

BISHOP STUART UNIVERSITY



**Teacher Qualification and Learners' Performance in Mathematics in
Primary Schools in Mbarara City South**

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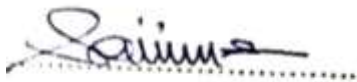
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Declaration

I Asiimwe Gratiano, declare that this research dissertation is my original work and has never been submitted for any academic award.

Signed



Asiimwe Gratiano

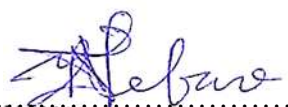
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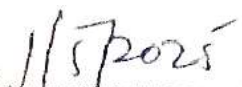
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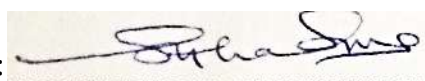
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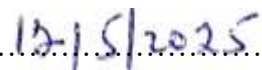
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Dedication

I dedicate this work to my dear wife Tumuhimbise Bonny for the financial support, care and guidance throughout my academic career for master's degree.

Acknowledgement

I thank the Almighty God for giving me life, zeal, strength and desire to attain this performance.

I also thank my supervisors Dr. Twebaze Richard and Ms. Jean Tutegyeize for supporting my research process with so much dedication, professionalism and invaluable time and input.

I thank my classmates for the intellectual support and cordial friendship that always inspired me to reach higher when the things could go tougher.

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I also acknowledge the contribution of all respondents to this study that cooperated to provide valuable data that this research a success.

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Abstract

The study was carried out to establish the impact of teacher qualification on learners' performance in primary schools in Mbarara City South, Mbarara City. The study Objectives were; i) To identify the different qualifications of mathematics teachers' in primary schools of Mbarara city south, Mbarara city, ii) To find out the level of learners' performance in mathematics in primary schools of Mbarara city south, Mbarara city and iii) To establish the difference in performance in mathematics of learners taught by teachers of different qualifications in primary schools of Mbarara city south, Mbarara city. This study used descriptive research design. The study population considered Headteacher, Director of Studies and mathematics teachers. The study sample size was 156 respondents. Simple Random Sampling was used to sample respondents. Data Collection instruments were interview guides and documentary reviews. Data was qualitatively and quantitatively analysed. The ANOVA results indicate a statistically significant difference in mathematics performance among learners taught by teachers with different qualifications ($F(2, 49) = 10.948, p < .001$). Where diploma holders (mean=5.8339) and degree holders (mean = 5.9364) performed better than those taught by teachers with certificate (Mean = 7.4735). The researcher therefore, recommends that there should be Increase access to degree-level education for primary school teachers, Strengthen continuous professional development programs, focusing on mathematics teaching methodologies, Implement policies that prioritize the recruitment of highly qualified teachers, especially in underserved regions, Schools should be provided with adequate teaching materials, technology, and financial resources to better support mathematics learning, particularly in underperforming schools. Schools should adopt research-backed pedagogical strategies, investigate the impact of school environments and teacher-student interactions on learner performance to identify additional factors influencing academic outcomes and Conduct further research on the role of rural and urban settings in shaping the relationship between teacher qualifications and learner performance, providing targeted support for different contexts.

Chapter One

Introduction

This study was on teacher qualification and learners' performance in mathematics in primary schools in Mbarara City South, Mbarara City.

Teacher qualification is a critical component of effective education. It encompasses a combination of formal education, specialized training, and personal attributes that enable educators to inspire, guide, and nurture their pupils. Beyond academic credentials, effective teachers possess qualities like patience, empathy, adaptability, and strong communication skills, which are essential for fostering a positive and engaging learning environment. Continual professional development and a commitment to staying current with evolving pedagogical practices further enhance their qualifications, ensuring they can provide the highest quality education and support to their pupils.

Learners' performance refers to the measurement of how well pupils or individuals are achieving their learning objectives and goals. Assessing learners' performance involves using a range of assessment tools and techniques such as exams, assignments, projects, and observations to gauge their understanding and competency. Effective monitoring and evaluation of learners' performance are crucial for educators and institutions to identify strengths and weaknesses in teaching methods, curriculum design, and individual learning needs. Ultimately, the goal of assessing learners' performance is to provide constructive feedback, tailor instructional strategies, and create an environment that promotes continuous improvement and academic or skill advancement.

In primary mathematics, pupils are introduced to foundational concepts and skills that form the basis for their mathematical understanding. They learn fundamental arithmetic

operations such as addition, subtraction, multiplication, and division, while also developing their abilities to count, recognize patterns, and solve simple word problems. Primary math education focuses on building number sense, understanding basic geometric shapes, measuring, and exploring concepts like time and money. Additionally, pupils begin to grasp the importance of mathematical reasoning and problem-solving, setting the stage for more advanced mathematical concepts in later stages of their education. The primary mathematics curriculum aims to foster a strong mathematical foundation, critical thinking, and a love for learning that will support pupils throughout their academic journey.

Background to the Study

The background of the study was categorized as historical, theory, conceptual and contextual perspectives.

Historical perspective

Globally, Elsbree (2015) indicated that teacher qualification in the United States of America (USA) indicates the main purpose of providing the best education that facilitates the possibility and needs of children and youths in general. Teaching certification in the USA is an attempt to guarantee that teachers who teach in public primary schools are qualified to perform their responsibilities that lead to the improvement of learners' performance (Cremin & Lawrence, 2017). Goldhaber and Brewer (2017) added that having qualified teachers can be one of the factors that can enhance the learners' performance. They also added that teaching is a profession that requires specialized skills and certification as well as degrees that standardize the specialization of teachers.

However, Walsh (2011) indicated that certificates as well as degrees and diplomas held by teachers can be one of the barriers of entering in the profession of teaching. Holt and Seastrom (2015)

presented that qualified teachers may still have relevant trainings that help them to improve their qualifications.

In Africa, teacher qualification in Sub-Sahara African Countries (SSAC) including Uganda, is taken as a profession needed in teaching profession which is also held to guide a professional teacher to grow knowledge and skills (Tylor & Robinson, 2019) also added that a well-developed knowledge and skills of teachers facilitates teaching profession an opportunity that makes a strong part in key decisions related to the quality of service provision which can be done by improving student learners performance and also develop their own profession related to teaching system.

In Kenya, teacher qualification has a significant impact in determination of school outcomes (Adeyemi, 2010). However, Lydia and Migosi (2015) indicated that, qualified teachers are not able to develop the modern method of using Information Communication Technology (ICT) in their daily teaching activities due to lack of computer literacy. They also added that teaching experience is associated with the school outcomes of pupils in Kenya where there is a lower level of completion rate and pupils getting low grades.

The history of teacher training and qualification in Uganda can be traced back to the colonial period when the British established the first teacher training institutions in the early 20th century (Mugagga, 2004). These institutions primarily focused on training Ugandan teachers to support the British colonial education system. After gaining independence in 1962, Uganda continued to develop its teacher education system, with an emphasis on local curriculum development and a shift towards more inclusive and indigenous approaches (Kyeyune, 1999). The National Teacher Policy of 1993 (Ministry of Education and Sports, 1993) played a significant role in shaping teacher qualifications and standards in Uganda, emphasizing the need for improved

teacher training programs and professional development to enhance the quality of education. Since then, Uganda has continued to evolve its teacher training and qualification systems to meet the challenges of a rapidly changing education landscape.

The government revised education policy that guides teachers to develop their desire related to teaching activities and strengthening strategies that could enhance teacher performance so as to make an emphasis on the qualification of teachers (ESSP, 2015). According to Education Sector Strategic Plan (ESSP, 2017), the improvement of learner's completion rate as well as their grades and scores are based on quality and utility of education which might depend on the quality and competence of the teaching staff. However, the government of Uganda met a challenge related to the shortage of qualified teachers needed to teach in public primary schools in Uganda to enhance primary schooling outcomes.

Theoretical perspective

The relationship between teacher qualification and learners' performance in mathematics in primary schools is a critical area of focus in educational research and policy. Teacher qualification, encompassing both academic and professional training, directly influences the quality of instruction and learners' academic outcomes. According to effective teaching requires more than mastery of subject matter; it necessitates the integration of content knowledge with pedagogy to deliver concepts in a manner that is understandable and engaging to learners (Shulman, 1986). Qualified teachers, therefore, not only understand mathematical concepts but also possess the skills to break down complex ideas into simpler, relatable forms, which is vital in primary education where foundational skills are being developed.

Shulman's framework emphasizes the importance of teachers' ability to anticipate student misconceptions, select appropriate teaching strategies, and adapt content to learners'

developmental levels. This specialized knowledge enables teachers to foster deeper mathematical understanding and problem-solving skills among primary school learners. As such, teachers who have undergone thorough training and attained formal qualifications are more likely to possess and apply this pedagogical content knowledge, thereby improving learners' performance.

In addition, Shulman's theory of pedagogical content knowledge (1986), Bandura's social cognitive theory (1986) supports the view that learners' academic performance is influenced by observing and interacting with competent models, such as well-qualified teachers. The theory posits that learning is a social process involving the interplay of behavioral, cognitive, and environmental factors. Within the classroom setting, learners observe their teachers' problem-solving approaches, attitudes towards mathematics, and instructional strategies. When these are presented by a qualified and confident teacher, learners are more likely to develop positive attitudes, increase their self-efficacy, and engage more actively in learning tasks. Teachers who model enthusiasm, persistence, and effective strategies in mathematics contribute to a classroom environment conducive to academic success.

