Effective Strategies of Teaching and Learning Mathematics in some primary schools of Oromo Zone Kemissie town.

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Abstract

This study was to assess effective teaching strategies of mathematics subject in primary schools of kemissie town. The sampling methods to select the respondents were purposive and random sampling method. And the sample size of the study was determined by Yemane formula for calculating the sample size. Two main instruments MTQ and SQ constructed and administered to five primary schools in kemissie town for 180 selected students and teachers. The collected data were analyzed by inferential statistics using software package social science students SPSS (20.1). The reliability of the research questionnaire was tested by Cronbach's alpha (0.741) and validated by experienced mathematics teachers. After normality and homogeneity of data tested, factor analysis was applied to extract factors. Finally, t-test was executed to test the significance. Results showed that there are many factors that influence effective strategies of teaching mathematics subject in primary schools. But the researcher categorizes it in three major areas. These are **Teachers factors** *such as less attention of teachers to teach students for conceptual understanding, Anxiety of mathematics due to mathematics teachers, Regarding methods of teaching mathematics(collaborative teaching method), Problem on assessment, inadequate using teaching aids, Inadequate supportive mechanisms and tutorial class,* **students factors** *such as, attitude towards mathematics, problem on mental competency of mathematics, anxiety of mathematics, poor reading style, poor time management and* **school factors** *such as, schools less attention to mathematics, less follow up how teachers use assessment, less follow up of teachers teaching methodology, less follow up of students behavior on mathematics.* **It is recommended that** *the teacher needs to have positive attitudes towards mathematics in class and needs to be willing to help students. School should build awareness of student on how students develop their capacity on mathematics, How to eradicate students math anxiety, Discuss with mathematics teachers on how to use most appropriate teaching and assessing methods, should follow up mathematics teachers how they use lesson plan, try to prepare class- room which is decorated by crafts, mathematical figures and mathematical formulas. KCTE need to give short training on the most appropriate methods to teach mathematics and on assessing students. And students also recommended to uses the suggestion those researcher list techniques to learn mathematics easily.*

[1]**keywords:** effective, mental mathematics skill, collaborative teaching, anxiety, achievement

1 Introduction

1.1 Background of the study

Mathematics is a science of magnitude and number that is very useful virtually in all subject areas. This is because all fields of studies are dependent on it for problem-solving and prediction of outcomes. Competency in mathematics learning is vital to any individual and nation in domestic and business deals, scientific discoveries, technological breakthrough, problem-solving and decision making in different situations in life. [4] Viewed mathematics as the basis for science and technology and the tool for achieving scientific and technological development.

It may be in consideration of these and other vital usefulness of mathematics that the Federal Government of Ethiopia made it a core and compulsory subject. In primary schools, more lessons of mathematics are taught than that of other sciences. Despite concerted efforts of teachers, school administrators, parents, and all other education stakeholders to enhance learning of mathematics among primary students, performance and success

in learning mathematics is still not satisfactory and Mathematics subject despite its great importance, it is the only subject that is most dreaded to learners among all subjects offered in schools [2, 5]. Students, therefore, tend to respond to it with less self- confidence, negative feeling and anxiety. This situation is worsened by the compulsory nature of the subject at primary and secondary schools levels, leading to student's poor performance in the subject. According to SMASSE Project Report [17], the reasons for poor performance in mathematics examination resulting from poor learning of the subject are likely to teaching methods which are not appropriate and lack of resources among others. The incessant poor achievement in mathematics in Ethiopia Primary and secondary Schools levels may be attributed to student's lack of interest in learning mathematics. Interest has to do with preparedness or mastery of a subject matter background knowledge that can enable the learner to cope with further or next higher level of learning of the subject- matter or related learning task [7]. Students factor include lack of interest to learn mathematics caused partly by mathematics phobia and distractions from handsets they carry about even in the mathematics classrooms as perceived by the researcher while teaching them mathematics.

