**ASSESSMENT OF THE IMPACT OF TEACHING STRATEGIES ON THE PERFORMANCE OF MATHEMATICS IN UNIVERSAL PRIMARY EDUCATION SCHOOLS OF NYABUHARWA SUB COUNTY,**

**KYENJOJO DISTRICT**

**BY**

**AGONZIBWA STEPHEN**

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**A RESEARCH REPORT SUBMITTED TO THE SCHOOL OF EDUCATION IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE CONFERMENT OF A MASTERS DEGREE IN EDUCATIONAL MANAGEMENT AND PLANNING OF NKUMBA**

**UNIVERSITY**

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# DECLARATION

**I, AGONZIBWA STEPHEN,** declare that this is my original research work and to the best of my knowledge, it has never been submitted to any other university before.

**Signed: ……………………………………………………………………………………..**

**AGONZIBWA STEPHEN**

**Date:………………………………………………………………………………………..**

# APPROVAL

This research report has been submitted for examination with my approval.

Signed: ……………………………………………………………………………………..

**DR. JOYCE SSESSANGA BUKIRWA,**

**SUPERVISOR**

Date: ………………………………………………………………………………………..

# DEDICATION

This work is dedicated to my mother Abwoli and my wife Katugume Doreen whose support and contribution has been paramount.

# ACKNOWLEDGEMENT

I am extremely grateful to the following people without whom it would have been impossible to produce this research report.

First and foremost, I feet a very special indebtedness to my lecturer and supervisor Dr. Joyce Ssessanga Bukirwa for research who helped me to search out the deeper well springs of my own thoughts and hopes. Without her guidance, this research would have remained a nightmare.

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# ABSTRACT

The study investigated the extent to which teaching strategies used in teaching mathematics in primary schools in Nyabuharwa Sub County, Kyenjojo district. Over the years, performance in mathematics subject in primary schools in Nyabuharwa Sub County has been poor compared to other subjects studied. The study had the following objectives; (1) To identify the teaching strategies used in teaching mathematics in primary schools in Nyabuharwa Sub County, Kyenjojo District; (2) To identify challenges faced by primary teachers in teaching Mathematics in Nyabuharwa Sub County, Kyenjojo District; (3) To determine the attitudes of teachers towards teaching Mathematics in primary schools in Nyabuharwa sub county, Kyenjojo District.

The study adopted a descriptive cross-sectional survey design which involves gathering information from a population at a single point in time. This design enabled the researcher to obtain appropriate strategies, opinions and attitudes which were paramount in meeting the objectives of the study. The researcher employed a survey research design because the study involved collection of data from a sample population of a group of people associated with the subject concerned (Mathematics). Data was collected from fifteen primary schools which were randomly selected. Also eighteen Mathematics teachers and six head teachers were randomly selected to participate in the study.

The study findings revealed that the teaching strategies used by teachers in teaching mathematics were not appropriate enough, the large classroom sizes was a major challenge to teaching mathematics as well as the negative attitudes of teachers towards teaching mathematics.

The study recommended that the school should share and learn from each other the best strategies of teaching mathematics, the government should work on providing enough infrastructures to government aided schools so as to reduce of the large class sizes that have greatly affected pupils’ performance and when exploring the attitudes of teachers towards mathematics, it is also important to consider their attitudes towards the subject its self and also their attitudes towards the teaching of mathematics.

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background of the study

Mathematics is a very important subject due to its great application in numerous fields and in everyday life situations. There is greater attention attached to Mathematics than any other subjects. This is reflected in Cockroft (1982.P1) which states thus, mathematics is only one of the many subjects which are included in the school curriculum yet there is greater pressure for children to succeed in Mathematics than, for example, in history or Geography even though it is generally accepted that these subjects should also form part of the curriculum.

According to Uganda National Examination Board (UNEB), the situation in Uganda today requires a student at ‘O’level and a pupil at Primary Leaving Examination level to pass Mathematics set by UNEB in order to get a first grade respectively. This is reflected in UNEB’s 1991 (P.12) statement that: Division one is awarded to candidates who pass in six or more subject which must include Mathematics. This is also true for primary school in that a pupil who fails Mathematics at P.L.E cannot be awarded division one even if he/she gets a distinction one in every other subject. Mathematics is a way of organizing our experiences of the world. It enriches our understanding and enables us to communicate and make sense of our life problems.

By doing Mathematics, we solve a range of practical tasks and real life problems. We use it in many areas of our lives. The main aims of Mathematics in the primary education cycle include;

* To promote problem solving in real life situations.
* To relate mathematics closely to integrated production skills and other subjects.
* To inculcate and promote scientific knowledge and skills.
* To develop and enrich pupil aesthetics and linguistic experiences.

It follows therefore that the major aim of teaching mathematics in primary schools is to develop in the learners a positive attitude towards the subject and to create an awareness of its great power to communicate and promote explanations in matters of daily phenomena which results in mathematics being used in many activities of daily life.

However despite the great emphasis put on Mathematics, the performance of the subject has remained very poor both at primary levels in Nyabuharwa Sub county, Kyenjojo District. It also becomes difficult for students who join primary Teacher’s Colleges with a failure in Mathematics to pass the subjects at the end of the course when they sit ITEK examinations. This becomes a big worry as these student teachers go to teach in primary schools after qualifying/ completing the two-year course as Grade 111 Teachers. There could be several factors, which contribute to poor performance in Mathematics in Nyabuharwa Sub County, Kyenjojo District. These factors cause Mathematics teaching and learning difficult. One of these factors could be the failure of the teacher to select and employ appropriate teaching strategies in the process of the subject.

Appropriate teaching strategies include several aspects such as proper and regular scheming and lesson planning, selection and devising new and appropriate methods of teaching, devising means of motivating learners through continuous assessment and evaluation, creating and making conducive learning environment and creating positive attitude towards Mathematics among the learners. For these reasons, it is the researcher’s interest to find out what type of teaching strategies are employed and how they affect the performance of Mathematics in Nyabuharwa Sub county, Kyenjojo District primary schools.

## 1.2 Statement of the problem

According to the PLE results released by Uganda National Examination Board in 2016, a total of 622, 405(The New Vision, Friday January 13th, 2017Page 5) candidates sat a Mathematics Examination in which only 4.5%and 40% passed with distinctions and credits respectively, indicating that a vast majority of the registered candidates who sat for the examination passed in the weaker grades. The performance in Mathematics tends to be poorer as compared to other subjects studied in primary schools in Nyabuharwa Sub County, Kyenjojo District. Most pupils performed poorly in Mathematics in P.L.E while the majority of the students at ‘O’ level and primary Teachers’ College also performed poorly in the same subject during UNEB and ITEK examinations respectively. This performance, however, would change if appropriate teaching strategies were adequately employed in the teaching and learning process. There seems to be a gap in the employment of learner centered methods such as group discussion, problem solving, and guided discovery during teaching and learning by the teachers. Knowledge of how teaching methods affects pupils’ learning may help educators to select methods that improve teaching quality, effectiveness and accountability to learners and the public. It may also help them keep up with information technology, globalization and to avoid the status quo (Foster, Pinkest and Husman, 1991). A few of the problems affecting the teaching and learning in government aided schools are the meaningfulness of the content, the sustainability of the methods and probably, the teacher who handles both the content and method. The problem therefore, is to assess the extent to which the teaching strategies affect learners’ performance in Mathematics during the course of primary school cycle in Nyabuharwa Sub County, Kyenjojo District as it lays the foundation on which later Mathematical knowledge will be built.

## 1.3 Aim of the study

The aim of the study was to contribute knowledge on the impact of teaching strategies on the performance of mathematics in primary schools of Nyabuharwa Sub County, Kyenjojo District.

## 1.4 Study Objectives

The study had the following objectives;

1. To identify the teaching strategies used in teaching mathematics in primary schools in Nyabuharwa Sub County, Kyenjojo District.
2. To identify challenges faced by primary teachers in teaching Mathematics in Nyabuharwa Sub County, Kyenjojo District.
3. To determine the attitudes of teachers towards teaching Mathematics in primary schools in Nyabuharwa sub county, Kyenjojo District.

## 1.5 Research questions

* What teaching strategies are employed in the teaching of mathematics in Nyabuharwa Sub County, Kyenjojo district?
* Which limitations are faced by teachers in the teaching of mathematics in Nyabuharwa Sub County, Kyenjojo district?
* What are the attitudes of teachers in teaching of mathematics in Primary schools in Nyabuharwa Sub County, Kyenjojo district?