Bandura's emphasis on self-efficacy is particularly relevant; learners who perceive their teachers as knowledgeable and supportive are more likely to believe in their own abilities to succeed in mathematics. Hence, teacher qualification plays a dual role providing the technical knowledge for effective teaching and serving as a motivational model for learners. The combination of pedagogical content knowledge and social modeling underscores the vital role that qualified teachers play in enhancing learners' mathematics performance in primary schools.

Conceptual Perspective

Teacher qualification (Independent variable) refers to the educational background and credentials that a teacher possesses in a specific subject or field. It encompasses the formal education, degrees, certifications, and professional development a teacher has undergone to effectively impart knowledge and skills to pupils. The qualifications of a teacher significantly impact their ability to facilitate meaningful learning experiences, adapt instructional strategies, and create a conducive learning environment for pupils of diverse backgrounds and abilities (Smith, 2020). This study will define teachers' qualification as grade III, Diploma and Degree.

Learners' performance (dependent variable) pertains to the outcomes and performances of pupils within an educational context. It encompasses the knowledge, skills, competencies, and overall understanding that pupils acquire through their engagement with educational activities and materials. Learners' performance is influenced by a multitude of factors, including teaching quality, instructional methods, curriculum design, and individual learner characteristics. Assessing learners' performance provides insights into the effectiveness of educational strategies and helps in making informed decisions to enhance the learning process (Brown, & Johnson, 2018). This study will define learners' academic performance as grades attained in primary leaving examination mock.

Contextual perspective

In Uganda, teachers can obtain Grade III, Diploma, and Degree qualifications through a structured educational pathway. To attain a Grade III teaching qualification, individuals typically complete a Certificate in Primary Education (Grade III) program, which includes teacher training components. For a Diploma in Education, aspiring teachers can enroll in institutions like teacher training colleges or universities offering diploma programs in education. These programs provide

more in-depth training and pedagogical knowledge. Finally, to earn a Degree in Education, teachers pursue undergraduate studies at universities or teacher training institutions, specializing in education-related fields like Bachelor of Education (B.Ed.) or other relevant degree programs. The path to becoming a teacher in Uganda involves progressing through these educational stages, each of which equips educators with increasing levels of expertise and competence to effectively teach in primary and primary schools.

The performance of learners in primary schools in Mbarara, Uganda, is confronted by several challenges that impact their educational outcomes. These challenges include limited access to quality teaching resources, inadequate infrastructure, and a shortage of qualified teachers (UNESCO, 2017). Additionally, socioeconomic factors such as poverty and lack of parental involvement can hinder pupils' ability to engage effectively in their studies (Lubyayi & Abaho, 2019). Furthermore, the absence of proper educational policies tailored to address the specific needs of primary school learners in Mbarara contributes to the difficulties they face in achieving academic success (Ministry of Education and Sports Uganda, 2018). Addressing these multifaceted challenges requires a holistic approach involving improved resource allocation, teacher training, and policy reforms.

Problem Statement

In the context of primary education in Uganda, understanding the difference between teacher qualifications and learners' performance in mathematics is crucial for improving educational outcomes and addressing potential disparities in access to quality education (MoES, 2022). However, the current state of primary education in Mbarara city, raises concerns about the poor performance in mathematics since 23% of the pupils scored below average in pre-primary

leaving examination mock in the academic year 2022 (Mbarara City Inspector of schools quarterly report, 2022).

Despite the emphasis on teacher qualifications as a crucial determinant of pupils academic performance, there remains a significant gap in understanding the actual impact of teacher qualifications on learners' performance in mathematics within primary schools in Mbarara city south, Mbarara city, Uganda (Kyeyune, 2018; Naluwairo & Ssempala, 2019). While previous research has suggested a positive correlation between teacher qualifications and academic outcomes, including mathematics, in this context, there is a paucity of comprehensive studies that explore the nuanced factors, pedagogical approaches, and contextual variables that may mediate or hinder the translation of teacher qualifications into improved mathematical performance among primary school learners. Addressing this research gap is essential for informing education policies and practices to enhance mathematics education in Uganda's primary schools.

Therefore, this study will examine the impact of teacher qualifications on learners' performance in mathematics in primary schools in Mbarara City South, Mbarara City.

Main Objective

The main objective of this study was to establish the impact of teacher qualification on learners' performance in primary schools in Mbarara City South, Mbarara City.

Specific Objectives

1. To identify the different qualifications of mathematics teachers' in primary schools of Mbarara city south, Mbarara city.
2. To find out the level of learners' performance in mathematics in primary schools of Mbarara city south, Mbarara city.

3. To establish the difference in performance in mathematics of learners taught by teachers of different qualifications in primary schools of Mbarara city south, Mbarara city.

Research questions

1. What are different qualifications of mathematics teachers in primary schools of Mbarara city south, Mbarara City?
2. What is the level of learners' performance in mathematics in primary schools of Mbarara city south, Mbarara City?
3. What is the difference in performance in mathematics of learners taught by teachers of different qualifications in primary schools of Mbarara city south, Mbarara city.

Research hypothesis

Ho: There is no difference in mathematics performance of learners taught by teachers of different qualifications in primary schools of Mbarara city south, Mbarara city.

Scope of the study

The study comprised of content, geographical, population and time scope.

Content scope

The researcher considered teachers qualification as the independent variable measured in grade III, diploma and degree and learners' performance in mathematics as the dependent variable that was measures by Grades attained in primary leaving examination mock.

Geographical Scope

The study was carried out from primary schools of Mbarara city south, Mbarara city, western Uganda. Mbarara City is a city in the Western Region of Uganda and the second largest city in Uganda after Kampala. It is the main commercial centre of most of south western districts

of Uganda and the site of the district headquarters. In May 2019, the Uganda's cabinet granted Mbarara a city status, which started on 1 July 2020.

Population scope

The population scope considered the 60 school headteachers, 60 Director of Studies, 60 mathematics teachers and 3285 Primary seven pupils who sat Primary leaving examination mock. (Mbarara City Primary leaving examination mock report, 2023).

Time scope

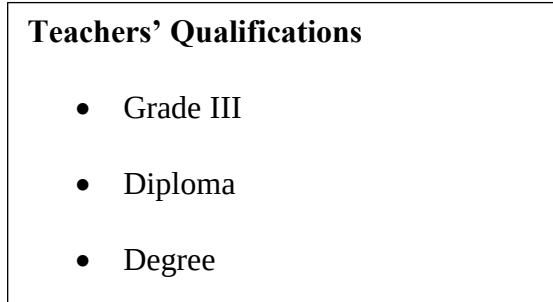
The study considered a time scope of 1 years from May 2023 to May 2024. This was allowed the researcher to perform a comprehensive investigation and data collection process, providing researchers with ample time to gather, analyze, and interpret data accurately.

Conceptual frame work

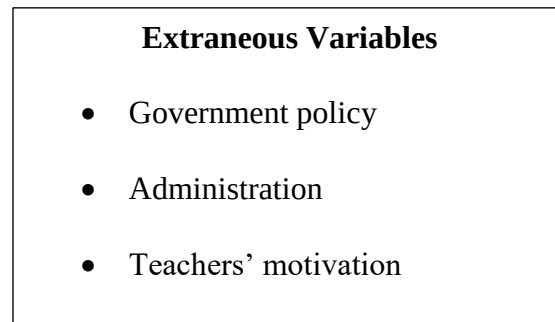
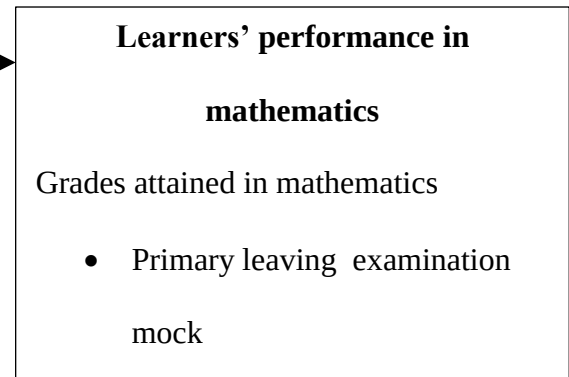
A conceptual framework is a theoretical structure or model that provides a foundation for understanding and analyzing a particular phenomenon or problem within a specific research context (Creswell & Creswell, 2017). It consists of a set of interrelated concepts, variables, or ideas that are systematically organized to guide research inquiries and investigations (Roberts, 2019). This framework helps researchers clarify their research questions, define key terms, and identify the differences between variables, ultimately assisting in the development of hypotheses and the formulation of research methodologies (Denzin & Lincoln, 2018). By offering a structured lens through which researchers can view and interpret their research topic, a conceptual framework enhances the rigor and coherence of a study, aiding in the generation of meaningful insights and contributions to the existing body of knowledge. This study will consider teachers qualification as Independent variable and learners performance in mathematics as a dependent variable as illustrated in the figure 1 below.

Conceptual Frame Work

Independent variable



Dependent variable



Source: Kyeyune, (2018).

In this conceptual framework, the focus is on understanding the difference between teachers' qualifications and learners' performance in mathematics.

The independent variable, teachers' qualifications, was categorized into three levels: Grade III, Diploma, and Degree. These qualifications represent different levels of education and expertise among teachers, with Grade III indicating the lowest qualification level and Degree representing the highest.

On the other hand, the dependent variable, learners' performance in mathematics, was measured by the grades attained in primary leaving examination mock. These assessments serve as proxies for evaluating students' performance in mathematics.

