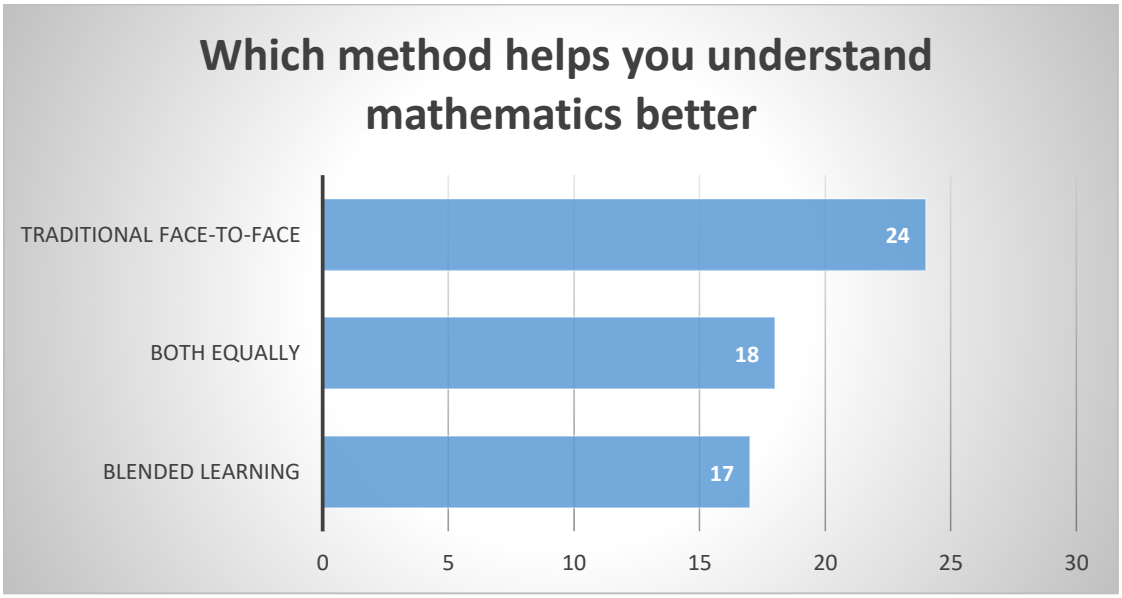
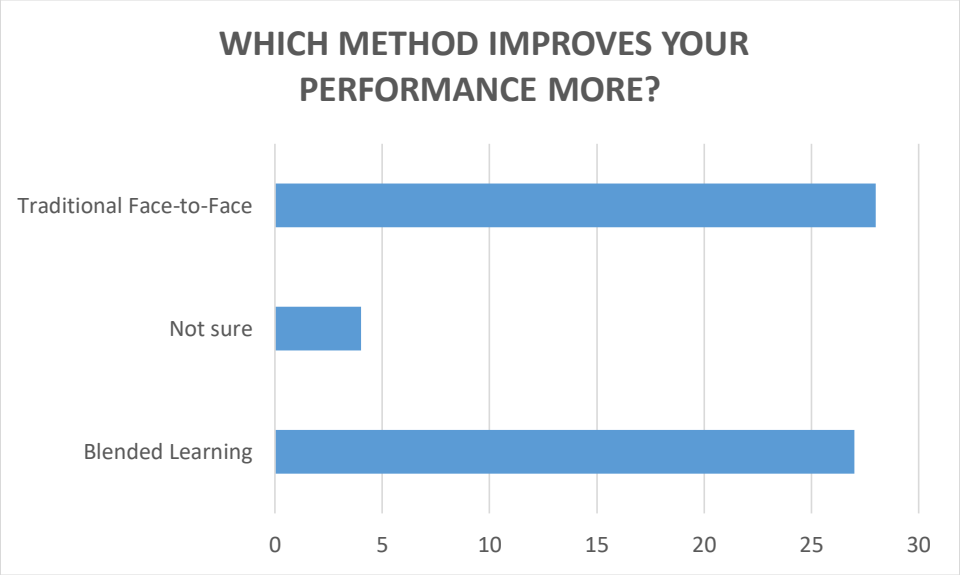


Figure 8

Traditional Face-to-Face (40.7%): The most popular single choice. Students value this for real-time clarification, group discussions, and immediate teacher support when solving complex mathematical equations, Both Equally (30.5%): This group benefits the most from a hybrid approach, enjoying the guidance of physical classes alongside the flexibility of digital resources, Blended Learning (28.8%): Students rely on independent online materials (like educational videos or modules) coupled with classroom sessions.

