APPLICATION OF JEAN PIAGET'S MENTAL DEVELOPMENTAL THEORY IN ASSESSMENT OF PUPILS OF GRADES ONE AND TWO IN BUNGOMA EAST DISTRICT, KENYA

BY
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DECLARATION

This Research Project is my original work and has not been presented for any degree in any University.

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RECOMMENDATION

This Research Project has been submitted for examination with my/our approval as University Supervisor(s).

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DEDICATION

To my late mother, Sophia Namalwa for her nurture and consistent encouragement from my early childhood till the time she left me pursuing this work.

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ABSTRACT

The study sought to find out whether mental developmental theory of Jean Piaget was applied in the assessment of grades one and two in primary schools in Bungoma East district in Kenya.

The purpose of the study was to establish whether the ages of pupils in primary schools were considered in assessment of pupils of grades one and two. The work was divided into five chapters. The study adopted a descriptive survey design.

The sampling technique was a stratified sampling for schools and batch of pupils picked at random from class one and two. Questionnaires interviews schedule and practical assessment of standard one and two were used to collect data

Data was collected, coded and analyzed using descriptive statistics. Statistical Package for Social Sciences (SPSS) was used to present information in tables, charts and graphs.

The findings of the study indicated that pupil's age wasn't the kind in factor in assessment carried out in standard one and two in primary schools in Bungoma East District.

Recommendations were made to help enhance the use of hands – on type of assessment as advised by the Piaget's theory of mental development.

ABBREVIATION AND ACRONYMS

D.T.E :	Diploma Teacher Examination
K.C.P.E	Kenya Certificate of Primary Education
K.C.S.E	Kenya Certificate of Secondary Education
K.N.E.C	Kenya National Examination Council
P.T.E	Primary Teacher Examination
T.T.E	Technical Teachers Examination
K.I.E	Kenya Institute of Education
K.L.B	Kenya Literature Bureau

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INTRODUCTION

1.1 Background

Learning and assessment are part and parcel of each other. Kimble (1961) defines learning as a relatively permanent change in behavior, potentially which occurs as a result of reinforced practice. During the process of teaching, the extent to which learning take place during instruction differ from one person to the other. Psychologist Pavlov and Skinner have experimented on classical and operant conditioning respectively using reward and punishment to train a dog and pigeon respectively. Whatever was used in conditioning was used in assessing learning of the same.

There is therefore need to assess what is learned. Gagne, Briggs and Wager (1988) defined assessment as a direct measure of what has been learned as a result of instruction on specific objectives. How is measurement done? Erickson and Wentling (1978) defined measurement as a systematic process that is concerned with developing a qualitative and quantitative description of student performance or behaviour. There is therefore need to design a measuring instrument that is both valid and reliable. According to Henring Stout (1994) a valid measuring instrument is that which measures what it is intended for, and is consistent such that it gives same information every time if, it should be relied upon.

Information obtained from assessment is used to judge the adequacy or worth of that particular performance for making decision. This is according to Erickson and Wentling (1978). Martin and Ramsden (1992) said that the difference in how students learn subject

matter can be related to how their teachers think about it and how they expect students to learn it. Students may be compelled to give back what they are given by their teachers if their (teacher's) orientation to learning indicates to students what performance is important? Taylor (1996) says teacher's orientation force students to change their learning strategies to obtain the highest possible scores even if the performance is contrary to students really achievement. Putting into consideration this orientation of teachers preferring certain assessment tool and method than the other; does this orientation take care of the learner's interest and capability?

This study intended to find out if the teachers put into consideration the mental developmental ability as postulated by the Swiss psychologist Jean Piaget when assessing pupils of the grades one and two who were in late pre-operational and early concrete operational stages; Children were expected to learn through activity interacting with materials as such assessment procedure was to take the same trend allowing children to use interact with materials in activities to get answers to questions.

1.2 Statement of the problem

Assessment is one of the activities done to aid learning process. Pupils in primary schools differ in age as such their mental developmental stages vary from one grade to the other.

Assessment is done in schools for various reasons as summative or formative. Pupils in grades one and two are in pre operational stage and early concrete operational stages. These children cannot reason in abstract terms like their counterparts in senior grades in

primary schools. These pupils are seen being assessed as others in schools. Do those who assess these grades one and two pupils consider their age?

Jean Piaget (1970), advocated for hands-on learning for children at this stage. Do those who assess these children consider theories of mental developmental?

1.3.0 Purpose of the study

The study was to find out whether children in grades one and two were assessed according to their age and whether they interacted with materials in activities to get answers to assessment instruments given to them by their teachers as Jean Piaget puts it in his theory of cognitive development.