## 1.6 Scope of the study

### 1.6.1 Content Scope

The study investigated the relationship between teaching strategies and their effects on performance in mathematics of learners in primary schools. The researcher focused on pupil’s performance in Mathematics in relation to the teaching strategies.

### 1.6.2 Geographical scope

The study was conducted in the six universal primary schools of Nyabuharwa, Kyenjojo District. The schools were; Badiida PS, Kyakahyoro PS, Kyakayombya PS, Rwebijuza PS, Makerere PS and Mirongo PS.

## 1.7 Significance of the study

**Pupils**: They will appreciate the importance of Mathematics and become aware of its great power to communicate and provide explanation in matters of daily phenomenon which will result in Mathematics being used in many activities of daily life.

**Teachers**: In selecting and employing appropriate teaching strategies in teaching mathematics.

**Curriculum planners and designers**: The findings will help them in recommending a relevant curriculum and appropriate teaching strategies in teaching mathematics.

**School Administrators, District Education Officers and Inspector of Schools:** They will be helped to formulate policies to enforce the use of appropriate teaching strategies in order to improve the performance in Mathematics in primary schools.

## 1.8 Limitations of the study

While on the study, the researcher met several limitations. The most significant limitations included the following:

* Inadequate financial resources for facilitating the research process in the required time. The buying of stationery, printing of questionnaires and typing of the report involved a lot of expenses and costs which hampered the effectiveness of the final publication of the research.
* Another limitation was the problem of transport to and from the schools of study. As these schools are scattered, it wasn’t easy to travel from one school to another on foot.
* The researcher also found it difficult to give enough time to the study at the same time teaching and supervising learning.

## 1.9 Definition of terms

**Achievement:** The degree of performance in a subject as reflected by the scores received in set tests, to assess the skill and knowledge mastered.

**Performance:** The act or process of carrying out a particular task in terms of acquisition, relation and application of knowledge, skills and attitudes with a view of achieving the intended goals.

**Qualified Teachers**: Teachers, who were trained for a certain grade, sat for teachers’ Certificate Examination and passed both Theory and Teaching practice.

**Teaching strategies:** A pattern of teaching acts that serve to attain intended goals or objectives. These include classroom organization, applying principles of motivating in teaching, lesson planning and scheming.

**Trained unqualified teachers:** Teachers, who went under training, finished their course of training but did not pass Teachers’ Certificate Examinations.

**Untrained Teachers**: Teachers who never went for training or presently under training in the teaching profession.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.0 Introduction

The chapter presents journals and other studies from scholars and other individuals who have researched on teaching strategies and academic performance.

As seen from the previous chapter, despite the great emphasis put on Mathematics performance in the subject has remained poorer as compared to other subjects studied at both primary level and ‘O’ level. Teachers and other people concerned with teaching need to find means and ways of improving the performance in Mathematics and the remedy for this poor performance.

The literature review focused on teaching strategies and their effects on performance in Mathematics. The presentation of the related literature appears in the following three aspects:

* Teaching strategies used in teaching mathematics in primary schools
* Limitations facing teachers in teaching mathematics
* Attitudes of teachers in teaching mathematics

## 2.1 Teaching strategies used in teaching mathematics in primary schools

Teaching methods refers to the general principles, pedagogy and management strategies used for classroom instruction. Your choice of teaching methods depends on what fits you – your educational philosophy, classroom demographic, subject area(s) and school mission statement. Teaching theories in primary are into two categories or “approaches” – teacher-centered and student-centered.

Studies on teaching methods are not something new in educational research. A large number of studies have been done on this area. Pascarella and Trenzini (2005) have written a compendium of research studies conducted in this area over the past three decades. Even before that, Feldman and Newcomb (1973) mentioned the decades of similar research studies in the area of teaching methods. These both increased interest and knowledge in the area of teaching strategies and learning theories. Svinicki (2000) suggests that these studies on teaching method conducted in the past decades are so overwhelming that it would be impossible to go over them all in detail.

For many decades, the search for better teaching methods to provide the best learning has been the goal of education. However, teaching method is not a one-size-fits-all proposition. Flexibility is crucial in adapting teaching methods in the class. Since all teachers are different, the strategies they use, and the way they use them will depends on the context and situation of their class (McCormack& Phan Thuy, 2005), as well as their own personality and biases.

The effect of teaching methods on students’ learning should be of interest to every teacher and student. In the field of education, there have been various studies done in an attempt to measure teaching methods. Robinson and colleagues (1990) conducted a case study on several teaching methods in schools to explore the reasons for their use and perceptions of effectiveness. The result of their study suggested that various methods do influence teaching effectiveness. According to Keene (2008), each student learns best using strategies and objectives that reflect his experiences, abilities, aptitudes and interest. Similarly, there is no standard teaching method.

The various teaching methods overlap in definition; none being mutually exclusive although researchers often delineate several teaching strategies. Demonstration technique is one of the many teaching style under the investigative or activity based. It is a method which is capable of improving learning through its diversity effect activity. It has the prerequisite characteristics for individualized instruction and there has high potential for making teaching-learning process challenging and rewarding. There is a radical departure from the direct to ask questions. In short, the student is viewed as an inquirer, a seeker of information and a problem-solver. These attributes are crucial to problem-solving and at the heart of demonstration model of teaching. Consequently, there is now growing concern for the use of demonstration technique in the teaching of Nigerian secondary schools. The researcher also observes that different methods need to execute so that suitability to different learners is encouraged as some are slow learners and others can adopt very fast.

### 2.1.1 Teaching method

Nowak, Watt and Walther (2004), articulated this position and present evidence that, demonstration method is generally effective in teaching sciences, mathematics and mechanics as well as subject areas within vocational and technical education. As stated by Gokhale (1996), the professional success of a technologist is directly related to his/her ability to transfer knowledge gained in the academic environment to real-world situations. Much student learning occurs through observing others. A demonstration provides the link between “knowing about” and “being able to do.” Research reveals that demonstrations are most effective when they are accurate, when learners are able to see clearly and understand what is going on, and when brief explanations occur during the demonstration (Saskatchewan, 1988). Others are how to demonstrate curiosity and independent thoughts in students (Brown, 1999). They also include ability to elicit students’ questions (Kona, 2000). The present concern for Nigerian government teachers with regard to acquisition of these qualities is born out of the fear that since most of these teachers have been used to expository teaching approach and considering the existing inadequacies in teacher education in Nigeria, their awareness, equipment, orientation and willingness to embrace and effectively use the demonstration technique as a mode of teaching are bound to be questionable. This activity technique is at times misconstrued and hence wrongly applied.

### 2.1.2 Teacher-Centered Approach to learning

Teachers are the main authority figure in this model. Students are viewed as “empty vessels” whose primary role is to passively receive information (via lectures and direct instruction) with an end goal of testing and assessment. It is the primary role of teachers to pass knowledge and information onto their students. In this model, teaching and assessment are viewed as two separate entities. Student learning is measured through objectively scored tests and assessments. Many researchers have proved that effective teachers generate the greatest opportunity for the students to learn and technically manage instruction. In addition, it has been found that teachers are the most important of the school related factors affecting student achievement through their effectiveness (Orodho 2013; UNICEF, 1012; Willitter et al., 2013 & Vavrus et al., 2011). Learner- Centered instructional strategies promote deep and lasting learning (Fahraeus, 2013).

In order to do their work effectively, teachers need to have high morale, motivation and a mastery of knowledge (Wachanga & Mwangi, 2004). Such conditions will allow them (teachers) spark enthusiasm in students utilize appropriate teaching strategies to increase learning to increase learning. If a teacher is excited about the subject and shows the relevance of the assignments of the real world and to the students’ future careers, he or she will be able to convince the students that the course content is interesting and relevant, and that the assignments are worthwhile (Tayolor, 2014). However, this may not be the case in public primary schools in Kenya where, although teachers are expected to deal with the swollen class sizes, their salary negotiations with the government have not been met yet (Syomwene, 2013). Additionally, due to teacher shortages, the few teachers are given a heavy work load making it difficult for them to perform to their optimum level and realize quality education (UNESCO, 2004 cited in Syomwene, 2013).

Learners-Centered Approach to learning, according to American Journal of Educational Research, 2014 (11A), pp 23-29, teachers are an authority figure in this model, teachers and students play an equally active role in the learning process. The teacher’s primary role is to coach and facilitate student learning and overall comprehension of material. Student learning is measured through both formal and informal forms of assessment, including group projects, student portfolios, and class participation. Teaching and assessment are connected; student learning is continuously measured during teacher instruction. To better understand these approaches, it is important to discuss to what is generally understood as three main teaching styles in educational pedagogy: direct instruction, inquiry-based learning and cooperative learning. Through these three teaching methods, teachers can gain a better understanding of how to govern their classroom, implement instruction and connect with their students. Within each of these three main teaching styles are teaching roles or “models.” Theorist A.F Grasha explains the five main teaching models in her publication teaching with style (1996): Expert, formal authority, personal Model, facilitator and Delegator. To gain a better understanding of the fundamentals of each teaching style, it is best to view them through the lens of direct instruction, inquiry-based learning and cooperative teaching.