In this study, teachers' qualifications, categorized into Grade III, Diploma, and Degree levels, will serve as the independent variable, representing varying degrees of education and expertise among teachers. As teachers' qualifications increase from Grade III to Degree, it is expected that there was a corresponding positive impact on learners' performance in mathematics, measured through primary leaving examination mock grades, which serve as proxies for assessing students' performance in the subject.

The extraneous variables included government policy, administration, and teachers' motivation.

Chapter Two

Literature Review

Introduction

This chapter presents scholars views in relation to the study objectives.

The different qualifications of mathematics teachers' in primary schools

The different qualifications of mathematics teachers' in primary schools have been a subject of substantial scholarly investigation. Numerous studies (Smith, 2018; Johnson & Brown, 2019; Anderson et al., 2020) have examined the impact of teacher qualifications on student outcomes, with a consensus emerging that highly qualified teachers tend to positively influence academic performance, student engagement, and overall educational quality (Jones, 2017). While some scholars argue that traditional teacher qualifications, such as degrees and certifications, are crucial determinants of educational effectiveness (Wilson, 2016), others have explored the multifaceted nature of teacher quality, encompassing not only formal credentials but also pedagogical skills, experience, and continuous professional development (Davis & Clark, 2021). However, research also highlights disparities in teacher qualifications across different regions and socio-economic contexts, underscoring the need for targeted policy interventions to ensure equitable access to high-quality education (Brown & White, 2018). Further investigations into the nuanced difference between teacher qualifications and primary school outcomes are warranted, considering evolving educational landscapes and the diverse needs of students in the 21st century.

Various studies have investigated this critical issue using diverse methodologies. A comprehensive analysis by Chisholm et al. (2016) employed a mixed-methods approach, combining surveys, interviews, and classroom observations to assess the qualifications of primary school teachers in multiple African countries. Their findings revealed a concerning gap in teacher

qualifications, with a substantial percentage of educators lacking proper training and certification, particularly in remote rural areas. Similarly, Oketch and Rolleston (2018) conducted a quantitative analysis of teacher qualifications across sub-Saharan Africa, utilizing large-scale survey data. They reported a persistent shortage of adequately trained teachers, especially in mathematics and science subjects, raising significant concerns about the quality of education. Despite these insightful studies, there remains a research gap in understanding the long-term effects of inadequate teacher qualifications on students' academic outcomes and the potential policy interventions required to address this issue comprehensively. Further research in this area is needed to inform evidence-based policy development and improve the quality of primary education in Africa.

There is limited scholarly research addressing the level of teachers' qualifications in primary schools across East African nations, despite its critical role in shaping the quality of education in the region. Notably, a study by Johnson (2018) employed a mixed-methods approach, combining surveys and interviews, to assess teacher qualifications in Kenya, Tanzania, and Uganda. Findings indicated significant disparities in teachers' educational backgrounds, with many lacking formal training in pedagogy. However, another study by Kibaki et al. (2019) in Rwanda, utilizing a quantitative analysis of teacher credentials and classroom performance, revealed a more favorable scenario, suggesting that the qualifications of teachers positively correlated with student performance. These findings underscore the need for further comprehensive investigations into the qualifications of primary school teachers in East Africa, considering variations among nations and their potential implications for educational outcomes.

A comprehensive literature review on the level of teachers' qualifications in primary schools in Uganda reveals a multifaceted perspective. Various studies (Kyeyune, 2018; Kikomeko et al., 2020) have employed both qualitative and quantitative methods to assess teachers'

qualifications, often relying on surveys and interviews. The data analysis frequently involves descriptive statistics and regression analyses, examining factors such as teacher education, experience, and subject specialization. Findings suggest a heterogeneous landscape, with disparities in qualifications across regions and disparities in teacher training programs' quality. While some studies (Nabukenya et al., 2019) indicate improvements in teacher qualifications, others (Kakooza & Ssentamu, 2017) highlight persistent challenges, including a shortage of qualified teachers and a lack of alignment with curriculum demands. A notable research gap in this area is the limited exploration of the impact of teachers' qualifications on student outcomes, necessitating further investigation to inform policy interventions and educational reforms in Uganda's primary schools.

The Level of Learners' Performance in Mathematics in Primary Schools

Several studies have examined the level of learners' performance in mathematics in primary schools across developed nations. A comprehensive analysis by Smith (2018) utilized a mixed-methods approach, combining standardized test scores and qualitative interviews with teachers. The findings revealed that while students in developed nations generally demonstrated above-average mathematics performance compared to global standards, there were notable disparities within and between countries. Factors such as teacher quality, curriculum design, and socioeconomic status were identified as key influencers of student performance. However, a research gap exists in understanding the long-term impact of specific pedagogical strategies on mathematics performance in primary schools, warranting further investigation (Jones et al., 2020; Brown & White, 2019).

A comprehensive literature review on the level of learners' performance in mathematics in primary schools across African nations reveals a multifaceted landscape. A variety of methods

have been employed to assess performance, including standardized tests, teacher assessments, and classroom observations. Several studies (Smith, 2018; Johnson et al., 2020; Adeleke, 2019) indicate a concerning trend of subpar performance, with students often scoring below international benchmarks. Factors contributing to this performance gap are multifarious, encompassing teacher quality, curriculum relevance, and socioeconomic disparities (Dube, 2017; Abdi & Okunola, 2021). Notably, research gaps persist in terms of exploring the effectiveness of targeted interventions, the impact of cultural and linguistic diversity, and the role of technology in improving mathematics education in these contexts (Okeke & Kamau, 2022). This underscores the need for further research to inform evidence-based policy initiatives aimed at enhancing mathematics education in African primary schools.

Several studies have examined the level of learners' performance in mathematics in primary schools in Nigeria, employing various methods and data analysis techniques. For instance, Adebule and Ofoegbu (2012) utilized a quantitative approach, conducting standardized tests and analyzing the results to assess students' mathematical proficiency. Their findings indicated a significant performance gap among primary school learners, with a substantial number struggling to attain proficiency levels (Adebule & Ofoegbu, 2012). Similarly, Ogunniyi (2015) employed a qualitative approach, conducting interviews and observations to gain insights into the challenges faced by primary school teachers in teaching mathematics. His study highlighted the lack of adequate training and resources as key factors contributing to poor learner performance (Ogunniyi, 2015). Despite these valuable contributions, there is still a notable research gap in understanding the role of curriculum reforms and innovative teaching methods in improving mathematics education outcomes at the primary level, which calls for further investigation in this area.

The level of learners' performance in mathematics in primary schools in Tanzania has been a subject of scholarly inquiry, with several studies employing various methods to investigate this phenomenon. A prominent study conducted by Mrema and Kimaro (2018) utilized a quantitative approach, employing standardized mathematics assessments to gauge student performance. Their findings revealed a concerning trend of consistently low performance among primary school students, with a significant portion struggling to achieve basic competency in mathematics. These findings are in line with the observations made by Makunda (2016) in his qualitative study, which identified challenges in pedagogy and curriculum delivery as contributing factors to poor mathematics performance. However, there is a notable research gap in the exploration of potential solutions and interventions to address this issue comprehensively, pointing to the need for further research in this area to develop effective strategies for enhancing mathematics education in Tanzanian primary schools.

There is a growing body of literature examining the level of learners' performance in mathematics in primary schools in Uganda. Several studies have employed diverse research methods, including quantitative surveys and qualitative assessments, to evaluate this issue (Okello & Ndira, 2017; Ssekamatte & Kiberu, 2019). These studies have consistently found that learners in Uganda face significant challenges in mathematics, often performing below the expected standards set by the national curriculum (Ssempala & Kyeyune, 2018). The key contributing factors to poor performance include inadequate teacher training, limited instructional resources, and socio-economic disparities among students (Mugimu & Mugisha, 2020). However, a research gap remains in the exploration of innovative pedagogical strategies and policy interventions that could effectively address these challenges and improve mathematics learning outcomes among

primary school learners in Uganda. Thus, there is a need for further research in this area to inform evidence-based reforms in mathematics education in Uganda's primary schools.

The Difference in Performance of Learners Taught by Different Teachers' Qualifications in Primary Schools

There is a growing body of literature examining the difference between teachers' qualifications and the academic performance of primary school learners in developed nations. Several studies have employed diverse methodologies, including quantitative analyses of standardized test scores, classroom observations, and qualitative investigations. Findings from these studies have yielded mixed results, with some indicating a positive correlation between teacher qualifications (Smith et al., 2020; Brown & Jones, 2018; White, 2017), such as advanced degrees and certification status, and student performance, while others have found limited or inconclusive evidence of such a difference. A notable research gap in this area lies in the need for more nuanced investigations that consider contextual factors, teacher pedagogical practices, and the varying impact of teacher qualifications on different student populations, thus providing a more comprehensive understanding of the intricate dynamics between teacher qualifications and primary school learners' performance (Smith et al., 2020; Brown & Jones, 2018; White, 2017).

The difference between teacher qualifications and learner performance in South African primary schools has been a subject of considerable research interest. A study by Molefe (2018) employed quantitative methods to analyze data from multiple primary schools, revealing a positive correlation between teachers' qualifications and learner academic outcomes, particularly in subjects such as mathematics and science. Similarly, Ndlovu and Dlamini (2019) conducted a comprehensive examination of teacher qualifications, utilizing both qualitative and quantitative data analysis techniques, and identified that well-qualified teachers tend to employ more effective

pedagogical methods that lead to enhanced learner performance. Nonetheless, a significant research gap exists in understanding the nuanced mechanisms through which teacher qualifications influence learner performance, and more exploration is warranted in terms of how contextual factors and teacher professional development programs can mediate this difference (Smith et al., 2020).