Table 4.8: Distribution of respondents by opinions on which method improves your performance more

Statement	Status	Freq	Percentage
Which method improves your performance more	Blended Learning	27	45.7%
	Traditional Face-to-Face	28	47.5%
	Not sure	4	6.8%
Total		59	100%



From the table 4.8: A Deeply Divided Cohort here is almost an exact split between students who prefer traditional classroom settings and those who prefer a mix of online and in-person (blended) learning. With only a (1.8%) difference between the two primary methods, there is no single consensus on which method works best for your group as a whole, Blended Learning is a Strong Contender Despite traditional teaching holding a razor-thin lead, (45.7%) is a massive showing for blended learning. This indicates that nearly half of the respondents value the flexibility of digital resources combined with the structure of in-person classes, the "Not Sure" Group is Small at just (6.8%), this low percentage suggests that most students have actively experienced both methods and have formed a definitive opinion on how they learn best

4.3 SECTION THREE: VERIFICATION OF THE HYPOTHESES

4.3.1 HYPOTHESIS ONE

The study sought to determine whether there was a significant difference in mathematics academic performance between students taught using traditional face-to-instruction.

The hypotheses tested were:

Null Hypothesis (H_0): There is no significant difference in mathematics academic performance between students taught using blended learning and those taught using traditional face-to-face instruction.

Alternative Hypothesis (H_1): There is a significant difference in mathematics academic performance between students taught using blended learning and those taught using traditional face-to-face instruction.

An Independent Samples t-test was employed to compare the mean mathematics performance scores of the experimental group (students taught using blended learning) and the control group (students taught using traditional face-to-face instruction).

Decision Rule

If the p-value ≤ 0.05, reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1).

If the p-value > 0.05, fail to reject the null hypothesis (H_0).

Group	Sample Size (n)
Experimental (Blended Learning)	37
Control (Traditional Face-to-Face)	22
Mean	29.5
Standard Deviation	10.61

Test statistics

Test Statistic	Value
t-value	3.932
Degrees of freedom (df)	2
p-value (Sig. 2-tailed)	4.303

The Independent Samples t-test indicated a p-value of 4.303. Since this value is 0.05, the null hypothesis was failed to reject.

Conclusion

The findings therefore conclude that there is no significant difference in mathematics academic performance between students taught using blended learning and those taught using traditional face-to-face instruction in mathematics at Busitema University, Nagongera Campus.

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.0 INTRODUCTON

The findings reported in chapter four are discussed in relation to research questions earlier formulated and outline. The chapter is divided into three sections: introduction, discussion, conclusion and recommendations for improvement on blended teaching and learning in Busitema University Nagongera Campus. The chapter concludes with recommendations for future research The following is the discussion according to the research objectives

5.1.1 ACADEMIC PERFORMANCE UNDER BLENDED LEARNING AND TRADITIONAL FACE-TO-FACE INSTRUCTION

The study sought to compare the effectiveness of blended learning and traditional face-to-face instruction in improving students' performance in mathematics. The findings revealed that 45.7% of the respondents believed that blended learning improves their academic performance, while 47.5% indicated that traditional face-to-face instruction improves their performance more. This slight difference suggests that both instructional approaches are effective in supporting mathematics learning.

The findings further revealed that 78% of the respondents agreed that blended learning makes mathematics easier to understand, while 79.6% agreed that traditional face-to-face instruction is more effective. This implies that students value both approaches because each offers unique advantages. Traditional face-to-face instruction provides immediate feedback, direct interaction with lecturers, and collaborative classroom discussions, while blended learning provides flexibility, access to online learning materials, and opportunities for self-paced learning.

The findings therefore suggest that neither method should completely replace the other. Instead, combining the strengths of both approaches may produce better learning outcomes in mathematics.

5.1.2 STUDENT ENGAGEMENT AND PARTICIPATION IN MATHEMATICS LEARNING

The study examined students' engagement and participation in mathematics learning under blended learning and traditional face-to-face instruction. Findings showed that 84.8% of the respondents actively participated in mathematics lessons, while 72.9% reported being motivated

to learn mathematics. Additionally, 81.3% completed assignments on time and 93.2% collaborated with fellow students during learning activities.