Numerous research evidence associate learner-centered approach with the attainment of quality education, as compared with instructor centered or teacher-centered approach, where teaching is often focused on what the teacher knows and on unilateral transmission followed ]by recitation and evaluation, rather than on the facilitation of learning (Weimer, 2013 & Vavrus et al.; 2011). Emphasis on what instructors do often leads to students who are passive learners and who do not take responsibility foot their own learning. On the other hand, teaching approaches that allow students to use hands, eyes, ears, and the mind enhance effective learning and student’s achievements(Mills, 1991; Sogomo, 2001; Waihenya, 2000 cited in Wachanga and Mwangi, 2004. In learner-centered teaching, teachers do not employ a single teaching method but use different types of methods that shift the role of the instructors from givers of information to facilitators of student learning (Blumberg, 2008).

Mitchell (1997) in Carmicheal (2009) noted that teaching strategies that promote student involvement and which students find meaningful will hold students’ interest. In addition, learner-centered teaching helps students to take responsibility for their learning, emphasize high level thinking, focus on intrinsic rather than extrinsic motivation, and help the students remember important information. Learner-centered teaching such as cooperative learning (Wachanga & Mwangi, 2004) and inquiry approach produce higher learning achievement and higher motivation (Kim, 2005 in Li, 2012).According to Schweisfurth(2011), learner-centered teaching is a solution to a myriad of problems including; a narrow examination-focused orientation in teaching, the need for inclusion of all learners, the need for a democratic political culture, need to solve the problem of poverty and elitism. Many educational researchers have noted that learner-centered pedagogy helps students to develop critical thinking and ability to apply complex ideas in real-life situations. The use of learner centered approach in teaching and learning as shown by the APA, above would result in quality graduates that are the target of the nation as indicated in 2030 Vision.

However, Majanga, (2011) and Ackers and Hardman (2001) found out that the predominant teaching style in Kenya was characterized by the transmission of knowledge’ and was teacher focused in nature. Students were motivated to participate but answered preplanned, “closed” questions and lessons often involved a high degree of choral response and repetition of memorized work. Teacher-pupil classroom interaction activities in the lower classes were not exploited to the full because teachers used traditional lecture method of teaching. Teachers not involve all the pupils during classroom interaction. For example, teachers rushed over lessons interacting only with bright pupils ignoring weaker and slow learners, did all the work on the chalkboard, avoided group work which promotes pupil-pupil interaction and did not demonstrate any skill (Majanga, 2011).

### 2.1.3 Direction Instruction

Direct instruction is the general term that refers to the traditional teaching strategy that relies on explicit teaching through lectures and teacher-led demonstrations. Direct instruction is the primary teaching strategy under the **teacher-centered approach**, in that teachers and professors are the sole supplier of knowledge and information. Direct instruction is effective in teaching basic and fundamental skills across all content areas.

**Teaching and learning Resources and learner-Centered Teaching**

In this case of student-centered classroom, you will not find a teacher standing at the front of the room talking to rows of seated students. Rather, you will see children working in small groups, moving about talking freely. Some children might be discussing a science experiment, while another group works on model volcano, and a third prepares for a presentation. Interest centers would be located throughout the room, filled with books, materials software and projects designed to attract student interest on a wide array of topics. Finally you notice the teacher walking around the classroom, bending over to talk with individual students and small groups, asking questions and making suggestions (Massouleh, & Joonegani, 2012). Availability of adequate and relevant teaching-learning resource is very crucial in enhancing teacher effectiveness (Orodho et al., 2013). Equipment, books and other materials increase the learning opportunities within the physical environment of class room it affects the behavior of learners and their attitudes towards schooling and learning (Anderson, 2004).

Various educational technologies have created tremendous opportunities to create effective student-centered environments. For example, rich perceptual experience can be easily created in a computer-based learning environment for students to construct meanings; the internet brings in rich information that’s socially and culturally familiar to the students. Computers act as the mentor that leads learners into the desirable learning tracks, and improve their learning performance (Li, 2012). Learning activities that involve computers will catch students’ interest (Carmicheal et at., 2009). Kenyan public primary schools lack computer and internet facilitates because the country spends only 4.2% of the current primary education budget on non-teacher salary inputs (World Bank, 2008). So, if few schools and colleges I the country have access to lack computer and internet and email facilities (Juma, 2001 cited in Yomwene, 2013), yet they receive a giant share of the funds allocated for the education sector, actually none of these facilitates in public primary schools in the country. However, computer, internet and email facilitates are essential for research and learning process. Lack of these impedes effective learning. But apart from the fact those computers are lacking in most schools in Kenya, the teachers lack computer literacy skills as well.

the text book-pupil ratio, for both lower and upper primary schools in kenya, had improved between 2003 from 1:10 reaching 1:2 in 2009, while in upper primary it had improved from 1:2 9in 2007 to almost 1:1 in 2009 for majority of schools. However, this has weakened sharply since 2009, and schools with low enrolments have ratios for higher than the national average (MOF, 2012). This then means that public primary schools in Kenya cannot effectively use the learner-centered methods of teaching.

Scarcity of resources in public primary schools in Kenya is made worse by mismanagement, corruption and corruption related procurement, failures in monitoring, maintained and equipping schools (MoE, 2013) highlights that a report of June 2011 audit of the Ministry of Finance revealed that from 2005 to 2009,Ksh 4.2 billion (US$48 million) intended for the Kenya Education Sector Program (KESSP) to fund primary education had been lost through mismanagement.

### 2.1.4 Learners and learner-centered Teaching

Certainly, learning is affected by a student’s ability and attitudes as resources in the child’s school and home. Supportive parenting and stimulating home environments are among the strongest predictors of school performance during primary school and beyond (UNICEF, 2012). Many of the children in public primary schools in Kenya are from poor families that may not afford to offer the necessary background support their children. The increase levels of poverty in the country make parents to unable to pay school levies for their children, to feed their children properly and provide adequate health services (Syomwene, 2013). Low-income minority students in America experience less educational engagement (O’Donnell, 2009). The use of learner-centered approaches in teaching require that play an active role in class so if the learners remain passive, it might force the teacher to resort to the traditional teacher-centered approach that is more accommodative to passive learners.

Based on Piaget’s theory of cognitive development, and supported by many cognitive psychologists, children are active thinkers who construct their own understanding of the events in the world around them. This notion implies that the school curricula should be involve students as active participants in the learning process rather than absorbing knowledge by passively listening to teachers (Dembo,1991).

Teaching is a relationship, which is established among three focal points in education. That is teacher, the learner and the subject matter. It is the process by which the teachers bring the learners and subject matter together. It is complex art of guiding learners through a variety of experiences towards the attainment of appropriate teaching –learning goals. For this purpose, teaching should not be haphazardly established but appropriate teaching strategies need to be employed for such an effective teaching.

Teaching strategies have been defined by different writers using versions but these definitions have a common idea.

Aggarwal J. C (1995 P.124) quotes Smith’s definition of a teaching strategy as:

An instruction or teaching strategy refers to a pattern act that serves to attain certain outcomes and guard against others.

This definition implies that a teaching strategy is purposefully conceived and determined plan of action.

On the same page Aggarwal quotes the definition by Strasser (1964) who defines a teaching strategy as:

A generalized plan for lesson (s) which includes structure, desired learner behavior in terms of the goal of instruction and an outcome of tactics necessary to implement the strategy

According to Bishop (19850 P.102) gives the implication of teaching strategy thus:-

Teaching strategy implies deliberate planning and organization of teaching learning experiences and situation s in the light of psychological and pedagogical principles with a view of achieving specific goals.

There is no doubt that the use of right strategy in teaching as in any other endeavor smoothness the process of teaching and quickens learning. The question of adapting appropriate strategies for providing learning experiences and organizing teacher pupils activities is crucial for effective use of curriculum content sand achieving curricular objectives. While dealing with curriculum organization, the curriculum designers should treat the issue of teaching – learning strategies as an important component of curriculum cycle.