The common goals of all mathematics teachers at all levels of education are that students should understand and learn mathematics. Various factors are involved in shaping the understanding and learning of mathematics. However, one of the prerequisites for understanding mathematics is interest in math and the desire of students to learn it. Interest is a stimulus that increases activity power. Simultaneous to active learning, students should be interested in the subject they are learning and students may resort to it in order to understand the materials and apply them [1]. Therefore, it is necessary to further examine the factors involved in making students interested in math so that no one hears such phrases as "not too sweet course of math! Wow! The boring math class! Monster math!

1.2   Statement of the problem

The best reason to teach mathematics is that it is essential for solving problems of all kinds (with a practical goal in mind or not). The applied mathematician tries to see the universe through the lens of mathematics. This is an undoubtedly valuable pursuit in and of itself and modern science and technology owes a lot of their rigor to the mathematics which underpins them. The techniques of calculation are clearly being taught to prepare students who may ultimately end up in science/technology/engineering/ mathematics (STEM for short). I certainly don't think I need to talk up the benefits of math to the people who already know what they're going to use it for. Students should learn mathematics (Eric Gutstein)

- For its own sake because it is a beautiful and amazing human accomplishment; and
- To be prepared for college and future careers, especially in science, technology, engineering, and mathematics (STEM) fields.
- Learn about and appreciate diversity in human thinking and accomplishments throughout history and around the world;
- See the role of mathematics in their daily lives, their community practices, and their cultural backgrounds; and
- Understand, analyze, critique, and take action regarding important social and political issues in our world, especially issues of injustice.

Learning mathematics aims to link school to everyday life, provide skill acquisition, prepare students for the workforce, and foster mathematical thinking (Ontario Ministry of Education, 2005). When we come to Ethiopian context some researchers find out that teaching mathematics in Ethiopian schools phasing different problems. According to (chernet Tuge, 2008, Mathematics Curriculum, the Philosophy of Mathematics and its Implications on Ethiopian Schools Mathematics Curriculum) the current school mathematics curriculum in Ethiopia is not producing competent mathematics students. Many mathematicians in Ethiopia and other parts of the world have often expressed grief that the majority of students do not understand mathematical concepts, or do not see why mathematical procedures work, or do not know when to use a given mathematical technique (Cuoco, A.1995). According to Cuoco, A.A, et.al. (1996) for generations, school students have studied something in school that has been called mathematics but has very little to do with the way mathematics is created. Much of the failure in school mathematics is due to the tradition of the curriculum design and inappropriate teaching to the way student learns (National Research Council 1989).

The mathematics curriculum has a great influence on how teachers teach in a classroom. In a traditional curriculum where a traditional teaching model is being employed a teacher demonstrates an algorithm or technique, assigns a set of problems for students to do on their own, and tests a student a week or two weeks later on an accumulation of their skills.

On the other hand Interactive Mathematics Curriculum (IMC) is designed around the process the aspect of mathematics in contrary to the curriculum we have at hand nowadays in schools. Ac- cording to Cuoco, A.A. et.al. (1996:377), the organizing principle of IMC is the "Habit of Mind" the students are expected to develop whereas in the traditional curriculum the organizing principle is the "content." A curriculum designed around habits of mind comprises both the content and the process.

The existing mathematics Curriculum that is underway in Ethiopia can be labeled as traditional for its main

organizing principle is the content that needs to be covered for a given grade level in a given academic year rather than the habits of mind that the students need to develop. Part of the solution to this problem could be adapting IMC to all school levels.

The researcher also observed many college students are not competent in mathematics while I taught different college courses of mathematics. However, this problem is not born in college. Since the factors come from primary and secondary schools around our college, the reacher initiated to conduct the research entitled: effective strategies in teaching and learning mathematics in some primary schools of Oromo Zone(Kemissie).