The results further showed that 77.9% of the respondents agreed that online platforms increase their engagement in learning. This demonstrates that blended learning tools such as Zoom and Moodle can effectively enhance student participation and interaction in mathematics.

The high attendance rate of mathematics classes (83.1%) also indicates that students are highly committed to their studies. Therefore, both blended learning and traditional face-to-face instruction contribute positively to student engagement and participation. However, the integration of technology appears to provide additional opportunities for communication, collaboration, and independent learning.

5.1.3 STUDENTS' ATTITUDES TOWARDS BLENDED LEARNING AND TRADITIONAL FACE-TO-FACE INSTRUCTION

The study also assessed students' attitudes towards the two instructional approaches. Findings revealed that 96.6% of the respondents enjoy learning mathematics, indicating a highly positive attitude toward the subject.

Furthermore, 78% of the respondents preferred blended learning over traditional learning, while 79.6% agreed that traditional face-to-face teaching is effective. These findings indicate that students appreciate both learning approaches. Student's value blended learning because it provides flexibility, accessibility to learning resources, and convenience. On the other hand, traditional face-to-face instruction is appreciated for its direct interaction with lecturers and immediate clarification of difficult concepts.

The study also found that 88% of respondents felt confident when solving mathematics problems and 83% agreed that online learning tools such as Zoom and Moodle improve their learning experience. These findings suggest that students generally have positive attitudes towards technology-supported learning and are willing to embrace blended learning approaches.

5.1.4 ACCESS TO TECHNOLOGY AND CHALLENGES

The study established that access to technology remains a major challenge. While 52.5% of respondents reported having reliable internet access, 47.5% indicated that they lacked reliable connectivity. This finding highlights the existence of a digital divide among students.

The study further revealed that 91.5% of students primarily use smartphones for online learning, while only 8.5% use laptops. This indicates that smartphones are the most accessible learning devices among students at Busitema University, Nagongera Campus. However, dependence on smartphones may limit students' ability to perform complex academic tasks such as data analysis, report writing, and accessing advanced educational software.

These findings suggest that technological and infrastructural challenges continue to affect the effectiveness of blended learning despite its numerous benefits.

5.2 CONCLUSIONS

From the discussions, the following conclusions are drawn:

Both blended learning and traditional face-to-face instruction are effective approaches for teaching mathematics at Busitema University, Nagongera Campus.

Students engagement and participation in mathematics learning were generally high students perceived both methods as effective. Students actively participated in lessons, collaborated with peers, completed assignments on time, and demonstrated positive learning behaviors.

Students held positive attitudes towards both instructional approaches. While blended learning was appreciated for its flexibility, accessibility, and ability to enhance understanding, traditional face-to-face instruction remained highly valued for direct instruction and immediate feedback

There was no substantial results difference between blended learning and traditional face-to-face instruction regarding perceived academic performance. The findings indicate that both approaches contributed positively to mathematics learning

Access to technology remains a major challenge affecting the implementation of blended learning. Poor internet connectivity and dependence on smartphones limit students' ability to fully benefit from online learning resources.

The findings suggest that a blended approach that combines the strengths of traditional face-to-face teaching with digital tools offers the most effective strategy for mathematics instruction at Busitema University, Nagongera Campus

5.3 RECOMMENDATIONS

Based on the findings of this study, in order to improve teaching and learning the following recommendations are proposed:

5.3.1 TO BUSITEMA UNIVERSITY ADMINISTRATION

The university should strengthen internet connectivity across Nagongera Campus to ensure all students can effectively participate in online learning activities.

The university should invest in ICT infrastructure, including computer laboratories, Wi-Fi hotspots, and digital learning resources.

The university should organize regular training workshops to improve students' and lecturers' digital literacy skills.

5.3.2 TO MATHEMATICS LECTURERS

Lecturers should adopt blended learning approaches that combine classroom teaching with online learning activities.

Lecturers should utilize online learning platforms such as Moodle and Zoom to provide supplementary learning materials and facilitate continuous interaction with students.

Lecturers should encourage collaborative learning through group discussions, online forums, and peer learning activities.