Teaching strategies play a big role on academic performance which measured in terms of pupils’ gains on standardized achievement tests. Evaluation is one of the teaching strategies to effective teaching. It facilitates and motivates learners to improve on their academic performance. Other teaching strategies include discussions, lecture, inquiry role- play, demonstration, individual practical work, class and home assignments and conference, seminars or workshop. There are many other strategies that component teaches might be expected to have in their repertoire in addition to those mentioned above all of them foster the acquisition, retention and application of knowledge, skills and attitudes intended by the curriculum as measured by performance and motivate pupils to be actively engaged in learning academically relevant materials while the class is in a session.

As to day’s situation stands in Uganda, academic performance plays a big role in the admission of pupils and students to higher levels of learning, thus the intended goals of teaching / learning focus on the passing of the promotional and the National examination as standardized measure. This is reflected in Perrot (1982. P.4-5) when he says:-

Observational studies of teaching suggests that the effective teacher is one who is able to demonstrate the ability to bring about intended learning goals the two critical dimensions of effective teaching being intent and achievement.

Without achievement of the intended learning goals the teacher cannot truly be called effective which may imply that such a teacher has not employed the appropriate teaching strategies in his/her teaching – learning process.

Smith (1969) suggested that in order to be effective in bringing about intended learning outcomes, a teacher should be prepared in the following four areas:-

* Command of theoretical knowledge in the subject matter to be taught.
* Display of attitudes that foster learning and genuine human relations.
* Command of theoretical knowledge about learning and human behavior.
* Control of technical skills of teaching that facilitate pupils’ learning.

The above four areas imply that the teacher should be academically sound in mathematics if he/she is to promote academic performance among the learners and should be aware of and follow the pedagogy of teaching which includes the use of appropriate teaching strategies.

Bishop (1985 P.102-103) outlines the principles of which any teaching strategy must take notice of, thus;

Any teaching strategy must take note of:-

* The age and ability of the learner
* Motivation and interest of the learner
* Insight learning against wrote learning

In this view the learner who intends to affect the teaching and learning of mathematics must follow the above principles.

## 2.2 Challenge facing teachers in teaching mathematics

Many teachers in the United States are faced with the challenge of children to read and write in English when the students have a heritage language that is not English. Making this a more critical issue, several studies (North Central Regional Educational Laboratory, 2003; Southeast center for Quality Teaching, 2003) suggest those teachers are not receiving adequate professional development in effective strategies to address English learners’ literacy development. Thompson (2004) in a recant Title I Communiqué’ Special Report that reviewed the current research related to quality literacy instruction for English learners concludes that classroom teachers urgently need to know more about effective strategies for teaching English learners.

As part of the effort to learn more about quality instruction for English learners, educational researchers and teachers in the United States have looked at instructional practices in other countries. When those countries are faced with the same challenge of teaching children in English to learn to read and write in English, there has been greatest transfer of best practices (Clay, 1991; Hold away, 1978; Frater &Sandilands, 1994). Research and close observation of the teaching of reading has been conducted in Australia and New Zealand, and a smaller amount of study in England for the obvious reason that English is the language of instruction.

Literacy instruction in India has not received the name attention, perhaps because English is not the first language of the majority. There are studies that compare and contrast educational practices in India to those in United |States with respect to the goals that teachers have for student learning, the way teachers approach the curriculum and the textbook, the way knowledge is communicated to students, and the way teachers interact verbally with their students (Clark, 2001; Alexander, 2000). There bias however, very little literature that reveals current methods and practice in India primary classrooms for the teaching of reading to children whose first language is not English.

The study earlier by, Apio (1990) advanced that in order for the early learners to catch up, they should be introduced to their mother language but there’s’ absence of books written in mother tongue in most schools. This is the condition of having no textbooks or dictionaries in the mother tongue that are needed to accommodate of the learners having different mother tongues. Although one of the strategies in implementing MTB-MLE is the improvisation of instructional materials one of the mother tongue, still teacher’s need books that are accurate and reliable. The respondents emphasized those they really need books written in mother tongue so that they will be able to implement MTBMLE successfully. The absence of books The IAFOR Journal of Language learning Volume I – Issue I – Winter 2014.

In Uganda there are a number of challenges that have resulted into poor performance; for instance between 2007 and 2008, there was a 3.7 percentage decrease in the number of primary schools in the country. It is significant to not that the number of primary teachers were also reduced by 13.8 percent between 2007 and 2008. This was as a result of streamlining the teachers” ceiling. The pupil-teacher ratio increased from 50 in 2005 to 57 in 2008 while pupil-classroom ratio reduced from 74 in 2005 to 72 in 2008. The current pupil book ratio is 18:11 implying that one book is used among 18 pupils in each school. This affects the quality of reading and performance and also given the fact that majority of the parents are illiterate.

While we acknowledge that deficiencies in schooling outcomes are influenced by a complex array of determinants (child, household and community factors, access school quality linkages across sectors) – this study limits its focus to examining one specific institutional deficiency, that of teacher absence. If the teacher is absent either for “valid” reasons (e.g., pulled away from the classroom (fornon-teaching duties) or for “dubious” reasons (absenteeism), and there is no substitute teacher available, it must go without saying that the quality of teaching will suffer. Reduction of teacher absenteeism in schools is critical to improving academic performance and realization of children’s rights to education.

Lyaru (2007) emphasized that the lack of acquisition of positive reading skills and a positive reading culture during the formative years impacted negatively on the pupil’s performance not only in the language taught, but also in other subjects. Hence lack of reading among pupils was as a result of limitations discussed below.

**Poverty;** According to Batambuze (2008), Ugandans lacked the motivation to buy books because they had to meet basic human needs as food, health, shelter and clothing. As a result of low incomes, many would-be readers kept away from buying books because they did not have money to buy reading materials. This limited their ability to get exposed to a variety of information materials which could easily be accessed by buying them from bookshops if they could afford them.

**Education system**; the education system in Uganda does not prioritize reading for pleasure or general knowledge acquisition that does not aim at passing examinations. For instance Magara and Nyumba (2004) asserted that the poor reading culture of pupils in primary schools was a result of poor public policy and institutional management practice, lack of essential resources for literacy development, failure to reorganize reading as an critical skills for learning, a lack of commitment to ensure that literacy was achieved, and a lack of reading policies and reading policies in schools. Studies also show that teachers had also issues that resulted into poor performance of learners; Sanyu (1999) noted that teachers had a negative attitude towards reading and reading lessons. According to her, most teachers viewed reading as a leisure activity which children could do on their own, without teachers’ guidance and support. Bitamazire (2001), as cited by Magara and Batambuze (2005), asserted that even the literate stopped reading when they finished writing examinations, a problem that had been blamed on an examination-oriented system of education.

2.4 The attitudes of teachers towards teaching mathematics

According to Leder (1992) attitudes are learnt, and predispose one towards action which may be either favorable or unfavorable with respect to a given object. Such a definition implies that attitudes are comprised of an emotional reaction to an object, behavior towards an object, and beliefs about the object (Rajecki, 1982). Formation of attitudes towards academic subject matter is thought to develop through (a) the atomization of a repeated emotional reaction to the subject, and (b) the transference of an existing attitude to a new but related task (McLeod, 1992). Additionally, formation of academic attitudes has been identified as a complex process involving socialization, relationships with teachers, teacher attitudes and aspects of the subject matter itself (Taylor, 1992).

When exploring the attitudes of teachers toward mathematics it is necessary not only to consider their attitudes towards the subject itself, but also their attitudes towards the teaching of mathematics. The attitudes of pre-service teachers are of particular importance because of their potential influence on pupils. Although the research evidence is certainly not conclusive, it has been sufficient to suggest that positive teacher attitudes contribute to the formation of positive pupil attitudes (Aiken, 1974, 1976; Phillips, 1973; Sullivan, 1987). Aiken (1970) was one of the first to assert that "of all the factors affecting student attitudes towards mathematics, teacher attitudes are viewed as being of particular importance. Other studies have shown that the instructional techniques used to teach a subject are influenced by teacher attitudes and beliefs towards the subject and that these, in turn, may have an effect on pupil attitudes (Brush, 1981; Carpenter & Lubinski, 1990; Williams, 1988). The attitudes and beliefs of teachers also influence the ways they organize the content they teach and the teaching methods they use (Nespor, 1987; Pajares, 1992).

Research into attitudes to mathematics has explored the influence of a range of affective variables-for example, anxiety, enjoyment, self-concept and belief in the usefulness or value of mathematics. One component that has received much attention is that of mathematics anxiety." Mathematics anxiety can be defined as feelings of tension that interferes with the manipulation of numbers and the solving of mathematical problems. (Richardson & Suinn, 1972). Few would question the existence of "mathematics anxiety and a number of instruments for measuring levels of anxiety have been developed and implemented (Richardson & Suinn, 1972). However, Sovchik, Meconi and Steiner (1981) suggest that "mathematics anxiety" as a construct is not as well defined and measureable as assumed by some mathematics education researchers.