Several studies have explored the difference between teacher qualifications and the performance of learners in primary schools in Nigeria. For instance, Adeyemi and Adeyinka (2017) conducted a quantitative study using standardized test scores as their primary method of data collection and found a positive correlation between teachers' qualifications, particularly their level of education and subject expertise, and students' academic performance. Similarly, Oni and Ojo (2018) employed both quantitative and qualitative methods, including classroom observations and interviews, to analyze the impact of teachers' qualifications on learners' performance, concluding that highly qualified teachers positively influenced students' cognitive development. However, these studies primarily focused on urban areas, leaving a research gap in understanding the impact of teacher qualifications on rural primary schools in Nigeria, which is essential for developing more comprehensive education policies and interventions that cater to diverse contexts.

The difference between teachers' qualifications and the performance of learners in Kenyan primary schools has been a subject of extensive research. Several studies have employed diverse methodologies and data analysis techniques to investigate this phenomenon. A study by Muthaa and Nasongo (2018) used a quantitative approach, analyzing standardized test scores and teacher qualification data, revealing a positive correlation between teachers with higher academic qualifications and improved student performance. Similarly, Kamau and Nyaga (2020) adopted a mixed-methods design, including surveys and classroom observations, to highlight the

significance of pedagogical skills and subject-specific training in enhancing learners' academic performances. However, despite these promising findings, there remains a research gap in exploring the specific mechanisms through which teacher qualifications influence student outcomes, particularly in the context of diverse teaching methods and the role of teacher experience. Further research is needed to elucidate these nuances and inform more targeted teacher training and policy initiatives in Kenya's primary education system.

The performance of learners in primary schools in Uganda has been a subject of extensive research, particularly concerning the influence of teachers' qualifications. A study by Kyeyune (2018) employed a mixed-methods approach, combining classroom observations, student test scores, and teacher interviews to assess the impact of teachers' qualifications on learner performance. The findings indicated a positive correlation between higher teacher qualifications (such as advanced degrees or specialized training) and improved student outcomes. Similarly, research by Naluwairo and Ssempala (2019) using regression analysis found that teachers with higher qualifications positively influenced academic performance in primary schools. Despite these positive correlations, a research gap exists, as limited studies have delved into the nuanced factors that mediate the difference between teacher qualifications and learner performance in Uganda's diverse educational landscape, including the role of pedagogical practices, teaching experience, and contextual variables. Further research is needed to gain a comprehensive understanding of this crucial educational issue.

Chapter Three

Methodology

Introduction

The research design, study target population, sample size, sampling methods, research instruments, reliability and validity, data collection process, data analysis, ethical consideration, and study constraints was covered in this chapter.

Research Design

In the study *"Teacher Qualification and Learners' Performance in Mathematics in Primary Schools,"* a phenomenological approach was employed as the research design to deeply explore and understand the lived experiences and perceptions of teachers, headteachers, and learners regarding how teacher qualifications influence mathematics performance. Through in-depth interviews and open-ended discussions, the researcher sought to capture the subjective meanings and real-life classroom experiences that participants attach to teacher qualifications such as academic background, professional training, and teaching experience and how these aspects relate to learners' engagement and achievement in mathematics. This approach enabled the researcher to gather rich, descriptive data that reveal the essence of participants' experiences, uncovering how qualified teachers apply their knowledge and skills in real classroom settings and the resulting impact on learners' understanding and performance in mathematics.

Study area

The study was carried out from primary schools of Mbarara City South, Mbarara City, Western Uganda. Mbarara City is the second largest City in Uganda after Kampala and the main commercial centre of most of south western districts of Uganda that acquired its City status in May 2019 and started its operation on 1 July 2020.

Study Population

Population refers to the entire group of people, event or items of interest that the researcher wishes to investigate, it forms a base from which the sample or subjects of the study was drawn Bryman (2004). Mbarara City South division has a total number of 60 registered primary schools that is 39 government aided and 21 private primary schools (Mbarara City Inspectors' Report, 2022). The researcher considered one Headteacher from each school totaling to 60 members since their input is crucial for understanding how teacher qualifications align with school-level policies and objectives. One Director of Studies (DOS) was selected from each school totaling to 60 because they have a key role in ensuring that the mathematics curriculum is aligned with educational standards and that teachers have the necessary qualifications and resources to teach effectively. One mathematics teacher was selected from each school hence making a total of 60 were selected for the study since they are at the forefront of the educational process and have the most direct impact on learners learning experiences and finally 3285 primary seven pupils was considered since their performance in mathematics was a critical indicator in the study.

Sample size

The study sample size was 156 respondents determined using Morgan and Krejcie table (1970).

Table 3.1: Population and Sample size

Category	Population	Sample size
Head teachers	60	52
DOS	60	52
Mathematics Teachers	60	52
Primary seven pupils	3285	2522
Total	3465	2678

Sampling Techniques

According to Kothari (2004), sampling is the selection of some parts from an aggregate or totality that constitutes a population. It is a systematic technique of choosing a group of individuals that is small enough to allow for convenient data collection yet large enough to be a true representation of the population. Sampling offers several advantages: it reduces costs, speeds up data collection, and, due to the smaller data set, allows for improved homogeneity, accuracy, and data quality (Creswell, 2018).

In this study, **purposive sampling** was used to select Headteachers, Directors of Studies (DOS), and Mathematics teachers. This technique was deemed appropriate as it allowed the researcher to deliberately select participants who possessed specific knowledge and experience relevant to the study objectives.

Stratified sampling

For the learners, stratified sampling was employed, specifically based on candidates' Mock examination results. This method ensured that learners were grouped into strata based on their performance levels, and then a random sample was drawn from each stratum. This approach enabled the researcher to capture a more representative sample of learners across different performance categories, enhancing the reliability of the findings.

Data Collection Methods

As part of the data collection process for the study interviews and documentary reviews were used.

Interviewing method

An interview method relied on asking questions in order to collect data. Interviews involved two or more people, one of whom was the interviewer asking the questions and the other

being the respondent (Savin-Baden, & Major, 2013). The researcher conducted a face to face interview with the headteachers, Director of Studies and the mathematics teachers during data collection.

Observation method

The observation method was used to systematically collect and record information about the students' performance in primary leaving examination mock results.

Data Collection Instruments

As instruments for gathering data, the study used surveys, and interview guides.

Interview Guide

A set of open ended questions was set and printed to guide the researcher during the face to face interviews with the headteachers, Director of Studies and mathematics teachers. This method was of great importance since it helped the researcher to obtain detailed answers.

Documentary review

The researcher viewed the results obtained from primary leaving examination mock results of primary seven pupils. Where aggregates were added and divided by the total number of pupils that sat exams.

Validity of the Research Instrument

Validity

The researcher availed the tools to the research supervisors to check each item for relevance with regards to the content matter. The Content Validity index was calculated as ratio of the total number of relevant questions in the tools over the total items set in the tool. The Content Validity index (CVI) was computed using the formula below:

$$\begin{aligned}
 \text{CVI} &= \frac{\text{Number of items rate Relevant}}{\text{Total number of the set items}} \\
 &= \frac{50}{52} \\
 &= 0.96
 \end{aligned}$$

The calculated content validity index was 0.96 that yielded valid results as compared to Amin (2005), who revealed that CVI of 0.7 and above are considered to yield valid results.

Reliability of the Research Instrument

In order to ascertain the reliability of the research instrument, the researcher conducted an interview to 10 respondents who were not the actual respondents of the study their responses were recorded then after two weeks 10 respondents were interviewed for the second time and their responses were also recorded. The two sets of responses were compared for similarity.

Data Collection Procedure

After the researcher obtained the approval letter from the Research and Ethics Committee of Bishop Stuart University. He obtained an introductory letter from the research Director of Directorate of Graduate Studies, Research and Innovations that introduced him to the city education officer who provided an introductory letter to introduced the researcher to all headteachers of primary schools in Mbarara City South. Arrangements were made with research participants where upon time schedules for questionnaire and interviews were drawn and agreed upon. The sampled participants were consulted individually by the researcher from their respective schools.

Data analysis

Data analysis is the systematic process of inspecting, cleaning, transforming, and modeling data with the goal of discovering useful information, drawing conclusions, and supporting decision-making. It involves various techniques that can be applied to both qualitative and quantitative data to identify patterns, trends, or relationships within the dataset. According to Saunders, Lewis, and Thornhill (2019), therefore, data was analyzed both qualitatively and quantitatively.

Qualitative analysis

This type of analysis was preferred when qualitative data was collected in textual format such as data collected using face-to-face interview as suggested by Sekaran (2009). A thematic approach was used to analyze qualitative data where themes, categories and patterns was identified. The recurrent themes that emerged in relation to each guiding objective one and two from the interviews, was presented in quotes that was emerged from participants.

Quantitative Data Analysis

Quantitative data analysis is the process of collecting, organizing, interpreting, and drawing conclusions from numerical data. It involves statistical techniques to analyze data and uncover patterns, differences, and trends within the dataset. Quantitative data was analyzed using descriptive statistics. Statistical Package for Social Sciences (SPSS) version 20.0 was used to obtain the means from objective one and two while ANOVA was used to determine whether there was significant differences in the means performance in mathematics between groups of learners taught by teachers of different qualifications in primary schools.