1.3   Purpose of the study

The purpose of this study is to assess effective strategies of teaching and learning mathematics in primary schools in kemissie town and to recommend the appropriate methods of effective teaching and learning mathematics in primary schools. In addition to this to put a corner stone for researchers who are initiated to conduct related researches on the mathematics subject.

1.4   Objectives of the study

1.4.1   General objectives of the study

The general objective of the study is to assess effective instruction of teaching mathematics in some primary schools of Kamissie town.

1.4.2   Specific objectives

The specific objectives of this study are to:

- To identify teachers essential aspects which enforce learners' understanding of mathematics.

- To recommend a good instructional method of teaching and learning mathematics in primary schools.

- To identify the problems which are influence effective teaching methods of mathematics in primary schools at kemissie town.

1.5   Basic question

The study will guided by the following research questions:

- How do teachers enforce essential aspects to enhance learner's understanding on mathematics?

- What are the possible effective strategies of teaching methods in primary schools?

- What are the cases that influence effective teaching methods of mathematics subject in primary schools?

2   Research Design and Methodology

2.1   Research design

This study was a descriptive survey research design to investigate the effective strategies in teaching and learning mathematics in primary school. Both qualitative and quantitative research design were used. The qualitative research design was used to explore effective strategies in teaching and learning mathematics subject whereas quantitative research design is used to quantify some numerical data obtained from sample survey and data sources gathered through qualitative analysis of interview and questionnaires. This descriptive research involves making a description of student attitudes and mathematics teachers as well as the stock-holders of the research.

2.1.1   Population, Sampling size and sampling technique

The population for this basic research were five primary schools in kemissie town (Rape primary school, Haromsa primary school, Sedasa primary school, Kemise 02 primary school & Kachur primary school).These schools were selected purposefully. And sample of respondents selected by using random sampling method from grade 7th and grade 8th.The sample size was determined by using Yemane formula $n = N/1 + Ne^2$ to calculate number of sample. According to calculation 160 students respondent identified randomly.

2.1.2   Data types and sources

To achieve the objective the study data were collected from both primary and secondary source. The primary data were collected through questionnaire and interview from selected samples. Secondary data were collected from books, journal articles, research papers and other relevant documents from concerned bodies.

2.1.3   Methods of data collection

1. Interview:- The researcher used this method of data gathering techniques to Collect valuable and obtain deep information about the problem from the selected samples(especially for teacher respondents).

2. Questionnaire: The researcher used this method data gathering tools to get information from students (students Questionnaire -SQ) and teacher (mathematics teachers Questionnaire -MTQ) by distributing both open and closed-ended questions which are prepared in different angles of ideas.

2.1.4   Methods of data analysis

The collected data was organized and tabulated according to their similarities under the same issue raised in the interviews and questionnaires. The researcher used descriptive and inferential statistics to analyze the primary data and secondary data. Since the collected data are qualitative and quantitative in nature, this research relies on both quantitative and qualitative data analyses. In addition to make the data clearer, quantitative data were analyzed using statistical tests and factor analysis. Data distribution were tested Kolmogorov Simonov and homogeneity tested, the data was analyzed by factor analysis to extract factors. Finally, t-test was executed to test the significance.

2.1.5   Reliability and Validity measurement

The reliability of research questionnaire was tested by Spss software(20.1). And the data was reliable since cronbach's alpha was 0.741 and above 0.6, indicating that the measurement is acceptable reliable. And all questionnaires were reviewed and commented by experienced mathematics teachers for validate. Therefore the reliability and validity of the measurement are all logic to test the hypothesis

3   Data Analysis and Interpretation

3.1   Background Respondents

This basic research is conducted in five (5) primary schools in kemissie town. Respondents also selected from these schools. Of 180 respondents of students 160(88.9 %) are grade 7th and grade 8th students, 20(11.1 %) primary school mathematics teachers.