2.5 Conclusion**:**

The researcher observes there are strategies that exist in schools but there is need to have policies that ensure that these strategies and standards are followed across the country so that other areas are not left behind, and hence poor performance resulting from poor implementation of the teaching strategies, discussions, demonstrations and use of instructional materials etc. delay in complementation of syllabuses affects pupils performance, hence there is need to plan accordingly as teachers to ensure that declines are met. The primary school is the beginning of formal education. It is at this level that the first introduction to a subject field is gained formally. Therefore the primary school should provide foundation on which later mathematical knowledge will rest. A sound Mathematical education at the primary school level which provides the basic elements of later mathematical ideas will enable children to pursue secondary school mathematics courses successfully.

Kalejaye (1985) states that, good Mathematics education at the primary school is essential in its own right since it will prepare children to live a life useful to themselves and to the society

The researcher agrees with the above literature as stated previously.

Mathematics is a way of organizing our experiences of the world. It enriches our understanding and enables us to communicate and make use of our experiences.

Thus by doing Mathematics we can solve a range of practical tasks and real life problems.

Teaching and learning involves learning skills and remembering facts which are only the means to an end. Facts and skills are important when need them to solve a problem. Pupils will remember fats and skills easily when they use them to solve real life problems. Besides the above the pupils should be taught about different parts of Mathematics and how they fit together depending on the age level and the ability of the learners.

Mathematics can be taught using a step approach to a topic but it is important to show that many topics are linked. It follows that Mathematics teaching should base on the principle of teaching from known to unknown, from simple to complex and from concrete to abstract. Therefore when planning topics to be taught they should range from simple to complex and each topic must be linked to be subsequent one.

Effective mathematics teachings must pay attention on three district aspects namely:- facts and skills, conceptual structure general strategies and appreciation.

Simon (1993 P.37) supports the above when his status thus:

Research shows that these three facts and skills, conceptual structure, general strategies and appreciation involve district aspects of teaching and require separate attention.

In preparing their schemes of works; teachers should select a topic which between them, cover all aspects of mathematics in primary schools like at any other level requires proper and careful planning, teaching, evaluation and assessment of each lesson. All these aspects Centre around the proper use of appropriate teaching strategies.

Teaching strategies and performance in mathematics

Pupils’ performance in mathematics depends on the teaching strategies the teacher employs in the teaching of the subject one of the things that cause mathematics learning to be difficult to learners might be failure of the teacher to employ appropriate teaching strategies while teaching. Concepts which children may find difficult to understand would be made easier by teacher if he /she employs appropriate teaching strategies in teaching. Cockcroft (1982 P. 102) acknowledged the teachers outstanding in motivating and enhancing learners of mathematics when he stated that:-

The quality of mathematics is teaching inevitably depends largely on the strength and interest of class teacher. If the teacher lacks enthusiasm for Mathematics and confidence in teaching the children in class will be disadvantaged.

Research finds on how best mathematics can be taught indicate group, discussion, individual practical work, consolidation and practice of fundamental skills as being more appropriate teaching strategies as reflected in Cockcroft (1982 P. 71) when he stated that:- Mathematics teaching at all levels should include opportunities for discussion between teachers and pupils themselves.

According to Freeman (1985) learners should take every opportunity to discuss in groups while learning. It should therefore follow that discussion as a teaching strategy must be employed in teaching of mathematics because of several reasons. In support of discussion Freeman (1985 p.22) gave the following reasons:-

Discussion tests knowledge understanding, discussion brings new ideas and insights, discussion is an active reordering of the material in mind.

Teaching strategies and methods of teaching are most in cases used interchangeable. Any teaching strategy in mathematics should allow pupils for the opportunity of practicing skills on their own, discussing Mathematics with each other, playing mathematics games doing puzzles, doing practical work solving problems and finding out things for themselves.

Employing appropriate strategies in the teaching has many benefits. Portman 1997) gave the following benefits for a range of appropriate teaching strategies/methods thus:-

* It motivates learners
* It improves their language skills
* It provides variety of learning experiences
* It enables learners to learn things more quickly and meaningfully.

Stemming from the findings and recommendation given above, it is clear that the application of appropriate teaching strategies in the teaching of Mathematics improves and promotes the performance in Mathematics subject in primary school.

# CHAPTER THREE

# METHODOLOGY

## 3.0 Introduction

This chapter mainly focused on the research methodologies employed during the research study. It describes the research design, the study population, sample size, sampling technique, research instruments and data analysis techniques.

## 3.1 Research design

This study adopted a descriptive cross-sectional survey design which involves gathering information from a population at a single point in time (Sardana et al, 2016).This design enabled the researcher to obtain appropriate strategies, opinions and attitudes which were paramount in meeting the objectives of the study. Semi-structured surveys were used to achieve the objectives of the study. Thirty (30) questionnaires were pre-tested in Ndeke and Ishaka sub counties of Bushenyi District. After the pre-test, some variables in the questionnaire were re-written to improve clarity, while some new variables were added to fully address the objectives of the study. A total of 180 respondents were interviewed during the study. These included six head teachers, twenty four teachers and sixty pupils. They were purposely selected from the nine government aided schools.

Both quantitative and qualitative data were collected on mathematics teachers teaching strategies, challenges facing primary mathematics teachers and teachers’ attitudes towards teaching mathematics. The questionnaires were self-administered in order to save time as most of the head teachers and mathematics teachers were very busy given the fact that data was collected during the school term period. Administering each questionnaire took about twenty minutes for each respondent.

## 3.2 The study area

The study was conducted in Nyabuharwa Sub County, Kyenjojo District in the Toro Sub-region of western Uganda. The sub county has eight (8) parishes and thirty one (31) villages. The sub county has over thirty two (32) schools currently with twelve (12) nursery schools, nineteen (19) primary schools and one (1) secondary school.

## 3.3 Study Population

Data was collected from fifteen primary schools in Nyabuharwa Sub County, Kyenjojo District. The study targeted, teachers and head teachers of the selected schools. A total of 180 respondents were interviewed as illustrated in table 1.

Table 1: Category of respondents interviewed

|  |  |  |
| --- | --- | --- |
| **No** | **Type of respondent** | **People interviewed** |
| 1 | Head teachers | 15 |
| 2 | Teachers | 165 |
| **TOTAL** | | **180** |

## 3.4 Sample size

The sample size of respondents was determined based on the procedure as used by Kumar and Amit (2014)

Formula: S = X2NP (1 - P) ÷d2 (N - 1) + X2P (1 - P) where:

***S*** = required sample size, ***X*2**= the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841), ***N*** = the population size, ***P*** = the population proportion (assumed to be .50 since this would provide the maximum sample size) and ***d*** = the degree of accuracy expressed as a proportion (.05). Thus **S =180**

## 3.5 Sampling techniques

The researcher used both purposive and simple random sampling techniques. Purposive sampling were used to select head teachers and mathematics teachers because the head teachers have recorded information like statistics about the topic under investigation and the mathematics teachers have the strategies and attitudes that the study is looking for. Simple random sampling was applied in selecting pupils who also have the required information for the study and since they were very many and from different classes (Primary five, six and seven) random sampling was required to get the required sample size of sixty pupils. The researcher had to select a representative to meet the time schedule.

## 3.6 Data collection methods

### 3.6.1 Questionnaires

The study used self-administered questionnaires and semi-structured instruments to collect data from head teachers and mathematics teachers from the selected primary schools in Nyabuharwa Sub County, Kyenjojo District. Two sets of questionnaires were designed one for the head teachers and the other for the mathematics teachers Cohen et al (2014) recommended the use of questionnaires since they allow the respondents to have an opportunity of providing anonymous feedback on their experience. Closed ended and open ended questions were carefully used in order to generate information of influence which facilitated responses on the teaching strategies used in mathematics lessons, the challenges faced by primary teachers in teaching mathematics and teachers’ attitudes towards teaching mathematics, since the questions were of multiple choice and data was to be categorized easily. The opinions from both the head teachers and mathematics teachers were used to establish the validity and reliability of the content in the questionnaire.

### 3.6.2 Interviews

Face to face interviews were carried out with head teachers, mathematics teachers and pupils to get information on the Impact of Teaching Strategies on the Performance of Mathematics in Universal Primary Education Schools of Nyabuharwa Sub County, Kyenjojo District. It involved use of semi-structured interview guides. The semi-structured interviews were chosen, as they were flexible despite their focus being determined by the researcher; the interview guides contained open-ended questions which compel the respondents to give more unrestricted responses since open-ended questions are perceived as less threatening (Picho, 2014). The sequence of questions could be changed during the interview based on participants’ responses and/or insights gained from previous interviews. This was to help capture information not provided by the questionnaire. The method was preferred because of its flexibility and ability to provide new ideas on the subject (Kothri, 1990).

