Research Journal of Educational Studies and Review
Vol. 4 (2), pp. 12-29, July, 2018
ISSN: 2449-1837
Full Length Research
http://pearlresearchjournals.org/journals/rjesr/index.html

Factors Influencing the Use of Instructional Materials in the Teaching of Mathematics in Senior Secondary Schools in Mbale Municipality, Uganda

Bashiru Aliyu Gada* and Umar Altine

Accepted 8 November 2017

Department of Curriculum and Instruction, School of General Education, Shehu Shagari College of Education, P.M.B. 2129 Sokoto, Sokoto State, Nigeria.

ABSTRACT

The study discusses the factors influencing the use of instructional materials in the teaching of mathematics in senior secondary schools in Mbale municipality. The research design adopted for this study was a cross-sectional design that mainly utilized the quantitative method of data analysis. The number of questionnaires distributed to teachers was 96, out of which 91 were completely filled with a response rate of 94.8%. The data collected was analyzed using descriptive statistical methods consisting of chi-square and Pearson correlation coefficient. The Results showed a significant influence of the availability of instructional materials for teaching mathematics in senior secondary schools in Mbale Municipality. It demonstrated the appropriateness of instructional materials has a significant influence in teaching mathematics in senior secondary school in Mbale municipality. It also shows a significant relationship between the competence of mathematics teachers and use of instructional materials in teaching. The study recommended the following: teachers should realize that the use of instructional materials during lessons simplifies content and brings distant events into classroom situations for easy understanding; policymakers and administrators should work hand in hand and refurbish teachers' resource centers at district level to help teachers get ideas and acquire more skills in designing appropriate instructional materials; and educational planners and administrators should always evaluate teachers' competence in using instructional material when carrying out teacher selection and teacher evaluation.

Keywords: Mathematics, School, Uganda, Materials, Factors.

*Corresponding author. E-mail: bashirugada@gmail.com

INTRODUCTION

The curriculum of Uganda had emphasized the use of instructional technology in teaching and learning process. Teachers that were responsible for teaching must recognize the importance of the uses of educational technology and creation of teaching materials in accordance with the education acts for the effectiveness of teaching and learning. It is revealed that most teachers are confronted with the use of instructional materials necessary for the teaching and learning process (Ministry of Education and Sport, 1997). Mathematics is the foundation of science and technology and the functional role of mathematics in science and technology is multifacet and multifarious that no area of science, technology, and business enterprise escapes its application (Okereke, 2006). Amazigo (2000); Agawam (2001); Betake (2001); Biome (2005); Maduabum and Odili (2006) and Okereke (2006) had observed that students lack interest in the subject and perform poorly in it. Ukeje (1986) posited that mathematics is one of the most poorly taught, widely hated and abysmally understood subjects in secondary school, students particularly girls run away from the subject.

The West African Examination Council (WAEC) chief examiners (2003, 2004, 2005 and 2006) consistently reported candidates' lack of skills in answering almost all the questions asked in general mathematics. WAEC chief

examiners (2003, 2005) further observed that candidates were weak in the geometry of circles and 3- dimensional problems. According to their reports, most candidates avoided questions on the 3-dimensional problem, when they attempt geometry questions; only a few of the candidates showed a clear understanding of the problem in their working. WAEC (2004) also reported candidates' weakness in algebraic expression and word problems among others in Mbale District, Uganda. Teachers do not use instructional materials in teaching and learning mathematics as frequently in institutions of learning. In addition, it was observed that teachers in senior secondary school in Mbale municipality were not using instructional materials in the teaching of mathematics in senior secondary schools during delivery of contents. Hence, both teachers and students were not exposed to the global mathematics learning environment which made teaching and learning mathematics process boring, less effective and time-consuming. Therefore, understanding the influence of using instructional materials for teaching mathematics in senior secondary schools in Mbale municipality Uganda was very vital. Similarly, the cause of concern was that, unless this problem was addressed, by investments in the developments of using instructional materials in senior secondary schools was to improve the quality of teaching and learning process in mathematics and to make teaching and learning more effective.

LITERATURE REVIEW

The literature reviewed in this chapter focused on the key themes related to the present study. This review, therefore, is organized into twelve sections. The first section centered on reviewing the role of instructional materials in teaching and learning process. The second reviewed the types of instructional materials. The third section reviewed the influence of the availability of instructional materials. The fourth is about the appropriateness of instructional materials. The fifth reviewed the factors in the teacher's use of instructional materials. The sixth themes are the teachers' identities and experiences while the seventh themes are teaching experience and eight themes are experience with the materials, the ninth theme is contextual factors, the tenth theme is mathematical knowledge, the eleventh theme is teacher's beliefs and the last theme is the competence of instructional materials.

ROLE OF INSTRUCTIONAL MATERIALS IN TEACHING AND LEARNING PROCESS

During the secondary school years, the environment plays a critical role, the richer the environment the more concrete opportunities there are for the student to learn by interacting with instructional materials. The teacher's role is to create an environment that invites learners to observe, to be active, interested, make choices and to experiment (Judy, 2001). He further states that instructional materials are tools used for teaching and learning, hence supports the teacher in the delivery of knowledge or help to emphasize specific knowledge. Thungu (2008) opines that instructional materials meet the needs of learners, fulfill the requirements of the subjects and facilitate the teaching and learning process. He further states that merely using instructional materials does not guarantee effective teaching, to make teaching and learners' participation effective; the instructional materials must be appropriately selected and used. Secondary school teachers must, therefore, become familiar with the types of instructional materials if a greater value is to be derived from their use. He also suggested that the primary function of instructional materials as a communication device is to serve as a more concrete reference to meaning than spoken or written word. In the view of Mwangi (2010), in the teaching and learning process, instructional materials serve as functions of enhancing retention which makes learning more permanent. Equally, they stimulate and sustain interest in learning by providing the first-hand experience with the realities of the physical and social environment. It is necessary to note that instructional materials are important catalysts for social re-engineering and change in learners. It is obvious that effective instructions cannot be well accomplished without the use of instructional materials.

The reason is not far-fetched as advances in technology have brought instructional materials, especially projected and electronic materials to the forefront as the most radical tools of globalization and social development which have affected the classroom teaching-learning situation positively. Such technological breakthroughs as networked and non-networked projected and non-projected, visual, audio, audio-visual electronic materials are important landmarks in knowledge transfer. With them, both teaching and learning become very pleasant experiences. Instructional materials are the relevant materials utilized by a teacher during the instructional process for the purpose of making the contents of the instructions more practical and less vague (Chuba, 2000). Ajayi (2006) opined that, without the teacher who is knowledgeable, instructional materials cannot create change and progress, the only time it begins to make an impact is when the teacher begins to make use of it and allows it to take over its value. Teaching and Learning materials, design, production and their use facilitate the teaching and learning outcomes. However, the success of using instructional materials to meet the teaching objectives demands, effective use and communication skills of the teacher to satisfy instructional delivery.

Types of Instructional Materials

All these are instructional materials that can be used by

the teacher in teaching and learning mathematics which can make learning more interesting and understandable. They include:

Real objects and models, printed materials (books, handouts and study guide), printed visuals (pictures, photos, drawings, charts, and graphs), display boards (chalk, bulletin and multipurpose), interactive whiteboards, slides and filmstrips, audio (tape, disc, and voice), video and film (tape and disc), television (live) and computer software.