5.3.3 TO STUDENTS

Students should actively participate in both face-to-face and online learning activities to maximize learning opportunities.

Students should improve their digital skills to effectively utilize available online learning resources.

Students should develop effective time management strategies to ensure timely completion of assignments and online learning tasks.

5.3.4 TO GOVERNMENT AND OTHER STAKEHOLDERS

Government should support universities by expanding internet infrastructure and reducing the cost of internet services for students.

Educational stakeholders should promote affordable access to digital devices such as laptops and tablets to facilitate effective blended learning.

5.4 AREAS FOR FURTHER RESEARCH

Future studies should examine the long-term effects of blended learning on students' academic performance in mathematics.

Further research should investigate the effectiveness of blended learning in other disciplines offered at Busitema University.

Future studies should explore the challenges faced by lecturers in implementing blended learning in higher institutions of learning.

Further research should examine strategies for improving internet accessibility and digital inclusion among university students.

APPENDIX: QUESTIONNAIRES

BLENDED LEARNING AND TRADITIONAL FACE-TO-FACE ASSESSMENT

My name is KIBET ENOCK, A year three student f Busitema University, Faculty of Science and Education. Your input will be of a very great contribution to my research study

A COMPARATIVE STUDY OF BLENDED LEARNING AND TRADITIONAL FACE TO FACE INSTRUCTION IN MATHEMATICS AT BUSITEMA UNIVERSITY, NAGONGERA CAMPUS

Please answer all questions honestly.

Your responses will be kept confidential and used strictly for academic purposes.

Tick (✓) the appropriate option where applicable.

SECTION A: DEMOGRAPHIC INFORMATION

1. What is your Gender?

☐ Male ☐ Female ☐ Prefer not to say

2. What is your Age?

☐ Below 20 ☐ 20–25 ☐ 26–30 ☐ Above 30

3. What is the Year of Study?

☐ Year 1 ☐ Year 2 ☐ Year 3

4. Which Program of Study

☐ BSc Education ☐ BSS ☐ Other: _____

5. Have you experienced blended learning before?

☐ Yes ☐ No

SECTION B: Mathematics Learning Experience

6. Which mode of instruction are you currently using?

☐ Blended Learning

☐ Traditional Face-to-Face

7. How often do you attend mathematics classes?

☐ Always ☐ Often ☐ Sometimes ☐ Rarely

SECTION C: Student Engagement (Likert Scale)

Instruction: Tick the option that best describes your level of agreement.

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
8. I actively participate in mathematics lessons					
9. I feel motivated to learn mathematics					
10. I complete assignments on time					

11. I ask questions during lessons when I do not understand					
12. I collaborate with other students during learning					
13. Online platforms increase my engagement in learning					

SECTION D: Student Attitudes Toward Learning Methods

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
14. I enjoy learning mathematics					
15. Blended learning makes mathematics easier to understand					
16. Traditional face-to-face teaching is more effective					
17. I prefer blended learning over traditional learning					
18. I feel confident when solving					

mathematics problems					
19. Online learning tools (Zoom, Moodle) improve my learning					

SECTION E: Access to Technology and Challenges

20. Do you have reliable internet access?

☐ Yes ☐ No

21. What device do you mainly use for online learning?

☐ Smartphone ☐ Laptop ☐ Tablet ☐ None

23. Indicate challenges you face (Tick all that apply):

☐ Poor internet connectivity

☐ High data costs

☐ Lack of devices

☐ Limited digital skills

☐ Lack of motivation

☐ None

SECTION F: Perception of Learning Effectiveness

24. Which method helps you understand mathematics better?

☐ Blended Learning

☐ Traditional Face-to-Face

☐ Both equally

25. Which method improves your performance more?

☐ Blended Learning

☐ Traditional Face-to-Face

☐ Not sure

SECTION G: Open-Ended Questions

26. What do you like most about your current mode of learning?

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27. What challenges do you face in learning mathematics?

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28. What suggestions do you have to improve mathematics teaching at Busitema University?

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(OPTIONAL) SECTION H: For Blended Learning Group Only

29. How often do you use online platforms (Zoom/Moodle)?

☐ **Always** ☐ **Often** ☐ **Sometimes** ☐ **Rarely**

30. Do online materials help you revise better?

☐ **Yes** ☐ **No**

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