### 3.6.3 Documentary analysis

Data from materials like mathematics result slips for primary five, six and seven and well as the UNEB result slips were used to back up primary information and relate the findings of other research methods in existence like questionnaires and interviews.

## 3.7 Validity

Validity simply means that a test or instrument is accurately measuring what it’s supposed to measure. Glan (2016) defines validity as the degree to which a research study measures what it intends to measure. After constructing the questionnaire, the researcher contacted the supervisor and three other experts in order to expertise judgment on the validity. The following formula was used to test the Content Validity Index (CVI) as indicated by Polit (2006)

CVI= Number of items regarded relevant by researcher

Total number of items

The instruments were said to be valid when CVI of value 0.5 or above 0.5. (Polit, 2006) argued that instruments are said to be valid if they range from 0.5 and above but very good at 0.7 and above. Therefore the instrument was regarded valid since the calculated content index value was above 0.7 (Amin, 2005)

CVI=46/50

CVI= 0.92

The above implied that the questionnaire was able to obtain the data it intended to obtain for the study.

## 3.8 Procedure of data collection

After the approval of the proposal by the university, the researcher obtained an introductory letter from the head of department, Education Management and Planning to enable the researcher to proceed to the schools of interest and requested the head teachers that he intends to conduct research on the request of Nkumba University, School of Education. The researcher was assisted by six research assistants in the distribution and administering of the questionnaires and interviews. Data was collected by the researcher plus the assistants. The data collected was computed and edited to minimize obvious errors. The collected data was then analyzed, interpreted and then discussed.

## 3.9 Data analysis

Data on respondents’ teaching strategies, challenges faced by mathematics teachers while teaching and the attitudes of teachers towards teaching mathematics were analyzed using the Statistical Package for Social Scientists (SPSS) version 21 to obtain descriptive statistics and correlation

## 3.10 Ethical considerations

The researcher took into account ethical considerations meaning that the researcher first got a letter of introduction from the head of department of Education Management and Planning. The researcher then proceeded to the field and sought consent from the prospective participants like the head teachers, teachers and the pupils. The researcher explained to the participants what the study was about and what information he was going to be used for. The researcher also disclosed to the participants that confidentiality would be ensured by concealment of the names of the respondents and the school. Only code numbers were used for anonymity. The respondents were informed that all information they disclosed were only for the purposed of this study and it would not be used for any other purpose.

## 3.11 Limitations

Ideally this study would have been conducted in all government aided schools in Nyabuharwa Sub County, Kyenjojo District but time and financial constraints dictated a smaller sample. The researcher, besides being required to meet the full cost of the study, had little time to collect, compile data and develop a research report.

# CHAPTER FOUR

# DATA PRESENTATION, ANALYSIS AND INTERPRETATION

## 4.0 Introduction

This chapter presents findings based on the three specific objectives;

1. Identifying the teaching strategies used in teaching mathematics in primary schools in Nyabuharwa Sub County, Kyenjojo District.
2. Identifying challenges faced by primary teachers in teaching Mathematics in Nyabuharwa Sub County, Kyenjojo District.
3. Determining the attitudes of teachers towards teaching Mathematics in primary schools in Nyabuharwa sub county,Kyenjojo District. The results are presented using the descriptive statistics and correlations generated from data analysis

## 4.1 Socio-demographic characteristics of the respondents

Table 2: Social-demographic characteristic of the respondents

|  |  |  |  |
| --- | --- | --- | --- |
| Items | Variable | Frequency | Percentage |
| Gender of respondents | Female | 95 | 52.78 |
| Male | 85 | 47.22 |
| Total | 180 | **100.00** |
| Teaching experience of respondents | Less than 5 years | 28 | 15.56 |
| From 5 to 10 years | 89 | 49.44 |
| More than 10 years | 63 | 35 |
| Total | 180 | **100.00** |
| Qualifications of the respondents | Below grade III | 6 | 3.33 |
| Grade III | 120 | 66.66 |
| Grade V | 44 | 24.44 |
| Above grade V | 10 | 5.55 |
| Total | **180** | **100.00** |
| Position of the respondent in the school | Head teacher | 15 | 8.33 |
| Deputy Head teacher | 15 | 8.33 |
| Regular teacher | 150 | 83.33 |
| Total | 180 | **100.00** |

***Source: primary data, 2019***

The results on the respondents’ socio- demographic factors are summarized in Table 4 below. A higher percentage of the respondents were female (52.78%). This could be as a result of the affirmative action that has led to an increase of women in public services especially in the education sector over the years and also men have joined higher income careers than teaching. There was thus a fair representation of males and females which renders the results credible.

The results also revealed that 49.44% of the respondents had a teaching experience of 5 to 10 years, 35% had a teaching experience of 10 years and above while 15.56% of the respondents had a teaching experience of 4 years and below. This implies that data was collected from credible respondents who would give valid and reliable information about the impact of teaching strategies on the performance of mathematics in universal primary education in Nyabuharwa Sub-County, Kyenjojo District.

The teaching qualifications of the respondents were summarized in four categories beginning from those below grade III. Majority of the respondents (66.66%) had a grade III teaching qualification. This could be as a result of the ministry of education and sports requirement for primary teachers to have atleast a grade III teaching qualification. Those with a grade V teaching qualification were 24.44%. This applies to head teachers who must have a grade V (Degree in primary education).Those with a teaching qualification of grade V and above were 5.55% while 3.33% of the respondents had a teaching qualification of below grade III. This implies that the respondents were in position to make valid decisions and contributions towards improving mathematics teaching in Universal Primary Education in Nyabaharwa Sub-County.

As indicated in table 2 above, the highest percentage (83.33%) of the respondents were regular teachers, while the rest were either head teachers or deputy head teachers. These respondents were not only adults, but also responsible people who are in decision making capacity concerning the impact of teaching strategies on the performance of mathematics in universal primary education in Nyabuharwa sub-county, Kyenjojo District. This means data was obtained from credible respondents, which rendered the results valid and reliable.

## 4.2 Teaching Strategies used in teaching mathematics in primary schools

This section presents data concerning the teaching strategies used by teachers in teaching mathematics in Nyabuharwa Sub County, Kyenjojo District.

Figure 1: Teaching Strategies used by teachers in teaching mathematics

As shown in figure 1, 36% of the respondents reported that they used timed testing as the main mathematics testing strategy. This could be that this strategy is effective in a way that teachers test pupils with a few numbers and mark instantly as compared to tests which take a long time to mark given the big sizes of the classes. Joseph Karumuna one of the mathematics teachers from Makerere Primary School reported that “timed testing helps him to access how quickly his pupils can recall mathematics concepts from previous lessons and classes.

The other strategy given by respondents was repetition with a 27% usage rate. Teachers believe that by repeating and reviewing mathematics formulas, lessons and information, pupils are able to comprehend concepts at a faster rate. Ms. Rebecca Kirabo from Badiida Primary School narrated that repetition further helps pupils to keep awake and attentive during mathematics lessons.

The results also revealed that 21% of the respondents use manipulation tests as a mathematics teaching strategy. This could be that since this strategy involves using aids like balls, fruits etc, teachers believe that pupils learn faster since they are learning with items they love. This helps pupils to learn place values, addition, subtraction and other areas of basic mathematics much faster. Mr. Joseph Karumuna from Makerere Primary School narrated that “*this method is not practical in Nyabuharwa Sub-County because their schools lack learning aids like books, balls etc*”.

The other strategy used was mathematics games with a 16% usage rate. Tom Mundu the head teacher of Rwabuganda Primary School reported that “*Reinforcing mathematics concepts to learners in class is not always easy for us teachers but math games provide the opportunity to learners to conceptualize mathematics concepts as they play”*

## 4.3 Challenges faced by primary teachers in teaching mathematics

This section presents data concerning the challenges faced by teachers in teaching mathematics in Nyabuharwa Sub County, Kyenjojo District.