INFLUENCE OF AVAILABILITY OF INSTRUCTIONAL MATERIALS IN TEACHING MATHEMATICS

Dunham and Dick (1994); Pomerantz (1997); Ningy and Gunstone (2002) found technology could motivate students to learn mathematics. Souter's (2001) action research study examined five algebra classes involving four teachers and 92 ninth-grade students. He compared the effects of technology-enhanced algebra instruction with traditional algebra instruction and determined that integrating technology into mathematics can increase student achievement and motivation, foster positive student attitudes, and enhance student outcomes. After in-depth interviews and classroom observations of five middle school teachers from three middle schools in rural Pennsylvania et al. (2003) concluded that using internet resources leads to active learning and motivates students to engage in the learning process. Likewise, when graphing calculators are included in the learning process, students can approach problems using techniques that suit them best, which results in better performance and increased confidence (Quesada, 1996). Presentation software such as PowerPoint leads to increased students motivation and better positive attitudes when students attend lessons in the classes (Susskind, 2005). Within the past few decades, the use of technology in the classroom has increased rapidly.

The use of calculators and computers is widespread and technology-enhanced classrooms are more prevalent. In Principles and Standards for School Mathematics (2000), the National Council of Teachers of Mathematics (NCTM) states technology is essential in teaching and learning mathematics, it influences the mathematics that is taught and enhances students' learning. They feel technology should be accessible to all students, but should not be used to replace basic understandings. The use of technological tools cannot replace conceptual understanding, computational fluency, or problem-solving skills (NCTM, 2008). Technology affects mathematicians and teachers in many ways. According to Quesada (1996), technology is forcing us to reevaluate not only what topics we teach, but also in what order we teach them, and what approach we follow while introducing a topic. Ellington (2003) concurs, stating technology and the pedagogical changes resulting from it have a decisive impact on what is included in the mathematics curriculum. This sentiment is also reflected by the NCTM in the Principles and Standards for School Mathematics. How mathematics is taught and learned as well as what math is taught and when are now being influenced by technology NCTM (2000). Therefore, educators need to consider how technology will affect what mathematics will be taught. Many teachers find it challenging to incorporate technology into their courses and some are still reluctant to even use it. Despite the fact that, the authors have shown the influence of using instructional materials in teaching mathematics in senior secondary schools is very relevant in a present-day institution, but they fail to consider the side effect of using those instructional materials in teaching mathematics. I observe that present instructional materials affect/reduce the thinking, reasoning, and intellectuality of the students' performance mathematically. The example in the 1970's to 1980's the students' performance in mathematics was better than now where most students heavenly rely on such materials on even simple calculation. More so they forget to look at the professional teachers who can utilize such materials in teaching mathematics properly. It was also observed that not every school can provide the available instructional materials to its students for effective teaching and learning of mathematics.

THE APPROPRIATENESS OF INSTRUCTIONAL MATERIALS IN TEACHING MATHEMATICS

Teachers implement curriculum guidelines through the tasks they employ with their students. They must evaluate the affordances and constraints of their instructional materials to select those tasks that are most appropriate for their students (Howson et al., 1981). Classroom tasks are defined as the activities and problems teachers select for instruction. Clarke (2008) referred to this process as the implemented curriculum as the ways in which a teacher takes a syllabus or curriculum guidelines or standards and enacts them in the classroom.

The tasks provided to students may have been created by the teacher or may originate directly from the instructional materials as a suggested activity the teacher may have modified the task from its original form or the teacher may have found and modified a task from a source outside of those provided by the school. Teachers do not merely deliver the curriculum. They develop, define it and reinterpret it too. It is what teachers think, what teachers believe and what teachers do at the classroom level that ultimately shapes the kind of learning that young people get. Although teachers implement curriculum, they use particular materials. The materials they choose to use and how they use those materials to implement the curriculum influence their students' learning opportunities.

THE COMPETENCE OF INSTRUCTIONAL MATERIALS IN TEACHING MATHEMATICS

According to Jallow (2011), competency is a statement of learning outcomes for a skill or body of knowledge. He adds that when students demonstrate a competency, they are demonstrating their ability to do something (showing the outcome of the learning process). Sulivan (2005) views competency as a set of skills, knowledge, and behaviors someone needs to have achieved in order to perform tasks, or activities at school and in the world of work. Kouwenhoven (2003) adds, it is the capability to choose and use (apply) an integrated combination of knowledge, skills, and attitudes with the intention to realize a task in a certain context, while personal characteristics such as motivation, self-confidence, and willpower are part of that context. The online dictionary defines competency as a skill, an ability or technique that has been developed through training or experience. The ability to communicate effectively demonstrates competency in that skills. Teacher-centered methods are also known as traditional instructional methods, where teachers are at the center of classroom activities, including explanations and discussions (Ahmad and Aziz, 2009). Kilundo (2002) observes that it is impossible to have meaningful teaching and learning in schools in the absence of these teaching materials. Lack of teaching materials can hinder any teaching programme from operating with the desired efficiency. He argues that while both experience and available literature would support the view that materials are associated with high academic achievement, there is no need just to verify, but to study the efficacy of those materials in the wider context of school quality.

This study concentrated on the use of textbooks and mathematical tables in the teaching of mathematics. The consideration of the above instructional resources was necessitated by the fact that they are the most common and readily available in senior secondary schools. They are also recommended by the Kenya Institute of Education (KIE, 2002) a branch of the Ministry of Education that assesses and recommends all the instructional resources to use in teaching in senior secondary schools. According to Jimoh (2009), ordinary words or verbalization has been found to be inadequate for effective teaching. Instructional materials serve as a channel through which message, information, ideas, and knowledge are disseminated more easily. According to what we observe the authors viewed that teaching and learning mathematics may only be possible with the competence of instructional materials, the teacher has to be dynamic and creative to encourage students to improve their capability and cooperative learning activities. Competence of instructional materials may encourage students to learn by themselves. Effective use of instructional materials makes the entire teaching and learning process functional and understood. Competence of instructional materials can be a challenge when teachers are not well trained on skills, method, and interest in using instructional materials to teach mathematics effectively and some instructional materials may be difficult to utilize by unprofessional teachers. However, not all instructional materials are to be provided by schools, teachers, and students to meet the desired objectives design in the curriculum. Curriculum planners and concerned department should provide incentives to the implementers/developers to use instructional materials for effective teaching and learning mathematics. Appropriate supervision and measures must be put in place to ensure use of instructional materials in teaching mathematics.

General Objective of the Study

The study determined the factors influencing the use of instructional materials in the teaching of mathematics in senior secondary schools in Mbale municipality.

Research Hypothesis

$H_0$1 The availability of instructional materials does not have significant influence in teaching mathematics in senior secondary school in Mbale municipality

$H_0$2 The use of appropriate instructional materials does not have significant influence value in teaching mathematics in senior secondary school in Mbale municipality.

$H_0$3 There is no significant relationship between the competence of mathematics teachers on the use of instructional materials and teaching of mathematics in senior secondary school in Mbale municipality.

RESEARCH METHODOLOGY

This section presents the research design, population of the study, sample size, procedure for data collection, research instruments, the validity, and reliability of the instrument and data analysis.