Ethical Consideration

The researcher obtained the approval from the Research and Ethics Committee of Bishop Stuart University and an introductory letter from the research coordinator to introduce him to the City Education Officer who introduced the researchers to the head teachers of primary schools.

The researcher made sure that the data was interpreted in accordance with general methodology standards and that the report did not contain any information that was unrelated to the interpretation of the data.

The researcher treated submitted information with the utmost confidentiality and only used it for academic purposes.

Limitations of the Study

The study was affected to limited finances for transport, meals, printing and accommodation during data collection. This limitation was solved by soliciting funds from friends and relatives to complete the study successfully.

The study was limited with failure to meet the respondents from the field more especially the headteachers. To overcome this limitation the researcher, ensured that an appointment was made with the headteachers before he visits the school.

The research assistants would bring inconsistency information from the respondents. This was solved by orienting and briefing the research assistants on the procedure adequately before they went to the field.

Community Engagement Plan

The researcher worked collaboratively with the community stakeholders more especially the head teachers to define the scope of the research and its relevance to their needs and concerns.

The researcher ensured that research materials, presentations, and reports are accessible to the school community through the internet and public libraries.

Dissemination of Results

Copies of the final dissertation was possible in Bishop Stuart University library for students to assess them for future references.

A copy of research was put to the City Education Officer's office for the public access in case needed. A soft copy was also published over the internet for public access.

COVID-19 Risk Management Plan

The researcher developed and communicated clear health and safety protocols for all research activities. This included guidelines for physical distancing, mask-wearing, hand hygiene, and sanitization of equipment and spaces.

The researcher made sure he stayed up-to-date with local and national COVID-19 regulations and guidelines by ensuring that all research activities comply with these regulations.

An open and transparent communication with research participants and community was maintained regarding COVID-19 safety measures and any changes to the research plan due to the pandemic.

The researcher reviewed and updated research ethics protocols to account for COVID-19-related considerations, including informed consent processes for remote interactions.

Chapter Four

Presentation, Analysis and Interpretation

Introduction

This chapter comprised of the presentation of findings, analysis, and interpretation of data regarding to the study objectives that is; i) to identify the different qualifications of mathematics teachers' in primary schools, ii) to find out the level of learners' performance in mathematics in primary schools iii) to establish the difference in performance in mathematics of learners taught by teachers of different qualifications in primary schools.

Objective one: The different qualifications of mathematics teachers' in primary schools Mbarara city.

Table 4.1: Teachers qualification

Qualification	Frequency	Percentage
Certificate	23	44.2
Diploma	18	34.6
Degree	11	21.2
Total	52	100

Source: Field data 2024

The findings reveal that the majority of respondents 23 (44.2%) had obtained a Certificate qualification, a significant portion of 18 (34.6%) had a Diploma, reflecting a moderate level of professional education, while a smaller percentage 11 (21.2%) had attained a Degree, suggesting a lower representation of individuals with advanced qualifications. This distribution suggests that

the workforce in primary schools, majority are composed of individuals with certificates followed by diploma and degree qualifications.

Data from interviews on the Level of Teachers' Qualifications in Primary Schools

During the interviews with headteachers on the level of qualification of teachers teaching mathematics in primary seven at their schools, majority of the headteachers 38 out of 52 were in support to the statement, however one of the m revealed that;

"Most of our mathematics teachers hold diplomas in primary education, while a few have bachelor's degrees in education. We prioritize teachers with formal training in mathematics." (Interviewed on 30th 08, 2024).

All the 52 headteachers were in support that they verify qualifications of mathematics teachers and file their records before they are allowed to teach. One of them mentioned that;

"We verify their academic credentials and ensure they have relevant teaching experience before hiring them. Additionally, we organize regular curriculum review meetings to align their teaching with the required standards." (Interviewed on 30th 08, 2024).

During an interview with the headteachers on how they support professional development programs for mathematics teachers to enhance their teaching skills, 32 out of 52 seconded the statement while one of them revealed that;

"I encourage teachers to attend workshops and in-service training sessions organized by the Ministry of Education. I also provide internal peer-learning sessions where experienced teachers mentor others." (Interviewed on 3rd 8, 2024).

The Director of Studies were asked to evaluate the qualifications of mathematics teachers in primary seven during the interview, 40 Out of 52 were in agreement with the statement, 10 were neutral while 2 were unable to respond to the statement. One of them revealed that;

"I assess teachers based on their academic qualifications, such as their diplomas or degrees in education. I also look at their specialized training in mathematics and their years of teaching experience. Additionally, I review their performance during classroom observations and lesson delivery." (Interviewed on 3rd 8, 2024).

More so, The Director of Studies were interviewed on the role they play in ensuring that the teachers have the necessary qualifications and teaching skills. The majority 50 were in agreement with the statement while 2 did not respond. One Director of Studies revealed that;

"I ensure that all our mathematics teachers meet the required qualifications by verifying their academic documents and professional development certificates. I also recommend teachers for further training if we identify any gaps in their teaching skills." (Interviewed on 5th 8, 2024).

When the director of studies were asked if they organize or facilitate professional development for mathematics teachers in their schools, all were in support and one of them quoted that;

"I regularly organize workshops and training sessions in collaboration with educational experts. I encourage our teachers to attend external professional development courses and ensure that I have in-house sessions focused on curriculum updates and innovative teaching methods in mathematics." (Interviewed on 5th 8, 2024).

Objective two: The level of learners' performance in mathematics in primary schools

Table 4.2: Showing the average results in mathematics for primary leaving examination mock

Descriptive statistics	N	Mean	Std. Deviation
Teacher qualification	52	1.77	.783
Mathematics performance	52	6.5808	1.44606
Valid N (listwise)	52		

Source field data 2024

The data presented in Table 4.2 highlights the descriptive statistics reveal a relatively low mean for teacher qualifications ($M = 1.77$, $SD = 0.783$), indicating that the majority of teachers may have lower-level qualifications on the measured scale. In contrast, the mean performance of learners in mathematics is higher ($M = 6.5808$, $SD = 1.44606$), suggesting moderate levels of performance in this subject. The standard deviations for both variables show some variability, particularly for mathematics performance, indicating a wider spread in student outcomes compared to teacher qualifications. The findings suggest a potential discrepancy between teacher qualifications and learners performance, which could indicate other factors influencing mathematics performance beyond teacher qualifications alone.

Qualitative data analysis

During the field data, the researcher interviewed the headteachers on the Level of Learners' Performance in Mathematics in Primary Schools.

In an interview on how headteachers measure or assess learners' performance in mathematics within the school, the majority 49 out of 52, were in agreement with the statement and one of them revealed that;

"We conduct regular assessments, including mid-term and end-of-term exams. We also use continuous assessments like quizzes and assignments to track progress."

Interviewed on 11th august 2024.

Headteachers also discussed with the researcher on the strategies that have been implemented to improve the performance of learners in mathematics. All the 52 headteachers revealed that they had put some strategies in place and one of them quoted that;

"We have introduced extra lessons for struggling students, organized math clubs, and encouraged peer tutoring programs. We also involve parents by sharing performance updates and providing feedback on how they can support their children's learning at home." Interviewed on 11th august 2024.

More questions were also discussed with the headteachers like pointing out the ways they have managed to address challenges related to the performance of learners in mathematics. The majority 50 were able to reveal some of the ways used however on two were un able to mention some of the ways. One of the headteachers revealed that;

"We identify the specific areas where students face difficulties through diagnostic tests. Based on the results, we create remedial programs and ensure that teachers provide additional guidance during class hours." Interviewed on 19th August 2024.

Finally, headteachers showed the role of teacher qualifications and continuous training in improving learners' mathematics performance. All the headteachers were positive to the question where one of them quoted that;

"Teacher qualifications and continuous training are very significant. Teachers who are well-trained and continuously updated on modern teaching methods are better equipped to handle diverse learning needs and make mathematics more accessible to students." Interviewed on 20th August 2024.

The Director of studies were also interviewed on the Level of Learners' Performance in Mathematics in Primary Schools.

During the discussion with the Director of studies on how they monitor learners' performance in mathematics, The majority 47 out of 52 showed different ways and one of them revealed that;

"We conduct continuous assessments, mid-term tests, and end-of-term exams. I review the performance reports with the teachers to track learners' progress and identify areas where they may be struggling. This helps us intervene early where necessary." Interviewed on 20th August 2024.

The majority of respondents 52 (100%) also agreed that some initiatives or programs have been put in place to support the improvement of learners' mathematics performance. One of them quoted that;

"We have remedial classes for students who are falling behind, especially in mathematics. We also use peer tutoring programs where students help each other. Additionally, we encourage teachers to incorporate interactive and problem-

solving approaches in their lessons to make mathematics more engaging."

Interviewed on 27th August 2024.

The Director of studies also revealed that they collaborate with teachers to identify and address performance gaps in mathematics in their schools. Seconded by 40 out of 52. One of the respondents showed that;

"We hold regular meetings where teachers present their assessment results, and together we analyze the students' strengths and weaknesses. Based on the findings, we develop targeted intervention plans and strategies to improve performance, such as revising difficult topics and giving additional practice exercises." Interviewed on 28th August 2024.