3.1.1   Sex composition of respondents

Table: 4.1 Sex compositions of students

sex	number of respondents
Male	75
Female	95
Total	160

Table: 4.2 Sex compositions of teacher's respondents

sex	number of respondents
Male	15
Female	5
Total	20

3.2   Data analysis

3.2.1   Students related factors on effective mathematics instruction in primary school

All the questions which have posed to respondents were analyzed using mixed approach.

- How students good attitude towards mathematics subject influence on effective instructional strategies of teaching mathematics in primary school?

Independent t-test was used to examine the above question. The result was presented in table 4:3 and 4:4.
Table 4:3:- percentage of responses to students good attitude toward mathematics which influence on effective mathematics instruction in primary school?

Indicator	very low	low	medium	high	very high	total
N	1	13	25	52	69	160
Percentage	0.6	8.1	15.6	32.5	43.1	100

Table4:4

Indicator	Mean	St.d	hypothesis mean	t	df	sig.
students good attitude towards mathematics	2.83	0.535	1.21	-1.897	64	0.007

As a result in the table above 69(43.1%) of students believe that students good attitude has very a high impact on effective instruction in teaching mathematics in primary school. And 52(32.5%) of students believe that students good attitude towards mathematics has high impact on effective instructional strategies of teaching mathematics in primary school. Furthermore 25(15.6%) believe that there is moderate relationship between effective instruction in teaching mathematics and Students good attitude towards mathematics. But 13(8.1%) believe that students good attitude towards mathematics has the least impact on effective instruction in teaching mathematics. Finally 1(0.6%) student believes that students' good attitudes towards math have very least impact on effective teaching instruction of mathematics in primary schools.
The T-test result showed that the mean score of students good attitude towards mathematics on effective instructional strategies of teaching mathematics in primary school were 2.83 which is more than the hypothesis mean (1.21).This difference was calculated against t(-1.897)and degree of freedom value (64)and it was concluded that the value was significant at 95 % level(0.5) since p-value is 0.007. The result has been presented in the table 4:4 statistically speaking, one can conclude that students good attitude towards mathematics highly influence effective instructional strategies of teaching mathematics in primary schools.

- How much mental competency of students on mathematics subject influences the effective instructional strategies of teaching and learning mathematics in primary schools?

Table 4:5 Percentages of responses to the impact mental competency of mathematics on effective learning and teaching instruction in primary schools.

Indicator	very low	low	medium	high	very high	total
N	21	30	41	51	17	160
Percentage	13.1	18.8	25.6	31.9	10.6	100

Table4:6

Indicator	Mean	St.d	hypothesis mean	t	df	sig.
Mental competency of mathematics	3.08	.79	1.79	-1.845	64	0.018

As a result in the table above 21(13.1%) of students believe that students mental competency of mathematics has a very low impact on effective instruction in teaching mathematics in primary school. And 30(18.8%) of students believe that students mental competency of mathematics has a low impact on effective instruction in teaching mathematics in primary school. Furthermore 41(25.6%) students believe that there is moderate relation-ship between effective instruction in teaching mathematics and student's mental competency of mathematics. But 51(31.9%) believe that students mental competency of mathematics has a high impact on effective instruction in teaching mathematics. Finally, 17(10.6%) student believe that students mental competency of mathematics has a very high impact on effective teaching instruction of mathematics in primary schools.

The T-test result showed that the mean score of students mental competency of mathematics on effective instructional teaching method of mathematics in primary school were 3.08 which is more than a hypothesis mean(1.21).This difference was calculated against t(-1.845)and degree of freedom value (64)and it was concluded that the value was significant at 95 % level(0.5) since p- value is 0.018.The result have been presented in table 4:6 statistically speaking, one can conclude that students mental competency of mathematics highly influence effective teaching instruction of mathematics in primary schools.

- How much is the impact of student's anxiety of mathematics on effective instructional strategies of teaching and learning mathematics in primary schools?

Table 4:7 percentages of responses to the impact of student's anxiety of mathematics on effective learning and teaching instruction in primary schools.