Research Design

The study employed a cross-sectional research design. This was because it was to allow researchers to reach the respondents from the eights selected senior secondary schools in Mbale municipality. Amin (2005) argued that a cross-sectional survey is useful when the researchers want to establish specific issues under investigation by reaching all the respondents at the same time. The views of the teachers would be sought. Both qualitative and quantitative approaches were triangulated for the purposes of getting a valid perception of the influence of the use of the instructional materials in the teaching of mathematics in senior secondary schools on

Table 1. Population, sample size, sample techniques.

Teachers Per School	Population	Sample	Sampling Technique
School A	77	13	Purposive sampling
School B	145	20	Purposive sampling
School C	88	15	Purposive sampling
School D	51	17	Purposive sampling
School E	31	4	Purposive sampling
School F	49	8	Purposive sampling
School G	51	9	Purposive sampling
School H	12	10	Purposive sampling
Total	956	96	

Source: Field survey (2015).

Table 2. Reliability statistics.

Cronbach's Alpha	N of Items
0.850	44

Source: Primary data.

one hand and presenting the information obtained through statistical methods such as frequency counts of respondents; tabulation and calculation of percentage responses on the other hand.

Study Population

According to Osuala (2005), the population was the aggregate of things, places, events, processes, people etc chosen for an intensive investigation. The population referred to the group of individuals, events or objects having observable characteristics. The population of the study comprised of twenty (20) senior secondary schools in Mbale municipality, Uganda. Out of which eights senior secondary school was selected with their teachers and the total number of the teacher was 956.

Sample and Sampling Technique

The study employed purposive sampling technique. The researchers identified teachers as the relevant stratum and their actual representation in the population. Purposeful sampling was used to acquire the appropriate number of teachers' representative on the study. The study was conducted in eights selected senior secondary schools in Mbale municipality. A sample of 96 respondents was targeted with the aid of a table for sample selection from Krejcie and Morgan (1970) tables of the sample. The categories and size of the respondents that took part in the study are presented in Table 1. The study population covered eights selected secondary school in Mbale municipality, sampling was done in order to come up with a small size which was a representative of the study population.

Data Collection Method and Instruments

The study used questionnaires instrument. Questionnaires were used for data collection. Both closed and open-ended questionnaires were used. Open-ended questionnaires were useful in helping to supplement the information given in the closed-ended questions and help in obtaining more views from the respondents. The questionnaire was suitable because they enabled the respondents to express themselves freely and especially for teachers who had enough time to attend to the personal interview. The questionnaires were administered to all respondents. This technique has enabled the researchers to reach many respondents more easily.

Validity of the Instruments

To establish the content validity, the instruments were subjected to the scrutiny of two experts who evaluated the relevance of each item in the instruments to the objectives. The senior researchers or experts in the field of education was to rate each item on a scale. Their recommendations were used to finally modify questions and therefore focused the tools so as to have the ability to solicit the expected data. The content validity index (CVI) was then computed with the formula;

$$\text{CVI}= \frac{\text{Number of valid items}}{\textit{Total number of items}} = \frac{44}{49} = 0.89$$

For the instrument to be accepted as valid, the average index should be 0.7 or above (Amin, 2005). Therefore, since computed values were 0.89 (Table 2) which was

Table 3. Response rate.

Category	Questionnaires Issued	Questionnaires Returned	Response Rate (%)
Teachers	96	91	94.7

Source: Results of analysis (2015).

Table 4. Age of respondents.

Age Bracket		Frequency	Percentage	Valid Percent	Cumulative Percent
Valid	20-24 years	1	1.1	1.1	1.1
	25-29 years	17	18.7	18.7	19.8
	30-34 years	50	54.9	54.9	74.7
	35-39 years	17	18.7	18.7	93.4
	40 years above	6	6.6	6.6	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score (3.11).

greater than 0.7, the instrument was considered valid.

Reliability of the Instruments

A pre-test was conducted after establishing the validity. Fifty respondents from Wanale view senior secondary school at Mbale District were used in the pre-test to answer the questionnaire. Their responses were computed and analyzed using statistical package for social science (SPSS) software. The results were presented in tabular format. For the instrument to be accepted as reliable, the average index should be 0.7 or above (Amin, 2005). Therefore, since computed values were 0.850, greater than 0.7, the instrument was considered reliable.

Data Presentation and Analysis

The data collected was mainly presented by the use of quantitative methods. Data from the open-ended questions were analyzed by indicating the magnitude of responses, his responses to questionnaires and information got from observation were grouped according to the views of the respondents. The views were coded in preparation for analysis using a computer program. Responses from the data were presented using descriptive statistic (frequencies, percentage and mean score); chi-square and Pearson correlation coefficient test with the help of SPSS software.

RESULTS AND DISCUSSION

This section presents, analyzes, interprets and gives a discussion of the data findings of the study of the factors influencing the use of instructional materials in the teaching of mathematics in senior secondary schools in Mbale municipality. The analysis makes use of descriptive statistics, chi-square, and Pearson correlation coefficients. Descriptive statistics were used to analyze the background information of the respondents, the response rate of the respondents and responses on each variable under investigation. While chi-square and Pearson correlation coefficients were used to analyze the significance of influence, relationship and prediction of the variables under study, respectively, so as to answer the objectives and hypotheses of the study. The first section presented the response rate, which was followed by background information then responses on each variable. Inferential analysis of the study findings was done to test the three null hypotheses that guided the study.

Response Rate

Table 3 showed that the study targeted 96 teachers giving a total number of 96 questionnaires that were distributed. However, out of the 96 distributed questionnaires, 91 were completely filled and returned in time while three were returned, but not filled and two went missing (invalid). This, therefore, gave a response rate of 94.7%, which was reliable and valid according to Amin (2005).

Background Information of the Respondents

This section presents the background information of the respondents that were relevant to the study. In this case, age, sex, and qualification of respondents were of great relevance to the study. This was presented in Tables 4, 5, and 6 as follows: As shown in Table 4, the teachers were asked to state their age bracket. On the age of the teachers, the study found that the majority of the teachers (54.9%) was between 30 to 34 years, 18.7% each were

Table 5. Sex of Respondents.

Sex		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	73	80.2	80.2	80.2
	Female	18	19.8	19.8	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score (1.20).

Table 6. Qualification of Respondents.

Qualification	Frequency	Percent	Valid Percent	Cumulative Percent
Certificate	5	5.5	5.5	5.5
Diploma	1	1.1	1.1	6.6
Bachelor	75	82.4	82.4	89.0
Master	9	9.9	9.9	98.9
Others	1	1.1	1.1	100.0
Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score (3.0).

Table 7. Availability of models as instructional materials.