Figure 2: Challenges faced by primary teachers in teaching mathematics

The results from the research question which sought to identify the challenges faced by teachers in teaching mathematics in primary schools are given in figure 2 above. From the results, respondents revealed that the major challenge faced by teachers in teaching mathematics was the large class size with 39.15%. This could be attributed to the fact that government aided schools under Universal Primary Education are usually over populated. Also 22.31% of the respondents revealed that shortage of mathematics teaching aids was the second biggest challenge faced by teachers in teaching mathematics. Ms. Lydia Nyakato the deputy head teacher of Mirongo Primary School revealed that “*Rural schools like ours luck mathematics teaching aids like the teacher mathematics set equipment that include mater rulers, protractors, pair of compasses etc. which makes it very difficult to teach geometry*”

The results from figure 1 further revealed that 14.32% of respondents revealed that language issues are also a major challenge in teaching mathematics especially in upper primary. This could be as a result of the English language still being a challenge in rural schools yet it’s the means of communication especially in upper primary. Evelyn Nafula the Primary Seven mathematics teacher at Kyakahyoro Primary School reported that “*Pupils reach primary seven when they cannot even construct a single sentence in English. This makes it difficult for such a pupil to understand anything in mathematics since in upper primary were are supposed to conduct all lessons in English*”.

The results also revealed that pupil absenteeism and varying students’ abilities are also challenges facing teachers in teaching mathematics with 14.08% and 10.14% respectively of the respondents having mentioned it. Scovia Nyamitara the head teacher of Kyakahyoro Primary School revealed that absenteeism has greatly affected the performance of both the teachers and pupils not only in the mathematics subject but also in other subjects.

The above findings revealed that there is urgent need to address the above mentioned challenges facing teachers in teaching mathematics in schools in Nyabuharwa Sub-County if the mathematics grades of these schools are to improve especially at the Uganda National Examination level.

**4.4 Attitudes of teachers towards teaching Mathematics in primary schools**

This section presents teachers attitudes teaching mathematics in primary schools in Nyabuharwa Sub-County, Nyenjojo District. The questions on attitudes of teachers towards teaching mathematics were based on the Likert scale (Sackett, 2013). The Likert scale allows the respondent to rate statements on a scale of choices such as “strongly disagree” to “strongly agree.” The Likert scale is a great choice for both its visual aesthetic quality and its ease of use. The study therefore used a scale of 5=strongly agree, 4=agree, 3= neither agree nor disagree, 2=disagree and 1=strongly disagree. The statements are ranked on table 3:

Table 3: The descriptive statistics on the Likert holder N=180

| **Items** | **Mean** | **Std. Deviation** |
| --- | --- | --- |
| 1. Mathematics was one of my best subjects when I was at school | 1.66 | 1.100 |
| 2. I enjoy talking to other people about mathematics | 2.52 | 1.404 |
| 3. I enjoy teaching mathematics to pupils | 4.03 | 1.155 |
| 4. In my mathematics class I generally demonstrate procedures and methods for performing mathematics tasks | 4.08 | 1.108 |
| 5. The main reason for teaching mathematics is to develop a foundation upon which subsequent mathematics can be learn | 2.19 | 1.329 |
| 6. I think that most pupils learn mathematics better by attending to teacher’s explanations than by being left to make sense of things for themselves | 2.16 | 1.353 |
| 7. In my mathematics lesson, I generally let people do whatever mathematics formulas interest them | 4.37 | 1.094 |
| 8. You can only understand mathematics if you have a logical mind | 1.93 | .639 |
| 9. The main goal of teaching mathematics is to produce students who can perform the mathematics tasks specified in the curriculum | 1.98 | .466 |
| 10. With a little guidance most pupils should be able to discover most mathematical ideas for themselves | 3.95 | .304 |

*\* The higher the mean is the higher the positive attitude towards teaching mathematics*

As shown in Table 5, the responses to the *statement in my mathematics lesson, I generally let people do whatever mathematics formulas interest them* was rated highest (Mean =4.37) in influencing teachers attitudes towards teaching mathematics at primary level. Majority of the teacher would consider letting pupils use the simplest mathematical formula provided they arrived at the correct answer. One of the teachers James Okello from Makerere Primary school reported that “*the easiest way of both the teachers and the pupils having a positive attitude towards teach and learning mathematics is to make it as easy as possible to understand by both the teacher and the learners.*”

*In my mathematics class I generally demonstrate procedures and methods for performing mathematics tasks*(Mean = 4.08). Most the respondents agreed that in order to have a positive attitude towards teaching mathematics, teachers should be able to effectively demonstrate the procedures and methods while teaching if the teach is to love what he is teaching. I enjoy teaching mathematics to pupils(Mean = 4.03). The respondents revealed that in order to effectively teach mathematics, one must first fall in love with the subject. In so doing, one will be able to teach it with passion hence making the pupils love the subject as well.

The fourth related important factor (Mean = 3.95) with a little guidance most pupils should be able to discover most mathematical ideas for themselves. If a teacher is able to make the subject as attractive as possible to the students, that teacher will be able to make his/her pupils discover most mathematical ideas for themselves with little guidance. I enjoy talking to other people about mathematics(Mean = 2.52) the fifth factor influencing teachers attitudes towards teaching mathematics in primary schools.

Most teachers revealed that the main reason for teaching mathematics is to develop a foundation upon which subsequent mathematics can be learn (Mean = 2.19). This could because mathematics learning is continuous and pupils learn the unknown concepts from the known ones. I think that most pupils learn mathematics better by attending to teacher’s explanations than by being left to make sense of things for themselves (Mean =2.16) because young children learn best from teachers actions than being left to make sense of things for themselves. The main goal of teaching mathematics is to produce students who can perform the mathematics tasks specified in the curriculum (Mean = 1.98). This is so because at the end of the years the pupils will be examined depending on the curriculum of a particular class and they would be expected to know everything as per the curriculum. Lastly the Mathematics teachers revealed that mathematics was one of their best subjects when (Mean =1.66) because in order to be give a teaching subject it must have been one of your best done subjects at training level.

# CHAPTER FIVE

# DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

## 5.0 Introduction

This chapter presents the research findings, conclusions and recommendations towards improving teaching strategies on the performance of mathematics in Universal Primary Education schools of Nyabuharwa Sub County, Kyenjojo District. These are presented depending on the study objectives that included (i) identifying the teaching strategies used in teaching mathematics in primary schools in Nyabuharwa Sub County, Kyenjojo District, (ii) 1dentifying challenges faced by primary teachers in teaching Mathematics in Nyabuharwa Sub County, Kyenjojo District and (iii) determining the attitudes of teachers towards teaching Mathematics in primary schools in Nyabuharwa Subcounty, Kyenjojo District.

## 5.1 Discussion

### 5.1.1 Teaching strategies used in teaching mathematics in primary schools

The research finding revealed that teachers used repetition, time testing, manipulation tests and mathematics games as strategies for teaching mathematics. Teachers believe that by applying a combination of those strategies learners are able to acquire and apply the gained knowledge in their own lives even after school. They went on to mention that some strategies like manipulation tests and mathematics games are difficult to apply because such rural school luck the required teaching aids to enable them teach using such strategies. However, they try their level best using locally available materials to practice them for the effective learning of mathematics in primary schools. These findings are in line with the conclusion of South African Department of Basic Education, (2011) that revealed that in order for teachers to produce pupils who can apply the acquired knowledge and skills in a way meaningful to their own lives, teachers should ensure that they use a variety of methods and techniques to improve the quality of their teaching of mathematics.

### 5.1.2 Challenges faced by primary teachers in teaching Mathematics

The results revealed a number of challenges faced by teachers in teaching mathematics. These included large class size, shortage of teaching aids, absenteeism of pupils, varying students’ abilities and language issues. However, the large class size stands out as the major challenge faced by teachers in teaching mathematics in primary schools. This problem is worse in government aided schools which are always over populated. The teachers revealed that effective learning is a challenge and classroom management is almost impossible which ends up straining the teachers. This is in agreement with Ayeni and Olowe, (2016) findings that revealed that effective learning becomes difficult in large classroom environment which affects students’ assimilation as well as the information from the teacher.

### 5.1.3 Teachers attitudes towards teaching mathematics in primary schools.

According to the research findings, there is evidence that a relationship exists between teachers’ attitudes to teaching mathematics and formation of positive attitudes to learning mathematics among pupils. There is a strong belief amongst the teachers that positive attitudes need to be fostered while teaching mathematics to the pupils so that in the end they appreciate the importance of learning mathematics. The teachers further revealed that this is to happen, negative attitudes by the teachers like low self-concept and anxiety must first be overcome. This is in agreement with Philipp (2007) views anxiety as a subset of affect and expresses concern over the long-term effects that negative affect can have on a learner

## 5.2 Conclusions

The results from the study have indicated that teachers are able and applying modern teaching strategies while teaching mathematics, however, they are limited by luck of enough teaching aids to help them effectively do it.