Indicator	very low	low	medium	high	very high	total
N	1	16	44	68	31	160
Percentage	.6	10	27.5	42.5	19.4	100

Table4:8

Indicator	Mean	St.d	hypothesis mean	t	df	sig.
anxiety of mathematics	3.70	.917	1.87	-2.023	97	0.045

As the result in table above 1(.6%) of students believe that students anxiety of mathematics has very low impact on effective instruction in teaching mathematics in primary school. And 16(10%) of students believe that students anxiety of mathematics has low impact on effective instruction in teaching mathematics in primary school. Furthermore 44(27.5%) students believe that there is moderate relationship between effective instruction in teaching mathematics and students' anxiety of mathematics. But 68(42.5%) believe that students anxiety of mathematics has high impact on effective instruction in teaching mathematics. Finally, 31(19.4%) student believe that students' anxiety of mathematics has very high impact on effective teaching instruction of mathematics in primary schools. The T-test result showed that the mean score of students anxiety of mathematics on effective instructional teaching method of mathematics in primary school were 3.70 which is more than hypothesis mean(1.87).This difference was calculated against t(-1.845)and degree of freedom value (64)and it was concluded that the value was significant at 95 % level(0.5) since p- value is 0.018.The result have been presented in table 4:8 statistically speaking, one can conclude that students anxiety of mathematics highly influence effective teaching instruction of mathematics in primary schools

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3.3   Teachers related factors on effective teaching and learning of mathematics subject in primary schools

FACTOR ANALYSIS

The questionnaires which are prepared to search mathematics teachers impacts on effective teaching and learning instruction of mathematics subject in primary schools are many questions. The researcher used factor Analysis method to reduce number of questions by taking the most factor components. According to the factor analysis result three components of questions were extracted as the factor of the whole questionnaires regarding teachers' impact in effective instruction of mathematics in primary schools. The extracted components have greater than one eigenvalue values, which means these questions are factor all the other components or questionnaires.

Factor-I: Regarding conceptual teaching of mathematics.

- How much is the impact of teaching for conceptual influence on effective teaching and learning of mathematics subject in primary schools?

  Independent t-test was used to examine the above question. The results were presented in table 4:9 and 4:10.

Table 4:9 Percentages of responses to the impact of teaching for conceptual understanding of mathematics on effective teaching mathematics in primary schools.

Indicator	very low	low	medium	high	very high	total
N	21	16	12	67	44	160
Percentage	13.1	10	7.5	41.9	27.5	100

Table 4:10

Indicator	Mean	St.d	hypothesis mean	t	df	sig.
Teaching, conceptual	3.42	1.233	3.15	1.437	109	0.043
Confidence of math. teachers	3.12	1.08	2.96	-1.309	109	0.043
Giving tutorial	3.48	1.29	3.13	-0.796	109	0.079

As the result in table above 21(13.1%)of students believe that conceptual teaching of mathematics has very low impact on effective instruction in teaching mathematics in primary schools. And 16(10%)of students believe that conceptual teaching of mathematics has low impact on effective instruction in teaching mathematics in teaching mathematics in primary school. Furthermore 12(7.5% students believe that there is moderate relationship between effective instruction in teaching mathematics and teaching students for conceptual understanding. But 67(41.9%) believe that students teaching for conceptual understanding has high impact on effective instruction in teaching mathematics. Finally, 44(27.5%) student believe that teaching students for conceptual understanding has very high impact on effective teaching instruction of mathematics in primary schools. The T-test result showed that the mean score of teaching students for conceptual understanding, confidence of mathematics teachers and teaching with tutorial classes on effective instructional teaching method of mathematics in primary school were 3.42,3.12 and 3.48 respectively which is more than hypothesis mean(3.08).This difference was calculated against t(1.437,-1.309 and -0.796)and degree of freedom value (109)and it was concluded that the value was significant at 95 % level(0.5).The result have been presented in table 4:10 statistically speaking, one can conclude that students conceptual teaching of mathematics highly influence effective teaching instruction of mathematics in primary schools.