Rate of Availability	Frequency	Percent	Valid Percent	Cumulative Percent
At all times available	32	35.2	35.2	35.2
Available at most times	31	34.1	34.1	69.3
Sometimes available	17	18.7	18.7	88.0
Rarely available	7	7.7	7.7	95.7
Never available	4	4.3	4.3	100.0
Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score (2.12).

aged between 25 to 29 years and 35 to 39 years, respectively, while 6.6% indicated that they were 40 years and above, and 1.1% were between 20 to 24 years. The age mean score of 3.11 was high, implying that age was equally distributed among respondents. This gives an indication that, the majority of teachers involved in the study were active population and at such an age one has sufficient understanding and reasonable experience on issues related to the use of instructional materials in respect to the teaching of mathematics in senior secondary schools. In establishing the teacher sex, the study established that the majority of teachers were males as shown by 80.2%, while females were the minority (19.8%). The mean score of sex (1.20) was low, implying that sex was not equally distributed among teachers in senior secondary schools in Mbale district. This gives an implication that more male teachers are employed in senior secondary schools than their female counterparts in Mbale district.

The study also sought to establish the distribution of respondents by the qualification of the teachers. According to data collected, the majority of teachers were Bachelor degree holders as shown by 82.4% of the teachers, 9.9% were Master degree holders, 5.5% were Certificate holders and 1.1% had Diploma and other qualifications, respectively. Since the mean score is relatively high (3.0), it implies that teachers are more inclined to their academic qualification. This information shows that the respondents were knowledgeable enough and could give valid and reliable information based on their level of education. Based on this information, it is important to note that data obtained in the background show that the respondents from which the data was gathered were a true representation of the study population to which the results presented in the subsequent section would be generalized. This indicates that the results obtained are valid and reliable; which gives the entire study scholarly credibility.

Presentation and Interpretation of the Results for Specific Objectives

Responses On Availability Of Instructional Materials

The responses are presented and interpreted as follows in Tables 5 to 15. As indicated in Table 7 the majority of

Table 8. Availability of computer software as instructional materials.

Rate of Availability		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	At all times available	12	13.2	13.2	13.2
	Available at most times	46	50.5	50.5	63.7
	Sometimes available	21	23.1	23.1	86.8
	Rarely available	5	5.5	5.5	92.3
	Never available	7	7.7	7.7	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 2.44).

Table 9. Availability of textbooks as instructional material.

Rate of Availability		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	At all times available	74	81.3	81.3	81.3
	Available at most times	9	9.9	9.9	91.2
	Sometimes available	4	4.4	4.4	95.6
	Rarely available	2	2.2	2.2	97.8
	Never available	2	2.2	2.2	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 1.34).

Table 10. Availability of projector as instructional material.

Rate of Availability		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	At all times available	11	12.1	12.1	12.1
	Available at most times	35	38.5	38.5	50.5
	Sometimes available	30	33.0	33.0	83.5
	Rarely available	9	9.9	9.9	93.4
	Never available	6	6.6	6.6	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 2.60).

Table 11. Availability of graphs/charts as instructional material.

Rate of Availability		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	At all times available	69	75.8	75.8	75.8
	Available at most times	14	15.4	15.4	91.2
	Sometimes available	4	4.4	4.4	95.6
	Never available	4	4.4	4.4	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 2.44).

Table 12. Availability of mathematical set as instructional material.

Rate of Availability		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	At all times available	76	83.5	83.5	83.5
	Available at most times	8	8.8	8.8	92.3
	Sometimes available	4	4.4	4.4	96.7
	Rarely available	2	2.2	2.2	98.9
	Never available	1	1.1	1.1	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 1.29

Table 13. Availability of drawings as instructional material.

Rate of Availability		Frequency	Percent	Valid Percent	Cumulative Percent
	At all times available	70	76.9	76.9	76.9
	Available at most times	16	17.6	17.6	94.5
Valid	Sometimes available	3	3.3	3.3	97.8
	Rarely available	1	1.1	1.1	98.9
	Never available	1	1.1	1.1	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 1.32).

Table 14. Availability of study guides as instructional material.

Rate of Availability		Frequency	Percent	Valid Percent	Cumulative Percent
	At all times available	72	79.1	79.1	79.1
	Available at most times	14	15.4	15.4	94.5
Valid	Sometimes available	2	2.2	2.2	96.7
	Rarely available	2	2.2	2.2	98.9
	Never available	1	1.1	1.1	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 2.44).

Table 15. Overall mean score for availability of instructional materials.

Variable	N	Mean	Standard Deviation
Availability of instructional materials	91	24.96	8.19

Source: Results of analysis (2015).

the teachers revealed that the model instructional materials are available at all times as this was supported by 32 (35.2%) of the respondents. This was followed by 31 (34.1%) of the teachers who indicated that models are available at most times, 17 (18.7%) said models are sometimes available, 7 (7.7%) said models are rarely available and only 4 (4.3%) pointed that model is never available. Looking at such presentation, there is a big range of responses (69.3%) and (30.7%) availability and unavailability, respectively. The mean score (2.12) being moderate indicates that this instructional material is moderately available for use in teaching mathematics in senior secondary schools in Mbale Municipality. In Table 8, 12 (13.2%) of the respondents reveal that computer software is available at all times, 46 (50.5%) said they are available at most times, 21 (23.1%) said they are sometimes available, 5 (5.5%) said computer software is rarely available and 7 (7.7%) said computer software is never available. Looking at such presentation, the majority (63.7%) revealed test computer software is readily available for use in teaching mathematics, while (36.4%) revealed that computer software is not readily available for use in teaching mathematics. This shows that most senior secondary schools have access to computer software in the teaching of mathematics and other relevant subjects. In addition, the mean score of computer software availability (2.44) was moderately high. This implied that computer software as instructional materials is largely available for use in teaching mathematics in senior secondary schools in Mbale Municipality.

The findings presented in Table 9 above shows that 74 (81.3%) of the respondents reveal that textbooks are available at all times, 9 (9.9%) reveal they are available at most times, 4 (4.4%) said textbooks are sometimes available, 2 (2.2%) each revealed they are rare and never available.

Since the margin of respondents who reveal textbooks are readily available for use (91.2%) and those who indicated non-availability at all or most times (8.8%), it implies that availability of textbooks did not cut across all senior secondary schools, thus variation in use as instructional materials for teaching mathematics. Though a higher number of teachers reveal the availability of instructional material, the mean score (1.34) was low indicating that teachers use them in teaching mathematics. As shown in Table 10, 11 (12.1%) of the respondents reveal that projectors are available at all

Table 16. Appropriate use of models in teaching of mathematics.

Responses		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very poor	4	4.4	4.4	4.4
	Fair	34	37.4	37.4	41.8
	Good	40	44.0	44.0	85.7
	Very good	13	14.3	14.3	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score (3.64).

Table 17. Appropriate use of computer software in teaching of mathematics.