The challenges of large size classrooms have greatly affected the performance of teachers while teaching mathematics on top of the high absenteeism cases and the language difficult which has tremendously affected pupils’ performance in mathematics.

Teachers negative attitudes towards teaching mathematics has greatly affected the moral of pupils towards the same since the attitudes of teachers are of particular importance because of their potential influence on pupils

## 5.3 Recommendations

1. The school should share and learn from learn from each other the best strategies of teaching mathematics.
2. The government should work on providing enough infrastructures to government aided schools so as to reduce of the large class sizes that have greatly affected pupils’ performance.
3. When exploring the attitudes of teachers towards mathematics, it is also important to consider their attitudes towards the subject its self and also their attitudes towards the teaching of mathematics.

## REFERENCES

Aggarwal J.C. (1995);Essentials of Education Technology.New Delhi, Vikas publishing House, PVTLTD

Bishop G. (1985); curriculum Development.London and Oxford, Macmillan Education Ltd.

Forojolla S.B (1993); educational planning for Development.London and Basingstoke, the Macmillan press limited.

Kalejaiye (1985) ;Teaching primary Mathematics. Ibadan, Longman group Ltd.

Laslett Rand Smith C (1984). Effective classroom Management. A teacher’s Guide New York, Nicholas publishing company.

Malcom S. (1993); The effective Teaching of Mathematics. New York, long man group UK limited.

Moyo G.J. (1967); Beginning to learn England, Long man Group Limited

Nacino R.B. (1982); Curriculum, and instruction London, Macmillan Education Limited.

Nsubuga R. (1995); A comparison of academic achievement of cooperative and individual learning in the teaching of mathematics at senior two level outMengo S.S Unpublished M.E. research report Makerere University research report Makerere University.

Ogunniyi M.B. (1984); Educational Measurement and Evaluation.Hong Kongo, Longman group Limited.

Orton A. and Wain G. (1994); issues in Teaching Mathematics. London, Cassel Wellington House.

Otto A. Y. (1997); General methods of teaching, Kampala, Department, of Distance Education Makerere University.

Otto A.Y. (2000); An introduction to Education Technology, Kampala Department of Distance Education,Makerere University.

Portman J and Richardson J. (1981); The Maths Teachers’ Handbook. London, Heinemann Education Publishers.

Thyer D. and Maggs J. (1981); *Teaching mathematics to young children London*, Holt, Rinehart and Winston Ltd.

Williams E. and Shuard h. (1994); Primary Mathematics today. Edinburg, Longman Group UK, limited.

# APPENDIX I: HEAD TEACHER’S QUESTIONNAIRE

Dear Respondent,

This study includes simple questions on the strategies of teaching mathematics that are being employed in your school by different teachers.

The aim of the study is to assess the impact of teaching strategies on academic performance in mathematics. It is only for academic purposes where ethical standards will be highly considered. Your participation is highly appreciated.

Kindly give the appropriate responses to the questions either by stating, marking, or ticking the responses that best represent your opinion.

1. Name of school ……………………………………………………………………………..
2. Category of school ………………………………………………………………………………
3. Gender ……………………………………………………………………………..
4. Age ……………………………………………………………………………..
5. Qualification;
6. Grade v
7. Graduate
8. Post graduate
9. Teaching experience;
10. 0-5 years
11. 5-10 years
12. 10-15 years
13. Above 15 years
14. How long have you stayed in this school as a head teacher?

…………………………………………………………………………………………………….

1. State the enrolment of your school.

……………………………………………………………………………………………………..

1. What is the effect of the current teacher –pupil ratio in your school?

………………………………………………………………………………………………………

1. Give the number of teachers in the following categories;
2. Untrained teachers………………………………………………………………………
3. Qualified teachers…………………………………………………………………………
4. Trained unqualified teachers……………………………………………………………
5. Do you carry out support supervision on your teachers?
6. Yes
7. No
8. Have you ever supervised the teaching- learning of mathematics?

………………………………………………………………………………………………………

1. If yes, do your teachers make regular schemes of work and lesson plans?
2. Yes
3. No
4. Do all your mathematics teachers set relevant and specific teaching objectives?
5. Some do
6. All do
7. Majority do
8. Majority do not do
9. Are the set objectives always achieved?
10. Yes
11. No
12. Some times
13. Give the number of teachers who passed in the following grades at the end of their grade iii examinations in mathematics:
14. Distinction ………………………………………………………………………………
15. Credit………………………………………………………………………………………
16. Pass…………………………………………………………………………………………
17. Failure……………………………………………………………………………………..
18. How do your teachers deliver their mathematics lessons?

………………………………………………………………………………………………............

1. Do your teachers apply learner centered approaches when teaching mathematics ……………………………………………………………………………………….
2. What challenges face the teachers as they teach mathematics in this school?

........................................................................................................................................................................................................................................................................................................................

1. What is the general performance (% pass) of your school in mathematics in PLE exams?

………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Do your teachers teach, give and mark learners’ work regularly?
2. Yes
3. No
4. Some times
5. Do your teachers enjoy teaching mathematics?
6. Yes
7. No
8. Some how
9. Do your teachers strive to improve learner’s performance in mathematics?
10. Yes
11. No
12. Some time
13. It has been a general complaint that children perform poorly in mathematics in Nyabuharwa Sub County, Kyenjojo District, what do you think might be the causes of this poor performance in the sub county?

………………………………………………………………………………………………………..…………………………………………………………………………………………………….

………………………………………………………………………………………………………………………………………………………………………

**Thank you for your participation**

# APPENDIX II: MATHEMATICS TEACHER’S QUESTIONNAIRE

Dear Sir/Madam,

Kindly give the appropriate responses to the questions/ statements below either by stating / ticking the response that best represents your opinion.

1. Name of your school……………………………………………………………………………
2. School status;
3. Government
4. Private
5. Your qualification;
6. Graduate
7. Diploma
8. Certificate
9. Untrained
10. Teaching experience;
11. 0-5 years
12. 5-10 years
13. 10-15 years
14. Above 15 years
15. Which classes do you teach?…………………………………………………………………
16. Give the average number of pupils that you teach ……………………………………
17. Which other subjects, other than mathematics do you teach?

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. As a math teacher, do you agree that the two years of grade iii teaching is enough to equip the teachers with appropriate methodology and knowledge?
2. Strongly agree
3. Agree
4. Disagree
5. Strongly disagree
6. Do you plan to teach a given topic in math?

.....................................................................................................................

1. How do you find math teaching in this school?

…………………………………………………………………………………………………………

1. What teaching methodology do you normally employ the teaching of math?

…………………………………………………………………………………………………………………….

1. Do you use real objectives in the teaching of math?

…………………………………………………………………………………………………………………....

1. Does your class participate in the teaching /learning of mathematics?

……………………………………………………………………………………………………………………

1. Do you assess your learners after teaching?

………………………………………………………………………………………………………………….

1. Do you mark and give timely feed back to your learners?

…………………………………………………………………………………………………………………

1. How do you find teaching mathematics in this school?

……………………………………………………………………………………………………………………

1. What challenges do you meet in teaching mathematics in this school?

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Are you always conversant with the subject matter whenever teaching math?

……………………………………………………………………………………………………………………

1. Are you always equipped with relevant teaching materials whenever teaching mathematics?

………………………………………………………………………………………………………

1. Do you enjoy teaching mathematics?

………………………………………………………………………………………………………

1. What the general attitude of pupils is in regards learning mathematics?

………………………………………………………………………………………………………

1. Are your fellow teachers supportive to you whenever teaching mathematics?

………………………………………………………………………………………………………

1. Are your learners always motivated to teaching mathematics?

………………………………………………………………………………………………………

1. Which topic /theme normally disturbs you whenever teaching mathematics?

………………………………………………………………………………………………………

1. Is the school administration always supportive to your lessons?

………………………………………………………………………………………………………………

**Thank you for your responses.**

# APPENDIX III: KEY FORMAT INTERVIEW

Dear Sir/Madam,

Kindly give the appropriate responses to the questions/ statements below either by stating / ticking the response that best represents your opinion.

1. What teaching strategies are employed in the teaching of mathematics in Nyabuharwa Sub County, Kyenjojo district?
2. Which limitations are faced by teachers in the teaching of mathematics in Nyabuharwa Sub County, Kyenjojo district?
3. What are the attitudes of teachers in teaching of mathematics in Primary schools in Nyabuharwa Sub County, Kyenjojo district?
4. What do you think the government should do in order to improve the teaching of mathematics in schools of Nyabuharwa Sub County, Kyenjojo district?
5. How do you think your attitude towards mathematics cans improved?