Factor-II: Regarding Methods teaching of mathematics.

- How much is the impact of teaching methods influence on effective teaching and learning of mathematics subject in primary schools?

Independent t-test was used to examine the above question. The result was presented in table 4:11 and 4:12.

Table 4:11 Percentage of responses on:- the impact of teaching different methods of mathematics on effective teaching mathematics in primary schools.

Indicator	very low	low	medium	high	very high	total
N	22	29	49	37	23	160
Percentage	13	18.1	30.9	23.1	14.1	100

Table 4:12

Indicator	Mean	St.d	hypothesis mean	t	df	sig.
Teaching in various methods	4.14	1.7	3.06	-5.428	63	0.000
Enhancing, collaborative teaching style	3.66	1.5	3.36	-2.835	63	0.001
teaching with Aids	3.48	1.20	3.43	-4.56	63	0.079

As the result in table above 22(13%)of students believe that teaching mathematics in various methods has very low impact on effective instruction in teaching mathematics in primary school. And 29(18.1%)of students believe that teaching mathematics in various methods has low impact on effective instruction in teaching mathematics in teaching mathematics in primary school. Further, more 49(30.9%) students believe that there is moderate relationship between effective teaching instruction of mathematics and teaching mathematics in various methods. But 37(23.1%) students believe that teaching mathematics in various methods has high impact on effective instruction in teaching and learning mathematics in primary schools. Finally, 23(14.1%) students believe that teaching mathematics in various methods has very high impact on effective teaching instruction of mathematics in primary schools.

The T-test result showed that the mean score of students teaching mathematics in various methods, enhancing collaborative teaching style and teaching with aids on effective instructional teaching and learning method of mathematics in primary school were 4.14, 3.66 and 3.48 respectively which is more than hypothesis mean (3.2).This difference was calculated against t (-5.428,-2.835 and-4.56) and degree of freedom value (63) and it was concluded that the value was significant at 95

% level (0.5).The result have been presented in table 4:12 statistically speaking, one can conclude that students conceptual teaching of mathematics highly influence effective teaching instruction of mathematics in primary schools.

Factor-III: Regarding ways of mathematics subject assessment.

- How much is the impact of assessment methods influence on effective teaching and learning of mathematics subject in primary schools?

Independent t-test was used to examine the above question. The results were presented in table 4:13 and 4:14.

Table 4:13 Percentage of responses to the impact of assessment methods of mathematics on effective teaching mathematics in primary schools.

Indicator	very low	low	medium	high	very high	total
N	8	15	30	47	60	160
Percentage	5.0	9.4	18.4	29.4	37.5	100

Table4:14

Indicator	Mean	St.d	hyp.mean	t	df	sig.
ways of assessment	3.82	1.08	3.12	-1.309	109	0.043
Give challenging questions to students	2.15	1.044	1.97	0.835	63	0.046

As the result in table above 8(5%) of students believe that assessing methods in mathematics has very low impact on effective instruction in teaching mathematics in primary school. And 15(9.4%) of students believe that assessing methods in mathematics has low impact on effective instruction in teaching and learning mathematics in primary schools. Furthermore 30(18.4%) students believe that there is moderate relationship between effective teaching instruction of mathematics and mathematics assessing methods. But 47(29.4%)

students believe that assessing methods in mathematics has high impact on effective instruction in teaching and learning mathematics. Finally, 60(37.5%) students believe that assessing methods in mathematics has very high impact on effective teaching instruction of mathematics in primary schools.

The T-test result showed that the mean score of students assessing methods in mathematics and Give challenging questions to students on effective instructional teaching and learning method of mathematics in primary school were 3.82 and 2.15 respectively which is more than hypothesis mean(1.21).This difference was calculated against t(-1.309 and 1.044)and degree of freedom value (109)and it was concluded that the value was significant at 95 % level(0.5).The result have been presented in table 4:13 statistically speaking, one can conclude that students conceptual teaching of mathematics highly influence effective teaching instruction of mathematics in primary schools.