Responses		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very poor	5	5.5	5.5	5.5
	Poor	10	11.0	11.0	16.5
	Fair	28	30.8	30.8	47.3
	Good	34	37.4	37.4	84.6
	Verygood	14	15.4	15.4	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 3.46).

times, 35 (38.5%) reveals that they are available at most times, 30 (33.0%) said projectors are sometimes available, 9 (9.9%) reveal that they are rarely available and 6 (6.6%) revealed they are never available. Almost an equal proportion of respondents (50.5%) said projectors are readily available and (49.5%) are not readily available yet with a mean score of 2.60, this implied that some schools equally have projectors all the time and/or most of the time and others do not hence this instructional material cuts across**.** Table 11 shows, 69 (75.8%) of the respondents reveal that graphs/charts are available at all times, 14 (15.4%) reveal that they are available at most times, 4 (4.4%) stated that graphs/charts are sometimes and never available. Since the margin of respondents who reveal that availability of graphs/charts at all and most times (91.2%), it implies that such instructional material did not cut across. In other words, while the majority have access to the use of graphs/charts as instructional material, others do not. The result in Table 12 shows that 76 (83.5%) of the respondents reveal that mathematical sets are available at all times, 8 (8.8%) said they are available at most times, 4 (4.4%) said they are sometimes available, 2 (2.2%) said they are rarely available and 1 (1.1%) said they are never available. Since more than three quarters (92.3%) gave affirmative responses, it implied that mathematical sets are generally available as instructional material in teaching mathematics in senior secondary schools in Mbale Municipality.

in Table 13, 70 (76.9%) of the respondents reveal that drawings are available at all times, 16 (17.6%) said they are available at most times, 3 (3.3%) said they are sometimes available, 1 (1.1%) said they are rare and never available. There was a disproportionate representation of responses to the availability of drawings (94.5%) and unavailability (5.5%), implying an unequal distribution of drawings across senior secondary schools. In Table 14 establishing the availability of study guides, 72 (79.1%) of the respondents indicated that the study guides are available at all times, 14 (15.4%) said they are available at most times, 2 (2.2%) attested that the study guides are sometimes and rarely available, respectively and only 1 (1.1%) attested that the study guides are never available. From the result, the majority (94.5%) of the teachers attested that the study guides are always available. This shows that study guides are always available for use as instructional materials in teaching mathematics. Looking at the presentation above, the overall mean score of availability of instructional materials is 24.96. Since the mean score was moderately high, it implied that teaching mathematics are moderately inclined to the availability of instructional materials.

Responses on Appropriateness of Instructional Materials

The responses are presented and interpreted in Tables 16 to 24. As indicated in Table 16, 4 (4.4%) of the teachers indicated that the rate at which models are used in teaching of mathematics is very poor, 34 (37.4%) felt models are fairly used, 40 (44.0%) said that the rate of using models is good while 13 (14.3%) said very good. Looking at the result, the majority of the respondents (58.3%) gave responses indicating that models are appropriately used in the teaching of mathematics in senior secondary schools in Mbale Municipality. The

Table 18. Appropriate use of text books in teaching of mathematics.

Responses		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very poor	6	6.6	6.6	6.6
	Poor	1	1.1	1.1	7.7
	Fair	4	4.4	4.4	12.1
	Good	21	23.1	23.1	35.2
	Very good	59	64.8	64.8	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 4.38).

Table 19. Appropriate use of Projector in teaching of mathematics.

Responses		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very poor	5	5.5	5.5	5.5
	Poor	3	3.3	3.3	8.8
	Fair	34	37.4	37.4	46.2
	Good	24	26.4	26.4	72.5
	Very good	25	27.5	27.5	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 2.60).

Table 20. Appropriate use of graphs/charts in teaching of mathematics.

Responses		Frequency	Percent	Valid Percent	Cumulative Percent
	Very poor	5	5.5	5.5	5.5
	Fair	5	5.5	5.5	11.0
Valid	Good	19	20.9	20.9	31.9
	Very good	62	68.1	68.1	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 4.46).

Table 21. Appropriate use of Mathematical set in teaching of mathematics.

Responses		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very poor	4	4.4	4.4	4.4
	Fair	3	3.3	3.3	7.7
	Good	20	22.0	22.0	29.7
	Very good	64	70.3	70.3	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 4.54).

Table 22. Appropriate use of drawings in teaching of mathematics.

Responses		Frequency	Percent	Valid Percent	Cumulative Percent
	Very poor	3	3.3	3.3	3.3
	Poor	1	1.1	1.1	4.4
Valid	Fair	8	8.8	8.8	13.2
	Good	13	14.3	14.3	27.5
	Very good	66	72.5	72.5	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score (4.52).

Table 23. Appropriate use of study guides in teaching of mathematics.

Responses		Frequency	Percent	Valid Percent	Cumulative Percent
	Very poor	5	5.5	5.5	5.5
	Fair	3	3.3	3.3	8.8
Valid	Good	14	15.4	15.4	24.2
	Very good	69	75.8	75.8	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 4.56).

Table 24. Overall mean score for appropriateness of instructional materials in teaching mathematics.

Variable	N	Mean	Standard Deviation
Extroversion traits	91	57.62	9.97

Source: Results of analysis (2015).

mean score (3.64) being high also indicates the appropriate use of models in teaching mathematics. In Table 17 establishing whether the use of computer software in teaching of mathematics is appropriate, 5 (5.5%) of the teachers indicated that the use of computer software is very poor, 10 (11.0%) point out that its use is poor, 28 (30.8%) felt its usage is good, while 14 (15.4%) said the rate at which computer software is used is very good. Looking at this result, majority (52.8%) revealed computer software are appropriately used in teaching mathematics while (47.2%) reveal that computer software is not appropriate for use in teaching mathematics. In addition, the mean score of computer software (3.46) was high. This implies that computer software as instructional materials is appropriately used in teaching mathematics in senior secondary schools in Mbale Municipality.

The result Table 18 shows that 6 (6.6%) of the teachers indicate that the rate at which textbooks are used in teaching of mathematics is very poor, 1 (1.1%) felt that textbooks are poorly used, 4 (4.4%) felt models are fairly used, 21 (23.1%) said that the rate of using textbooks is good while 59 (64.8%) said they are very good. Since more than three-quarters of the teachers (87.9%) gave affirmative responses, it implies that textbooks are appropriate for use in the teaching of mathematics. The mean score (4.38) being high also indicates the appropriate use of textbooks in teaching mathematics in senior secondary schools in Mbale Municipality. As in Table 19, 5 (5.5%) of the respondents reveal that the use of projector is very poor, 3 (3.3%) said they are poorly used, 34 (37.4%) said projectors are fairly used, 24 (26.4%) feel they are in good use, while 25 (27.5%) pointed that the rate of projector usage is very good. Almost an equal number of respondents (53.9%) and (46.1%) gave responses, respectively, implying that while some schools appropriately use projectors, others do not appropriately use them in the teaching of mathematics in senior secondary schools in Mbale Municipality. Looking at the result in Table 20, 5 (5.5%) of the respondents reveal that the use of graphs/charts in the teaching of mathematics is very poor, another 5 (5.5%) felt graphs/charts are fairly used. While 19 (20.9%) felt the use of graphs/charts is good and 62 (68.1%) revealed that rate at which graphs/charts are used in the teaching of mathematics is very good. Since the majority of the respondents (89.0%) gave responses, it implies that graphics/charts are appropriately used in the teaching of mathematics. In addition, the mean score (4.46) being high implies the appropriate use of graphs/charts in the teaching of mathematics in senior secondary schools in Mbale Municipality.