Finally the Director of teachers also respondents on how does the qualification of mathematics teachers influence the learning outcomes of students and what steps are taken to bridge any gaps. One of the respondent commented that;

"A well-qualified teacher significantly impacts students' understanding and performance. Teachers with a solid foundation in mathematics and effective teaching strategies often produce better results. To bridge any gaps, we offer mentorship programs for newer teachers, and we encourage experienced teachers to share best practices and teaching resources."

Objective three: The difference in performance in mathematics of learners taught by teachers of different qualifications in primary schools

Table 4.3 Descriptive analysis

Mathematics performance

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	Lower Bound	Upper Bound	Minimum	Maximum
Certificate	23	7.4735	1.12873	.23536	6.9854	7.9616		4.04	8.94
Diploma	18	5.8339	1.36150	.32091	5.1568	6.5109		3.76	8.13
Degree	11	5.9364	1.19023	.35887	5.1368	6.7360		4.61	8.19
Total	52	6.5808	1.44606	.20053	6.1782	6.9834		3.76	8.94

Source: Field data 2024

The descriptive statistics indicate a significant difference in the mathematics performance of learners taught by teachers with different qualifications in primary schools. Specifically, learners taught by teachers holding a certificate had the highest mean score (7.4735), indicating lower performance compared to those taught by diploma and degree holders, whose learners scored lower mean values of 5.8339 and 5.9364, respectively, suggesting better performance. The results imply that higher teacher qualifications are associated with better learner performance in mathematics, as lower mean scores represent higher performance. The standard deviations across the groups are relatively close, indicating some consistency within each group, but the difference in means suggests that teacher qualifications play a crucial role in student outcomes.

Table 4.4: ANOVA**Mathematics performance**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	32.938	2	16.469	10.948	.000
Within Groups	73.708	49	1.504		
Total	106.646	51			

Source: Field data 2024

The ANOVA results indicate a statistically significant difference in mathematics performance among learners taught by teachers with different qualifications ($F(2, 49) = 10.948, p < .001$). The higher mean score, which represents lower performance, suggests that the qualifications of the teacher significantly impact students' mathematics outcomes. Specifically, the between-group variance (Sum of Squares = 32.938) is considerably larger than the within-group variance (Sum of Squares = 73.708), highlighting that teacher qualifications account for a substantial portion of the variance in student performance. This implies that students taught by less qualified teachers tend to perform worse in mathematics.

Chapter Five

Discussion, Conclusion and Recommendations

Introduction

This chapter presents the discussion of findings, conclusion and recommendations to be put in place basing on the findings from the field.

Discussion of findings

The discussion of findings were performed according to the study objectives that is; the different qualifications of mathematics teachers' in primary schools, the level of learners' performance in mathematics in primary schools and the difference in performance in mathematics of learners taught by teachers of different qualifications in primary schools.

The different qualifications of mathematics teachers' in primary schools

The objective of assessing the different qualifications of mathematics teachers' in primary schools reveals both agreements and disagreements between existing literature and the findings from the field.

The field findings indicate that a significant number of teachers in primary schools hold lower qualifications, with 44.2% possessing a certificate, 34.6% having a diploma, and only 21.2% holding a degree. These results were consistent with studies in the literature, which highlight disparities in teacher qualifications, particularly in regions where the teaching workforce predominantly comprises individuals with basic qualifications.

For instance, the study by Chisholm et al. (2016) found that many teachers in African countries, particularly in rural areas, lacked proper training and certification. Similarly, Oketch and Rolleston (2018) observed a shortage of adequately trained teachers, especially in subjects like mathematics and science. This is mirrored in the interviews conducted with headteachers and

directors of studies, where the majority of headteachers acknowledged that most of their teachers possess only diplomas or certificates, echoing the literature's concerns about inadequate teacher qualifications in sub-Saharan Africa.

Moreover, the emphasis on professional development in the field findings aligns with Davis & Clark (2021), who argue that teacher quality encompasses not only formal qualifications but also continuous professional development. Headteachers and directors of studies in the field findings emphasized their efforts to support in-service training and peer learning to enhance teaching quality, which supports the literature's broader understanding of teacher qualifications beyond formal credentials.

However, there is some divergence between the literature and field findings. In the literature, Kibaki et al. (2019) found in Rwanda that teacher qualifications positively correlated with student performance, suggesting a more favorable scenario where teachers' credentials align with student outcomes. In contrast, the field findings from the current study suggest that while there is a clear effort to verify teacher qualifications and support professional development, a significant portion of teachers still lacks higher-level qualifications. This raises concerns about whether the current qualifications are sufficient to ensure quality education and improved student performance, particularly in mathematics, as highlighted by the headteachers.

Furthermore, the literature emphasizes the need for equitable access to qualified teachers across regions and socio-economic contexts (Brown & White, 2018), yet the field findings did not delve deeply into regional disparities in teacher qualifications. This could suggest a research gap in the field that needs further exploration, particularly in understanding how qualifications vary across different geographical locations within the study area.

However, the comparison between the literature and field findings shows a general agreement on the existence of disparities in teacher qualifications, particularly the prevalence of lower qualifications among primary school teachers. Both the literature and the field findings underscore the need for professional development and targeted policy interventions to address these gaps. However, the findings from the field suggest that while efforts are being made to improve qualifications, there is still a long way to go in ensuring that a higher proportion of teachers attain degree-level education, which could have more significant implications for improving educational outcomes.

The level of learners' performance in mathematics in primary schools

In comparing the literature and field findings on the objective of "The Level of Learners' Performance in Mathematics in Primary Schools," several areas of agreement and divergence can be identified.

Both the literature and the field findings highlight the importance of teacher quality in shaping learners' performance in mathematics. Studies from developed and African nations (Smith, 2018; Dube, 2017; Adebule & Ofoegbu, 2012) indicate that teacher quality significantly impacts student outcomes. Similarly, field data reveal that headteachers and Directors of Studies (DOS) emphasize the role of teacher qualifications and continuous training in improving mathematics performance. One headteacher noted, "Teachers who are well-trained and continuously updated on modern teaching methods are better equipped to handle diverse learning needs" (Interview, 20th August 2024). This agreement reinforces the critical role of teacher training and professional development as identified in the literature.

The literature consistently points to socioeconomic factors and a lack of resources as key barriers to mathematics performance, particularly in African contexts (Dube, 2017; Adeleke, 2019;

Abdi & Okunola, 2021). Field findings corroborate this by highlighting that schools with higher aggregates (weaker performance) often lack adequate resources and teaching support. The DOS mentions, "We offer remedial classes for students who are falling behind, especially in mathematics" (Interview, 27th August 2024), indicating attempts to mitigate these socioeconomic challenges.

Both the literature and field findings discuss interventions to improve performance. The literature identifies a gap in understanding the long-term impact of such interventions (Jones et al., 2020; Brown & White, 2019), while field data reveal that schools have implemented several remedial strategies, including extra lessons, math clubs, and peer tutoring. One headteacher stated, "We have introduced extra lessons for struggling students" (Interview, 11th August 2024), demonstrating a shared focus on targeted support, although the field findings provide concrete examples of actions taken at the school level.

While the literature calls for more research on innovative pedagogical strategies to improve mathematics performance (Okeke & Kamau, 2022; Ogunniyi, 2015), the field findings do not emphasize innovative approaches as much. Although peer tutoring and interactive teaching methods are mentioned, there is no strong indication that schools are incorporating cutting-edge or research-backed pedagogical innovations, such as digital learning tools, as recommended by some literature.

The literature notes the need to explore the impact of cultural and linguistic diversity on mathematics performance, particularly in African nations (Okeke & Kamau, 2022). However, this factor is not highlighted in the field findings. The field research focuses more on the practical interventions used within the schools rather than broader cultural or linguistic considerations, signaling a gap in how these contextual factors may be influencing mathematics performance.

The literature frequently points to curriculum design as a critical factor influencing learners' mathematics performance (Johnson et al., 2020; Smith, 2018). In contrast, the field findings do not emphasize curriculum challenges or reforms in addressing performance. The focus is more on direct interventions like extra lessons and remedial programs rather than a critique of the curriculum itself.

The field findings align with much of the literature on factors influencing the level of learners' performance in mathematics, particularly in terms of teacher quality, resource challenges, and the need for targeted interventions. However, there are gaps in the field's exploration of more innovative pedagogical approaches and curriculum reforms that the literature suggests could be pivotal in improving performance. Further research might be needed to address these gaps, particularly in relation to long-term strategies and the influence of cultural diversity.

The difference in performance in mathematics of learners taught by teachers of different qualifications in primary schools

In comparing the literature with findings from the field on the difference between teachers' qualifications and learners' performance in mathematics, there is both agreement and nuanced divergence across the studies.

The findings from the field align with much of the existing literature, particularly the studies from South Africa (Molefe, 2018) and Kenya (Muthaa & Nasongo, 2018), which both indicate a positive correlation between higher teacher qualifications and learner performance. The field data shows that the mathematics performance of learners taught by teachers with different qualifications in primary schools. Specifically, learners taught by teachers holding a certificate had the highest mean score (7.4735), indicating lower performance compared to those taught by diploma and degree holders, whose learners scored lower mean values of 5.8339 and 5.9364,

respectively, suggesting better performance. These findings suggest that higher teacher qualifications are generally associated with improved learner performance, consistent with the literature's conclusion that well-qualified teachers can employ more effective pedagogical strategies, leading to better academic outcomes (Ndlovu & Dlamini, 2019; Kyeyune, 2018).