3.4 Interview with Teacher respondents on effective instructional teaching mathematics in primary school.

3.4.1 Students Anxiety of mathematicssubject.

According to teachers suggestion math anxiety can be manifested in many different ways. A student may have a bad attitude about mathematics. When he/she in mathematics class, he may be nervous and unable to sit still or focus on the lecture. Math-anxious students may dread even going to mathematics class. There is a great fear of answering a teachers question incorrectly in mathematics class than other classes. They panic (fear) about mathematics turbulence in the mind. This problem is very difficult and which affects effective instruction of mathematics in primary schools.

3.4.2 Poor reading style of students

As teachers interviewees stated most of their students have no constant plan to read mathematics. Reading mathematics is step by step, it needs patience, abstract thinking, analyzing ideas, working with many variables and symbols. But many of our students do not need such challenges, they simply try pass class to class without having no understanding of mathematics concepts. Therefore the crucial point here that interviewees point out is poor reading style of students in mathematics subject.

3.4.3 Teachers factors

Inadequate supportive mechanisms: In most schools, the tutorial services and various support mechanisms not sufficiently provided, particularly, the overall academic environment is not ad- equate and supportive for students in mathematics. The issue is related to major challenges of effective instructional teaching of mathematics in primary schools. The other thing teacher respondents pointed out that

- *The attitude of some teachers towards students' education and motivation, commitment to support students to improve academic achievement in mathematics was very low.*
- *Teachers must focus on teaching reasoning skills include such things as identifying similarities and differences, size, or shape.*
- *Mathematics class needs to be fun and engaging.*
- *Providing a Strong Mathematics Foundation in the Early Years starting from gradefirst*

3.4.4 Individual students experience

A relationship between achieved grades in earlier examinations at same level attitudes formed by students towards learning mathematics. Repeated low academic achievement might lead to negative attitudes towards the subject, in turn, may influence how students will learn the subject in the sub-sequence years of education. One of challenge that affect student achievement in mathematics is the repeated low grades achieved earlier influence attitudes formation or do attitudes formed earlier influence how a student learns mathematics and consequently.

4   Summary, Conclusion and Recommendation

Summary:-

Under this section, the researchers try to summarize the effective strategies of teaching and learning mathematics subject in primary schools.

- The first hypothesis: Influence of Students good (positive) attitude towards mathematics in effective teaching and learning strategy.

Regarding the obtained results, it can be argued that students positive attitude towards mathematics plays significant role in effective instructional teaching and learning of primary mathematics. This result is consistent with the result of study conducted by **(Calgon, 2014)** who found having positive outlook in mathematics is an important factor of student's achievement. Similarly researchers **(Mata, Ontario, & ,Peixoto , 2012)**diagnose that positive attitudetowards mathematics had greater success in mathematics.

- The second hypothesis: How much teaching for conceptual understanding influence on effective instruction of mathematics in primary schools.

Regarding the obtained result, it is evident that teaching conceptual understanding influence on effective mathematics instruction in primary schools. Because teaching for conceptual understanding develops procedural fluency which is the ability to apply and use steps or strategies to solve different problems. This result consistent with results, research conducted by Researchers **(Lawson, 2007; Protheroe, 2007)** which give stress on the importance of teaching for conceptual under- standing .Similarly **(Rittle-Johnson & Schneider, 2014)** stated as conceptual understanding is the knowledge of abstract ideas which helps students to understand the real-life of world. In addition to this **(Shellard & Moyer, 2002)** stated three critical components to effective mathematics instruction:

1. Teaching for conceptual understanding

2. Developing children procedural literacy

3. Promoting strategic competence through meaningful problem-solving investigations

- The third hypothesis: How much collaborative teaching style and teaching in flexible methods influence on effective instruction of mathematics in primary schools.