The result presented in Table 21 shows that 4 (4.4%) of the respondents revealed that the use of mathematical sets in teaching of mathematics is very poor, 3 (3.3%) felt mathematical sets are fairly used and, 20 (22.0%) felt the use of mathematical sets is good while 64 (70.3%) revealed that the rate at which mathematical sets are used in teaching of mathematics is very good. Since more than three quarters (92.3%) gave affirmative responses, it implies that mathematical sets are appropriately used in teaching mathematics in senior secondary schools in Mbale Municipality. The result presented in Table 22 shows, 3 (3.3%) of the respondents reveal that the use of drawings in the teaching of mathematics is very poor, only 1 (1.1%) felt drawings are poorly used, and 8 (8.8%) said they are fairly used. Whereas, 13 (14.3%) felt the use of drawings is good and 66 (72.5%) reveal that the rate at which drawings are used in the teaching of mathematics is very good. There was an unequal representation of responses on the appropriate use of drawings (86.8%) and inappropriate use (13.2%), implying that the use of

Table 25. Competence of mathematics teachers in using models.

Responses		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very poor	2	2.2	2.2	2.2
	Poor	1	1.1	1.1	3.3
	Fair	21	23.1	23.1	26.4
	Good	52	57.1	57.1	83.5
	Very good	15	16.5	16.5	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score (3.85).

Table 26. Competence of mathematics teachers in using computer software.

Responses		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very poor	2	2.2	2.2	2.2
	Poor	9	9.9	9.9	12.1
	Fair	25	27.5	27.5	39.6
	Good	38	41.8	41.8	81.3
	Very good	17	18.7	18.7	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 3.65).

Table 28. Competence of mathematics teachers in using projector.

Responses		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	9	9.9	9.9	9.9
	Fair	39	42.9	42.9	52.7
	Good	31	34.1	34.1	86.8
	Very good	12	13.2	13.2	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 3.51).

drawings cut across senior secondary schools in Mbale Municipality. In establishing the availability of study guides, Table 23, 5 (5.5%) of the respondents reveal that the use of study guides in the teaching of mathematics is very poor, and 3 (3.3%) felt that study guides are fairly used. Whereas, 14 (15.4%) felt the use of study guides is good and 69 (75.8%) indicated that the rate at which study guides are used in the teaching of mathematics is very good. From the findings, the majority (91.2%) of the teachers attested that the study guides are appropriately used. This illustrates that study guides are appropriately used in the teaching of mathematics in senior secondary schools in Mbale Municipality. Looking at the result in the table above, the overall mean score of the appropriateness of instructional materials in teaching mathematics is 57.62. Since the mean score is high, it implies that teaching mathematics is more inclined to appropriate use of instructional materials. The interpretation here is that appropriate use of instructional materials has a positive influence in teaching mathematics in senior secondary schools in Mbale Municipality.

Responses on Competence of Mathematics Teachers and Use of Instructional Materials in Teaching of Mathematics

The responses are presented and interpreted as follows in Tables 25 to 32. As indicated in Table 25, 2 (2.2%) of the teachers indicated very poor use of models as instructional materials in the teaching of mathematics, 1 (1.1%) felt teachers are poor at using models, 21 (23.1%) said they are fair in using models, 52 (57.1%) pointed out that they are good at using models while teachers who were very good at using models in teaching mathematics are represented by 15 (16.5%). 13 (14.3%) said very good.

Looking at the result, the majority of the respondents

Table 29. Competence of mathematics teachers in using graphs/charts.

Responses		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fair	4	4.4	4.4	4.4
	Good	24	26.4	26.4	30.8
	Very good	63	69.2	69.2	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 4.65).

Table 30. Competence of mathematics teachers in using Mathematical set.

Responses		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very poor	1	1.1	1.1	1.1
	Poor	2	2.2	2.2	3.3
	Fair	2	2.2	2.2	5.5
	Good	11	12.1	12.1	17.6
	Very good	75	82.4	82.4	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score 4.73).

Table 31. Competence of mathematics teachers in using dawings.

Responses		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very poor	1	1.1	1.1	1.1
	Fair	6	6.6	6.6	7.7
	Good	14	15.4	15.4	23.1
	Very good	70	76.9	76.9	100.0
	Total	91	100.0	100.0	

Source: Results of analysis (2015): Mean score (4.67).

Table 32. Overall mean for competence of mathematics teacher on the use of instructional materials in teaching mathematics.

Variable	N	Mean	Standard Deviation
Competence of mathematics teachers	91	59.48	6.33

Source: Results of analysis (2015).

Table 33. Chi-Square tests for the influence of availability of instructional materials in teaching mathematics in senior secondary schools in mbale municipality.

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	700.857[a]	437	0.000
Likelihood Ratio	227.328	437	1.000
Linear-by-Linear Association	7.084	1	0.008
N of Valid Cases	91		

Source: Results of analysis (2015).

Table 34. Chi-Square tests for the influence of appropriateness of instructional materials in teaching mathematics.

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	808.335[a]	532	0.000
Likelihood Ratio	244.254	532	1.000
Linear-by-Linear Association	12.212	1	0.000
N of Valid Cases	91		

Source: Results of analysis (2015).

(73.6%) gave affirmative responses indicating that most mathematics teachers are good at using models as teaching aids in senior secondary schools in Mbale Municipality. The mean score (3.85) being high also indicates that most teachers are competent. Therefore, the more the teacher is competent in using models, the higher the appropriate use. In Table 26 establishing whether the teachers are competent in using computer software in teaching mathematics, 2 (2.2%) of the teachers indicated that teachers are very poor, 9 (9.9%) are poor, 25 (27.5%) are fair, 38 (41.8%) are good while 17 (18.7%) are very good. Looking at such result, the majority (60.5%) of the mathematics teachers are good (competent) while a minority (39.5%) is not good (incompetent) at using computer software. In addition, the mean score of computer software (3.65) was high. This implied that most mathematics teachers are competent and good at using computer software in senior secondary schools in Mbale Municipality.

The result presented in Table 27 shows that 2 (2.2%) each indicate that the teachers are very poor and fair respectively, 18 (19.8%) are good, while 69 (75.8%) are very good at using textbooks in the teaching of mathematics. Since more than three-quarters of the teachers (95.6%) gave affirmative responses, it implies that teachers on the average are competent and good at using textbooks in the teaching of mathematics in senior secondary schools in Mbale Municipality. The mean score (4.67) being high also indicates competence among mathematics teachers in using textbooks as instructional materials in teaching mathematics in senior secondary schools in Mbale Municipality.

As in Table 28, 9 (9.9%) indicated that the teachers are poor at using projectors, 39 (42.9%) said they are fair at using projectors, 31 (34.1%) said they are good while 12 (13.2%) said they are very good. Almost an equal number of respondents (47.2%) and (52.8%) gave affirmative and normative responses, respectively implying that while some teachers are competent and good at using projectors others are poor and incompetent at using them in the teaching of mathematics in senior secondary schools in Mbale Municipality. Looking at the result in Table 29, 4 (4.4%) of the teachers reveal that they are fair at using graphs/charts, 24 (26.4%) said they are good while 63 (69.2%) felt they are at using graphs/charts. Since the majority of the respondents (95.6%) gave affirmative responses, it implies that more than three-quarters of the teachers are competent at using graphs/charts in the teaching of mathematics. In addition, the mean score (4.65) being high implies high competence among teachers in using graphs/charts in the teaching of mathematics in senior secondary schools in Mbale Municipality.