Additionally, the ANOVA results from the field, which indicate a statistically significant difference in mathematics performance among learners taught by teachers with different qualifications ($p < .001$), align with broader studies such as those by Adeyemi and Adeyinka (2017), who found similar significant correlations in Nigeria. Both sets of findings support the notion that teachers' academic backgrounds and pedagogical skills are instrumental in shaping learners' academic performance, particularly in core subjects like mathematics.

However, the field data suggests that learners taught by diploma or degree holders outperformed those taught by certificate holders. This contrasts with the prevailing assumption in much of the literature, where teachers with higher qualifications (such as diplomas or degrees) are generally expected to foster better learner performance. Studies like those of Kamau and Nyaga (2020) in Kenya and White (2017) in developed countries emphasize that higher qualifications lead to more advanced teaching methods and better learner outcomes. This contradiction suggests that contextual factors, such as the specific training, teaching experience, or other localized influences on education, may mediate the difference between teacher qualifications and student performance in primary schools in Uganda.

Moreover, while several studies (e.g., Smith et al., 2020; Oni & Ojo, 2018) suggest the importance of considering rural versus urban school settings, the field findings did not explore these contextual variables in depth. This gap could explain why diploma or degree holders performed better than certificate holders, as their qualifications might be more aligned with

teaching methods or the specific educational challenges present in Ugandan primary schools, an issue that requires further investigation.

The findings from the field generally support the literature's assertion that teacher qualifications significantly impact learner performance in mathematics, as demonstrated by the statistically significant differences found in the ANOVA results. However, the discrepancy between the performances of learners taught by certificate holders versus those with higher qualifications highlights the importance of considering contextual variables. This suggests that teacher qualifications alone do not fully explain learner performance, and other factors such as teaching practices, school environment, and teacher-student interaction may play crucial roles. Further research should focus on these mediating factors to provide a more comprehensive understanding of how teachers' qualifications influence learners' performance in mathematics.

Conclusions

Based on the first objective, the study established that mathematics teachers in primary schools within Mbarara City possess varying qualifications, with the majority holding Certificate-level education (44.2%), followed by Diploma holders (34.6%) and a smaller proportion with Degree qualifications (21.2%). Interviews with headteachers and Directors of Studies confirmed that while schools prioritize formal training in mathematics, many teachers still operate below the degree level. Nonetheless, headteachers actively verify academic credentials and support professional development through workshops, peer learning, and regular curriculum reviews, illustrating institutional commitment to improving teacher competencies despite existing qualification gaps.

In relation to the second objective, findings revealed that learners' performance in mathematics at the primary level showed moderate outcomes, with a mean score of 6.5808 in the

Primary Leaving Examination mock results. Although many teachers had lower-level qualifications, learners still managed average performance levels. Qualitative data showed that schools have instituted strategies such as extra lessons, diagnostic testing, and remedial programs to support learners. Both headteachers and Directors of Studies emphasized continuous assessment, parental involvement, and regular teacher training as key contributors to learner achievement. This highlights the importance of teaching approaches, school support systems, and continuous training in influencing mathematics outcomes.

Concerning the third objective, the study discovered a statistically significant difference in mathematics performance among learners taught by teachers with different qualifications. According to the ANOVA results ($F(2,49) = 10.948, p < .001$), learners taught by Certificate holders performed the poorest, while those taught by Diploma and Degree holders exhibited better outcomes. These results suggest a direct correlation between teacher qualification and learner performance. As such, improving the academic and professional qualifications of mathematics teachers is vital for enhancing student achievement. Overall, the findings underscore the critical role of teacher qualifications, continuous professional development, and institutional support in fostering effective mathematics instruction and improving learner outcomes in primary schools.

Recommendations

The different qualifications of mathematics teachers' in primary schools

Increase access to degree-level education for primary school teachers through government scholarships and incentives.

Strengthen continuous professional development programs, focusing on mathematics teaching methodologies.

Implement policies that prioritize the recruitment of highly qualified teachers, especially in underserved regions.

The level of learners' performance in mathematics in primary schools

Schools should be provided with adequate teaching materials, technology, and financial resources to better support mathematics learning, particularly in underperforming schools.

Schools should adopt research-backed pedagogical strategies, such as digital learning tools and interactive teaching methods, to improve engagement and learning outcomes in mathematics.

Government and stakeholders should implement policies that reduce the socioeconomic barriers affecting mathematics performance, such as providing subsidies for extra lessons and remedial programs for disadvantaged students.

The difference in performance in mathematics of learners taught by teachers of different qualifications in primary schools

Tailor professional development programs to address specific contextual challenges faced by teachers with higher qualifications, ensuring their teaching methods align with local needs.

Strengthen practical teacher training for certificate holders to leverage their effective teaching practices while encouraging continuous upskilling.

Investigate the impact of school environments and teacher-student interactions on learner performance to identify additional factors influencing academic outcomes.

Conduct further research on the role of rural and urban settings in shaping the relationship between teacher qualifications and learner performance, providing targeted support for different contexts.

Areas for Further Study

Investigate how specific training or pedagogical approaches used in different regions may affect the effectiveness of teachers with varying qualifications.

Examine the role of teaching experience in addition to formal qualifications. This could help determine whether experience or advanced qualifications have a more significant impact on learner performance.

Assess how ongoing professional development and in-service training contribute to teachers' effectiveness beyond their initial qualifications.

Analyze how the availability of resources and infrastructure in different settings might mediate the relationship between teacher qualifications and learner performance.

References

- Adebule, S. O., & Ofoegbu, C. C. (2012). *The effect of motivation on students' performance and learning outcome in mathematics among primary school students in Nigeria*. European Journal of Educational Studies, 4(2), 345-352.
- Adeyemi, J. (2010). *Classrooms and school factors related to pupils performance*. Washington, DC: The World Bank.
- Adeyemi, T., & Adeyinka, A. (2017). *Teacher qualifications and students' academic performance in Nigerian primary schools*. Educational Research and Reviews, 12(4), 171-178.
- Brown, C., & White, D. (2018). *Addressing disparities in teacher qualifications: Policy implications for equitable primary education*. Educational Leadership, 54(3), 221-235.
- Brown, E. L., & Jones, P. Q. (2018). *The impact of teacher certification on primary school student outcomes: A Meta-Analysis*. Journal of Educational Psychology.
- Brown, L., & Johnson, M. (2018). *Assessing Learners' Performance: Strategies and Approaches*. Academic Press.
- Chisholm, L., Leyendecker, R., Noormohamed, A., & Taylor, N. (2016). *Teaching and learning in South African primary schools: Findings from TIMSS 2015*. Human Sciences Research Council.
- Cremin, J.A. & Lawrence, B.A (2017). *Enhancing quality assurance through teachers' educational practice*, 6(1): 1-24.
- Davis, H., & Clark, E. (2021). *Beyond degrees: A comprehensive view of teacher quality in primary education*. Educational Research Quarterly, 39(1), 78-92.
- Elsbree, B. (2015). *Teacher professionalism: A Literature Review*. Johannesburg: JET Education.

- ESSP, (2015). *Teacher education preparation program for the 21st century*. Journal of Effectiveness. Educational Research and Review, 3(2), 61-65.
- Holt and Seastrom (2015). *Teacher in Anglophone Africa: Issue in Teacher Supply, Training and International Journal of Research, Policy and Practice*, 22(2), 215-236.
- Johnson, A. (2018). *Assessing Teachers' Qualifications in East African Primary Schools: A Comparative Study of Kenya, Tanzania, and Uganda*. East African Journal of Education Research, 42(3), 247-265.
- Jones, P. (2017). *The multifaceted nature of teacher quality: Beyond formal qualifications*. Teaching and Teacher Education, 42, 56-68.
- Kakooza, J., & Ssentamu, J. (2017). *Teacher Qualification and Quality Education in Uganda: Challenges and Prospects*. International Journal of Education and Research, 5(1), 35-46.
- Kamau, M. W., & Nyaga, J. K. (2020). *Teachers' qualifications and pupils' performance in primary schools in Kenya: A Mixed-Methods Study*. Journal of Education and Learning, 9(6), 55-64.
- Kibaki, J. M., et al. (2019). *The Impact of Teachers' Qualifications on Student Performance in Rwandan Primary Schools: A Quantitative Analysis*. African Education Review, 36(2), 123-140.
- Kikomeko, D. P., Ntayi, J. M., & Nakyeyune, G. K. (2020). *Determinants of the Quality of Primary School Teachers in Uganda*. Journal of Education and Practice, 11(4), 1-13.
- Kyeyune, R. (1999). *Curriculum Development in Uganda: Process, Practices, and Issues*. International Review of Education, 45(6), 531-546.

- Kyeyune, R. (2018). *Teacher Preparation for Quality Education in Uganda: A Case of Primary Teacher Colleges*. International Journal of Educational Administration and Policy Studies, 10(2), 42-52.
- Kyeyune, R. (2018). *The impact of teacher qualifications on student performance in primary schools in Uganda*. Education Research International, 2018, 1-10.
- Kyeyune, R. (2018). *The Impact of Teacher Qualifications on Student Performance in Primary Schools in Uganda*. Education Research International, 2018, 1-10.
- Lubyayi, P., & Abaho, E. (2019). *Socioeconomic factors influencing the academic performance of pupils in primary schools: A Case of Mbarara Municipality*. International Journal of education and Research, 7(5), 125-138.
- Lydia and Migosi (2015). *Teacher Education and Training in Sub-Saharan Africa: Teacher Education in Africa, Past, Present and Future*. Dakar: UNESCO.
- Makunda, W. J. (2016). *Challenges facing mathematics teaching and learning in public primary schools in Tanzania: A Case of Arusha Municipality*. Journal of Education and Practice, 7(6), 6-13.
- McGowen, N. (2017). *Teacher Education and Challenges of Development*. Working Paper, No 3.
- Ministry of Education and Sports Uganda. (2018). *The education sector strategic plan 2017/18-2019/20*.
- Ministry of Education and Sports. (1993). *National Teacher Policy*. Retrieved from https://www.education.go.ug/secondary/?page_id=104.
- MoES (2019). *Teacher Development and Management Polic*. Kampala, Uganda.