From the result we obtained, it is argued that collaborative teaching style and flexible teaching methods play a vital role in the effective instruction of mathematics in primary schools. These results are consistency with the study of **(MacMath, Wallace, & Xiaohong, 2009)** Collaboration is an important way to foster mathematical understanding and increased confidence in mathematics. In a similar vein, Substantial research exists explaining that collaboration improves self-confidence **(Evans & Dion, 1991)**, feelings of unity **(Evans & Dion, 1991)**, improved satisfaction **(Tett & Meyer, 1993)**, and cohesiveness **(Evans & Dion, 1991)**. In the same way **Charleston, WV (2006)** diagnoses the best Practices in Teaching Mathematics.

- The fourth hypothesis: The influence of students' mental mathematics skill on effective instruction of mathematics in primary schools.

From the result obtained, it is argued that mental mathematics skill plays a significant role in effective instructional teaching of mathematics in primary schools. This result has consisted with results of the **Victoria State Government in Australia (2009)** found that students should be taught mental mathematics strategies and develop these strategies at school throughout the grades.

- The fifth hypothesis: The influence of providing varied and ongoing assessment and giving challenging questions on effective instruction of mathematics in primary schools.

From the result we obtained, it is evident that providing varied and ongoing assessment and giving challenging questions on effective instruction of mathematics in primary schools play a vital role. These results have consisted with results of research conducted by Swank(1999)which states meaningful homework(challenging questions) improve academic achievement of students. Similarly **(Ontario Ministry of Education, 2005)** stated Mathematics Curriculum Grades 1-8 explains the goal of assessments is to improve student learning and the assessments should be varied and ongoing.

- The sixth hypothesis: The influence of students' anxiety of mathematics on effective instruction of mathematics in primary schools.

From the result we obtained, it is argued that students anxiety of mathematics on effective instruction of mathematics in primary schools play a role. this result is consisted with the result of **Ho et al. (2000)** conducted a study with 671 students in Grade 6 in China, Taiwan, and the United States and found that math anxiety has an impact on student achievement. And **(Stuart, 2000)** Most often a lack of confidence in mathematical abilities can lead to anxiety in mathematics, but many other things can attribute to mathematics anxiety including teacher attitudes, peer attitudes, and family attitudes.

Conclusion:-

One of the purposes of this study was to assess how effective instruction of teaching and learning mathematics in primary schools implemented.

According to analyzed data the effective strategies of teaching mathematics in primary schools are influenced by *students attitudes towards mathematics, students mental competency, students anxiety towards mathematics, teachers teaching for conceptual, previous math teachers behavior, peers, teachers varied methods of teaching, teachers varied methods of assessment, students poor reading style, inadequate supportive mechanism, some teachers less motivated to teachmathematics.*

Recommendation:-

Recommendation of the study focuses on measure to be taken in the future to enhance effective strategies of teaching mathematics in primary schools.

- The mathematics teacher needs to be stimulated (excited) about teaching mathematics and he/she must believe that there is a reason for his students to learn themathematics.

- The teacher needs to have positive attitudes when in class and needs to be willing to help students. (To prevent math anxiety of students.)

- The teacher should review basic mathematics skills with his students.

- KCTE need to give awareness building and short training on the most appropriate methods to teach mathematics and how to assess students for mathematics teachers.

- Teachers need to have resources of teaching mathematics.

- Schools must give attention to mathematics lessons: how students interact, teachers activities, students feeling towards mathematics, teachers teaching methodology, how teachers use teaching aids, how teachers assess their students...

- Schools try to have at least one class which decorated by mathematics formulas, solid figures

- Teachers should encourage collaborative teaching method.

- Attention should be directed towards using a variety of math games to improve the attractiveness of our lessons.

- It's important that students feel comfortable and are to be given the opportunity to learn new math ideas at their own pace, without feeling rushed.

5   Biblography

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