The result presented in Table 30 shows that 1 (1.1%) indicate that the teachers are very poor at using mathematical sets, 2 (2.2) are poor and fair, respectively, 11 (12.1%) are good while 75 (82.4%) believed that they are very good at using mathematical sets while teaching mathematics. Since more than three quarters (94.5%) gave affirmative responses, it implies that teachers are competent in using mathematical sets in teaching mathematics in senior secondary schools in Mbale Municipality. In Table 31, 1 (1.1%) revealed that the teachers are very poor at using drawings, 6 (6.6%) felt they are poor, 14 (15.4%) said they are good. Whereas, 70 (76.9%) reveal they are very good at using drawings in the teaching of mathematics. since the majority (92.3%) of the teachers gave affirmative responses, it implies that they are competent in using drawings while teaching mathematics in senior secondary schools in Mbale Municipality. Looking at the result in Table 32, the overall mean score of competence of mathematics teachers is 59.48. Since the mean score is high, it implies that teachers are competent and inclined in the use of instructional materials in teaching mathematics in senior secondary schools in Mbale Municipality.

Inferential Analysis of Research Hypotheses

The focus of inferential analysis is to establish the factors influencing the use of instructional materials in the teaching of mathematics in senior secondary schools in Mbale municipality. Chi-square tests analysis provides statistical information on the influence of one variable (availability) on the other variable (use of instructional materials). Also, Chi-square tests give statistical information on the appropriateness of instructional materials as a factor in the use instructional material in the teaching of mathematics in senior secondary school in Mbale municipality. Whereas, Pearson correlation was used to give the relationship between two variables (competence of mathematics teachers in use of instructional materials and teaching of mathematics).

Null Hypothesis one ($H_0$1)

The availability of instructional materials does not have significant influence in teaching mathematics in senior secondary school in Mbale municipality. The Null Hypothesis one ($H_0$1) was tested using Chi-square test and the results were shown in Table 33. In Table 33, a Chi-Square test was performed between availability of instructional materials and teaching mathematics and a significant influence was found between the two variables, X^2 (700.857, N = 91) = 437, p =0.000. Since the significant value is 0.000 (which is lesser than .05) ($p<0.05$). Thus we can say that there is a significant influence of the availability of instructional materials on teaching mathematics in senior secondary schools in Mbale Municipality. This implies that when instructional materials like models, drawings, computer software, chalkboards, study guides, charts, mathematical sets and so forth are readily available, teaching mathematics is likely to be effective and efficient.

Table 35. Pearson correlation between competence of mathematics teachers in using instructional materials and teaching mathematics.

Correlation variable Statistics		Competence	Use of Instructional Material
Competence	Pearson Correlation	1	0.502**
	Sig. (2-tailed)		0.000
	N	91	91
Use of instructional material	Pearson Correlation	0.502**	1
	Sig. (2-tailed)	0.000	
	N	91	91

Source: Results of analysis (2015).

Null Hypothesis two ($H_0$2)

The appropriateness of instructional materials does not have significant influence in teaching mathematics in senior secondary school in Mbale municipality. The Null Hypothesis two ($H_0$2) was tested using Chi-square tests and the results were shown in Table 34. As in Table 34, a Chi-Square test was performed to analyze the relationship between the appropriateness of instructional materials and teaching mathematics and a significant influence was found between the two variables, X^2 (808.335, N = 91) = 532, p =0.000. Since the significant value is 0.000 (which is lesser than .05) (p<0.05), we can the appropriateness of instructional materials have significant influence in teaching mathematics in senior secondary school in Mbale municipality. This implies that when the instructional materials are appropriately used, effective teaching of mathematics is realized and when they are inappropriately used, effective teaching ceases.

Null Hypothesis three ($H_3$0)

There is no significant relationship between the competence of mathematics teachers in using instructional materials and teaching of mathematics in senior secondary school in Mbale municipality. Pearson correlation procedure analyses were used to test the relationship between two variables (competence of mathematics teachers in using instructional materials and teaching mathematics). The results of Pearson correlation analysis (Table 35) showed a significant relationship between the competence of mathematics teachers and teaching mathematics given by the high value of the computed correlation index (0.502). The p-value (0.000) being lesser than the level of significance (alpha P<0.05). This suggests that competence of mathematics teachers in using instructional materials has had a significant influence on teaching mathematics in senior secondary schools in Mbale Municipality. Therefore, there is a significant relationship between the competence of mathematics teachers in using instructional materials and teaching of mathematics in senior secondary school in Mbale municipality.

Findings

Results in Table 33, showed a significant influence of the availability of instructional materials on the teaching of mathematics in senior secondary schools in Mbale Municipality (X^2 (700.857, N = 91) = 437, p =0.000. This result is corroborated by previous studies of Ogbondah, 2008 and Jimoh, 2009. Ogbondah (2008) reported shortage of instructional materials in schools in Nigeria. Nevertheless, he noted that there was a significant relationship between availability and adequate utilization of instructional materials and in the effective implementation of Migrant Fishermen's children education programme in the Rivers State of Nigeria. Similarly, Jimoh (2009) investigated the use of instructional materials in the teaching of mathematics in senior secondary schools in Kabba Bunu Local Government Area of Kogi State of Nigeria. Results of its study indicate the minimal use of instructional materials in the teaching of mathematics in most schools in the area. Most teachers depended mostly on textbooks and chalkboards as instructional materials while other relevant instructional materials such as maps and charts, overhead projectors, televisions, cartoons, computers, and pictures etc were sparingly used. As in Table 34, the results show that appropriateness of instructional materials has a significant influence in teaching mathematics in senior secondary school in Mbale municipality (X^2 (808.335, N = 91) = 532, p =0.000). Remillard (1999) described those tasks taken directly from materials as appropriated tasks and those tasks created by teachers based on ideas in the text as invented tasks.

A teacher needs the ability to invent and to modify tasks in line with his or her learning goals. By analyzing and adopting a problem, anticipating the mathematical ideas that can be brought out by working on the problem, and anticipating students' questions, teachers can decide if particular problems will help to further their mathematical goals for the class (NCTM, 2000). The results of Pearson correlation analysis show a significant relationship between the competence of mathematics teachers and

teaching mathematics given by the high value of the computed correlation index (0.502) and (p=0.000). This is in line Jimoh (2009), who observed that teaching and learning mathematics may only be possible with the competence of instructional materials, the teacher has to be dynamic and creativity to encourage students to improve their capability and cooperative learning activities. Competence in the use of instructional materials may encourage students to learn by themselves. Effective use of instructional materials makes the entire teaching and learning process functional and understanding.

CONCLUSIONS and RECOMMENDATIONS

Conclusions

Based on the study findings, we can conclude that the availability of instructional materials has significant influence in teaching mathematics in senior secondary school in Mbale municipality. This implies that when instructional materials like models, drawings, computer software, chalkboards, study guides, charts, mathematical sets etc are readily available, teaching mathematics is likely to be effective and efficient. According to the findings, we can conclude that the appropriateness of instructional materials has significant influence in teaching mathematics in senior secondary school in Mbale municipality. This implies that when instructional materials are appropriately used, effective teaching of mathematics is realized and when they are inappropriately used, effective teaching ceases. There is a significant relationship between the competence of mathematics teachers in using instructional materials and teaching of mathematics in senior secondary school in Mbale municipality. The p-value (0.000) being lesser than the level of significance alpha $P<0.05$ implied that the results were statistically significant. This suggests that competence of mathematics teachers in using instructional materials has had a significant influence on teaching mathematics in senior secondary schools in Mbale Municipality.