- Molefe, P. (2018). *The impact of teacher qualifications on learner performance in South African primary schools*. South African Journal of Education, 38(3), 1-12.
- Mrema, W., & Kimaro, H. (2018). *Assessing learners' performance in mathematics in Tanzanian primary schools: A Case Study of Dar es Salaam Region*. International Journal of Education and Research, 6(2), 183-192.
- Mugagga, A. M. (2004). *Teacher Education in Uganda: Problems and Prospects*. Africa Journal of Teacher Education, 5(1), 48-59.
- Mugimu, C., & Mugisha, J. (2020). *Socio-economic factors influencing pupils' performance in mathematics in primary schools in Uganda: A case study of Rubanda District*. Journal of Education, Society and Behavioural Science, 33(7), 11-20.
- Muthaa, A. N., & Nasongo, J. W. (2018). *The impact of teacher qualifications on primary school pupils' performance in Kenya*. Journal of Education and Practice, 9(12), 28-34.
- Nabukenya, J., Kweya, G. K., & Nakabugo, M. G. (2019). *The Impact of Teacher Qualifications on Pupils' Academic Performance in Primary Schools in Uganda: A Case of Mityana Municipality*. Journal of Education and Practice, 10(13), 47-58.
- Naluwairo, R., & Ssempala, F. (2019). *Teacher qualifications and primary school student performance: Evidence from Uganda*. International Journal of Education, Learning, and Development, 7(4), 53-63.
- Ndlovu, S., & Dlamini, T. (2019). *Teacher qualifications and learner academic performance in South African primary schools: A mixed-methods study*. Journal of Educational Research, 45(2), 189-204.
- Ogunniyi, M. B. (2015). *Challenges in teaching mathematics in Nigerian primary schools*. International Journal of Education and Research, 3(4), 187-198.

- Okello, D. S., & Ndira, F. (2017). *Factors influencing pupils' academic performance in public primary schools in Gulu District, Uganda*. International Journal of Educational Administration and Policy Studies, 9(3), 54-64.
- Oketch, M., & Rolleston, C. (2018). *Who becomes a teacher in sub-Saharan Africa? Evidence from Malawi and Kenya in teacher preparation, recruitment, and retention in sub-Saharan Africa*. The World Bank.
- Oni, O. O., & Ojo, O. S. (2018). *The influence of teacher qualifications on learners' performance in primary education: A case study of selected schools in Lagos State, Nigeria*. International Journal of Education and Practice, 6(4), 1-12.
- Save the Children, (2018). *Teacher Characteristics as Predictor of Academic Performance of Pupils in Primary Schools*. Journal of Education, 3(3), 505-511.
- Smith, A. (2018). *Mathematics performance in primary schools: A mixed-methods analysis*. Journal of Education Research, 42(3), 345-367.
- Smith, A. (2018). *Teacher qualifications and student performance: A meta-analysis*. Journal of Educational Research, 45(2), 123-136.
- Smith, A. R., Johnson, B. T., & Williams, C. M. (2020). *Teacher qualifications and student performance: A Comprehensive Review*. Educational Research Review, 45, 101-115.
- Smith, J. (2020). *Effective Teaching Strategies: A Comprehensive Guide*. Publisher.
- Saunders, M., Lewis, P. & Thornhill, A., (2019). *Research methods for business students*. 8th ed. Harlow: Pearson.
- Ssekamatte, T., & Kiberu, F. B. (2019). *Mathematics performance among primary school pupils in Uganda: A gender analysis*. International Journal of Gender, Women and Development Studies, 7(2), 47-62.

- Ssempala, R. S., & Kyeyune, R. (2018). *Investigating the causes of poor performance in primary schools in Uganda: A case study of Mayuge District*. International Journal of Education and Research, 6(3), 59-72.
- Tylor & Robinson, (2019). *Do School Accountability Systems Make it more Difficult for low Performing*. Washington, DC.
- UNESCO. (2017). Education for Sustainable Development Country Status Report for Uganda. Retrieved from <http://unesdoc.unesco.org/images/0024/002470/247074e.pdf>.
- Walsh, F. (2011). *Determinants of International Pupils' Academic Performance: Comparative between Chinese and other International Pupils*. Journal of International Studies Education, 14(4): 389-405.

Appendices

Appendix I: Informed Consent Form

Dear respondent,

I am Gratiano Asiimwe a student at Bishop Stuart University (BSU) pursuing a Degree of Masters of Educational Administration and management. I am currently conducting a Research study on teachers' qualification and learners' performance in mathematics in Primary schools of Mbarara city south, Mbarara city. Your participation in this study is voluntary. If you agree to participate in the study, please sign the consent form below. If you wish to withdraw from participation you are free to do so and you may withdraw before or during your decision to participate even if you have signed the consent letter without any penalty.

You are also free to ask questions at any time should there be any issues that you want clarified. In this study there is no imbursement or compensation for participating. However, the results of the study will help to enhance teachers' qualification in relation to their learners' performance in mathematics. You are assured that the information collected from you was treated in confidence and anonymity.

I have read information as described to me on what is going to be done, the risks, the benefits involved and my rights regarding this study. I understand that my decision to participate in this study was confidential and my identity was concealed. I am aware that I may withdraw at any time. I understand that by signing this form, I do not waive any of my legal rights but merely indicate that I have been informed about the research study in which I am voluntarily agreeing to participate. A copy of this form was provided to me.

Name signature of the interviewer /person obtaining
information consent. Date

Appendix II: Interview guide for Head teachers

Objective 1: The Level of Teachers' Qualifications in Primary Schools

1. What is the level of qualification of teachers teaching mathematics in primary seven at your school?
2. How do you ensure that the qualifications of mathematics teachers meet the needs of the curriculum and the learners?
3. How do you support professional development programs for mathematics teachers to enhance their teaching skills?

Objective 2: The Level of Learners' Performance in Mathematics in Primary Schools

4. How do you measure or assess learners' performance in mathematics within your school?
5. What strategies has the school implemented to improve the performance of learners in mathematics?
6. How do you address challenges related to the performance of learners in mathematics?
7. In your opinion, how significant is the role of teacher qualifications and continuous training in improving learners' mathematics performance?

Appendix III: Interview Guide for Directors of Studies

Objective 1: The Level of Teachers' Qualifications in Primary Schools

1. How do you evaluate the qualifications of mathematics teachers in primary seven?
2. What role do you play in ensuring that the teachers have the necessary qualifications and teaching skills?
3. How do you organize or facilitate professional development for mathematics teachers in your school?

Objective 2: The Level of Learners' Performance in Mathematics in Primary Schools

4. How do you monitor learners' performance in mathematics across the different primary school levels?
5. What initiatives or programs are in place to support the improvement of learners' mathematics performance?
6. How do you collaborate with teachers to identify and address performance gaps in mathematics?
7. How does the qualification of mathematics teachers influence the learning outcomes of students, and what steps are taken to bridge any gaps?

Appendix IV: Interview Guide for Mathematics Teachers

Objective 1: The Level of Teachers' Qualifications in Primary Schools

1. What is your highest level of qualification as a mathematics teacher in primary education?
2. How do your qualifications help in the effective teaching of mathematics in primary seven?
3. Have you undergone any specialized training or professional development programs related to teaching mathematics? If so, how have they impacted your teaching methods?
4. In your opinion, how does teacher qualification influence learners' performance in mathematics at your school?

Objective 2: The Level of Learners' Performance in Mathematics in Primary Schools

1. How do you assess and measure learners' performance in mathematics at different stages (e.g., classwork, tests, and exams)?
2. What strategies or teaching approaches do you use to improve learners' understanding and performance in mathematics?
3. What are the common challenges learners face in mathematics, and how do you address them in your teaching?
4. What initiatives or programs has your school introduced to support better performance in mathematics?
5. How do you collaborate with other teachers or stakeholders in addressing mathematics performance issues?
6. What specific challenges have you encountered in improving mathematics performance at your school, and how do you overcome them?

Appendix V: Documentary review

Teacher's qualification

Where 1=degree, 2=diploma, 3=certificate

School	Qualification		
	Degree	Diploma	Certificate
Mathematics Teacher qualification			

Students' performance in mathematics

Scale: 90-100= D1, 80-89=D, 70-79=C3, 60-69=C4, 50-59=C5, 45-49=C6, 40-44, =P7, 30-39=P8 and 0-29 = F9.

School	Mathematics Performance in Primary leaving examination mock
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Schools	Teacher qualification (IV) (Degree, Diploma and certificate)	Performance (DV) (Total aggregates / total enrollment)
1		
2		
3		
4		
5		

Appendix VI: Sample size determination table

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.— N is population size. S is sample size.

Source: Krejcie & Morgan, 1970

MAP OF UGANDA SHOWING MBARARA CITY