Recommendations

In regard to the findings of this study, the following recommendations were made:

1. Teachers should realize that the use of instructional materials during lessons simplifies content and brings distant events into classroom situations for easy understanding. Therefore, they should always create attractive and functional classrooms with necessary equipment and materials since unattractive and dysfunctional classrooms are detrimental to teacher effectiveness and student learning. It is also important to note that it is the teacher's task to always improvise on the instructional materials needed for the teaching process even if funds for the purchase of ready-made materials are not available. Workshops or rooms can be set aside by the school management for purposes of designing teaching materials.
2. The policymakers and administrators should work hand in hand and refurbish teachers' resource centers at the district level to help teachers get ideas and acquire more skills in designing appropriate instructional materials.
3. Educational planners and administrators should always evaluate teachers' competence in using instructional material when carrying out teacher selection and teacher evaluation. This can as well be an ongoing process during continuous assessment procedures. Inspection and supervision should not only remain paperwork but be conducted regularly by either head teachers or inspectors from the different stakeholders like the Education Standards Agency or Ministry of Education.
4. Since this study was limited to senior secondary schools in Mbale Municipality, a comprehensive study need to be done in all senior secondary schools in Uganda to establish whether the findings will be similar to the current study.
5. Since this study was only quantitative, a qualitative research using an in-depth interview guide and focus group discussion guide as data collection tools should be done on a similar topic.

REFERENCES

Abdo M and Semela T (2010). Teachers of poor communities: The tale of instructional media in primary schools of Gedeo zone, Southern Ethiopia. Australian J. Teach. Edu., 35 (7): 78-92.

Adeyemi BA (2008). Effects of Cooperative Learning and Problem-Solving Strategies on Junior Secondary School Students' Achievement in Social Studies. Electronic Journal of Research in Educational Psychology, 6(3): 691-708.

Ahmad F, Aziz J (2009). Students' perception of the teachers' teaching of literature communicating and understanding through the eyes of the audience.European Journal of Social Sciences, *7*(3):17-26.

Dahar MA, Faize FA (2011). Effect of the availability and the use of instructional materials on the academic performance of students in Punjab (Pakistan). Middle Eastern Finance and Economics Issue 11. Dakar, Senegal. Prepared for the Pan African Conference on Teacher Education and Development (PACTED), Lome, Togo, 13-15 April 2011.

Domazet M (2011). We are taught to decide: the importance of the citizen's ("national") education in the development of the scientific and scholarly competence of the Croatian-speaking, in: Afrić, V .; Bakić-Tomić, Lj .; Polšek, D.; Žažar, K. (Ur.). Društvene pretpostavbleruštvaznanjsa.Zagreb: FF Press, InstitutPilar, Akademija.

Monaghan J (2007). Computer Algebra, Instrumentation and the Anthropological Approach. Int. J.Technol. Mathematics Edu. 14(2):63-71.

Gamble KT (1984). Communication Works. New York. Random House Inc. http://www.ehow.com/about_6557185_competency-based-education-training.html#ixzz1O7BSP0NMhttp://www.lifescied.org/cgi/content/full/8/2/89 (Access 20 September, 2012).

Hughes KL, Karp MM (2004). School-Based Career Development: A Synthesis of the Literature.

http://www.tc.colombia.edu/iee/PAPERS/care (Retrieved on 4th December 2013)
Jallow SS (2011). Competency –based Curriculum: Teaching and Assessing Student Competences. UNESCO BREDA Dakar, Senegal.Prepared for the Pan African Conference on Teacher Education and Development (PACTED), Lome, Togo, 13-15 April 2011.
Jimoh ME (2009). The use of instructional materials in teaching Social Studies at the secondary schools of Kabba Bunu Local Government area of Kogi State [Online] Available: http://www.docstoc.com
Kilundo JM (2002). Evaluation of Instructional Materials and their Use in Power Mechanics and Drawing and Design in Kenyan Senior secondary schools. M.Phil Thesis Moi University.
Kim Y, Grabowski BL, Song H (2003). Science teachers' perspectives of the web-enhanced problem-based learning environment: A qualitative inquiry. Retrieved from ERIC database. (ED475713).
Kouwenhoven GW (2003). Designing for competence in Mozambique : towards a competence-based curriculum for the Faculty of Education of the Eduardo Mondlane University. PhD Thesis - Research UT, graduation UT.
Kulik JA (2003). Effects of using instructional technology in elementary and secondary schools: What controlled evaluation studies say (SRI Project No. P10446.001). Retrieved from Stanford Research Institute (SRI) International website:http://www.sri.com/policy/csted/reports/sandt/it/K ulik_ITinK-12_Main_Report.pdf
National Council of Teachers of Mathematics (2000). Principles and Standards for School Mathematics: An Overview.
Lappan G, Phillips ED, Fey JT (2007). The case of Connected Mathematics. In C.R. Hirsch (Ed.), Perspectives on the design and development of school mathematics curricula.Reston, VA: National Council of Teachers of Mathematics, pp. 67-79.
McDowell GR (2001). A student-centered learning approach to teaching soil mechanics.
Okereke G (2006). A Comprehensive Theory of Representation for Mathematics Education. J. Math. Behav. 17(2):167-181.
Oluyori FO (1986). Delimiting Factors to Instructional Media Utilization in Nigeria School. J. Curriculum and Instruction.1:196-206.
Peck R, Olsen C, Devore J (2010). Introduction to statistics and data analysis.
Pomerantz H (1997). The role of calculators in math education.Prepared for the Urban Systemic Initiative/Comprehensive Partnership for Mathematics and Science Achievement Superintendents Forum. Retrieved from Texas Instruments website: http://education.ti.com/sites/US/downloads/pdf/therole.pdf
Quesada AR (1996). On the impact of the first generation of graphing calculators on the mathematics curriculum at the secondary level.In P. Gomez & B. Waits (Eds.), Roles of Calculators in the Classroom. Res. Sci. Edu. 32(4): 489-510.
Reston VA, NCTM.Ng, W, Gunstone R (2002).Students' perceptions of the effectiveness of the world wide web as a research and teaching tool in science learning. Research in Science Education, 32(4): 489-510.
Souter MT (2001). Integrating technology into the mathematics classroom: An action research study.Action Research Exchange, 1(1).Retrieved from http://teach.valdosta.edu/are/Artmanscrpt/vol1no1/ souter_am.pdf.
Strayhorn TL (2006). College in the information age: Gains associated with students' use of technology. J. Interactive Online Learning, 5(2):14155.
Strayhorn TL (2007). Use of technology among higher education faculty members: Implications for innovative practice.http://studentaffairs.com/ejournal/Summer_2007/TechnologyUseByFaculty.html
Susskind JE (2005). PowerPoint's power in the classroom: Enhancing students' self-efficacy and attitudes. Comp. and Edu. 45:203-215
Waits B, Demana F (2000). Calculators in mathematics teaching and learning: Past, present, and future. In M.J. Burke & F. R. Curcio(Eds.), Learning Mathematics for a New Century: 2000 Yearbook of the National Council of Teachers of Mathematics Reston, VA: NCTM. pp. 51-66.