1.3.1. Specific objectives of the study

i. To determine the objectives of assessment of lower grades in primary schools

ii. To determine type of the assessing instruments used in assessing lower grades in primary schools in Bungoma District.

iii. To determine the criteria used to develop instruments for assessing standard one and two in Bungoma District?

iv. To determine what pupils in standard one and two require in order for them to answer assessment items.

v. e) To establish the theories which teachers apply when teaching and assessing grades 1 and2

1.4. Research Questions

i. What are the objectives of assessment, in lower grades in primary schools in Bungoma District?

ii. What are the types of assessing instruments used in assessing lower grades in primary schools in Bungoma district?

iii. What is the criterion used to develop instruments for assessing standard one and two in Bungoma District?

iv. What do pupils in standard one and two require in order for them to answer assessment items.

v. What theories do teachers apply when teaching and testing grades 1 and 2?

1.5 Significance of the study

The rationale of the study was to address the area of assessment which enhanced talents and discovery as such findings might influence both teaching and learning.

i. Teachers might benefit from the study by reconsidering their instruction approach and assessment procedures which might benefit both children and teachers by making communication in learning and assessment easy. Activity assessment might also help teachers discover children's talents and improve on them from early schooling stages. Teachers might be able to assess skills which otherwise could not be assessed through paper work (written tests).

ii. Parents might benefit because their children might learn with ease and enjoyment as such like schooling.

iii. Children's mental development may be enhanced with activities which may lead them discover by themselves answers to challenging encounters. Learning may be meaningful because children may be able to explain answers as opposed to rote learning where they just give back what they are given by teacher's .Children may discover for themselves new knowledge which could be relevant to their learning but which may not have been captured by their course book.

iv. Education developers such as K.I.E., K.L.B, and K.N.E.C may review the learning and assessment procedures to match the mental development of children.

1.6 Delimitation

The study mainly focused on assessment of pupils in standard one and two in thirty nine schools in Bungoma East districts. The study therefore, did not cover all school as such may not have allowed a wider generalization of the findings. However, the findings could still be applied for other schools in other districts in Kenya. In every school, only two teachers were given questionnaires and interviewed. Assessment process was also observed practically as pupils answered assessment items but pupils were not interviewed because of their age. A total of seventy eight teachers were given questionnaire and also interviewed. A batch of grade one and grade two pupils were assessed using model mathematics tests for grades 1 and 2 respectively.

1.7 Limitations

Some schools sampled for the study were located very far away from good roads, however the researcher employed research assistants who enabled him to gather data

required for the study. Interviewees' integrity in their responses in giving true information was a limitation, however, the researcher assured respondents that information given will be treated confidential for the purpose of research such that would not be availed to any other person for whatsoever reason.(see appendix I on questionnaires).Every school had its own schedule for assessment as such asking a school to carry out assessment at the researcher's convenience was not possible, however, the researcher liaised with the concerned schools in time such that the researcher arranged his programmes of visiting those schools to suit the school's assessment dates. The number of teachers to be interviewed was large that the researcher couldn't manage interviewing them in time scheduled; however, the researcher assigned research assistants who helped to reduce the workload of the researcher.

1.8 Assumption of the study

The study was carried out on the basis of the following assumptions

i. All teachers teaching in lower primary classes in primary schools were trained and qualified to teach subjects they handle.

ii. Primary schools under study had sufficient teaching and learning materials and facilities.

iii. Pupils in the grades under study were of the same age group in those particular grades.

iv. Grades under study had normal children who do not have learning difficulties.

v. Teacher/pupil ratio was 1:50

1.9 Definition of terms

For the purpose of conducting this study, a number of terminologies will be adopted. These operational terminologies will be used

Assessment	:	measure in order to evaluate
Measurement	:	developing a quantitative and qualitative Description of student's performance or behavior
Evaluation	:	judging the merit of worth of a particular Performance.
Validity	:	the extent to which an assessment Procedure or instrument measure what is supposed to measure?
Reliability	:	the consistence of the assessing instrument to which it produces the same information every time it is used
Cognitive dissonance	:	disagreement between what is known and the new information
Formative assessment	:	Continuous assessment that is carried out frequently within term
Summative assessment	:	Assessment done once at the end of the term, year or course
Orientation	:	Approach/style
Trend	:	style/common practice
High-stakes testing	:	An exam with consequences attached.

CHAPTER TWO

RELATED LITERATURE REVIEW

2.1 Introduction

This chapter presents review of related literature on assessment orientation of grades one and two in Kenyan primary schools in relation to Jean Piaget's theory of cognitive mental development of pre-operational and concrete operation stages of children

2.2.0 Objectives of assessment

Learning and assessment are successfully done if they are pegged on pupil's ability. Stiggins (1994) says to assess a performance one has to design the purpose, whether the performance is based on skill or knowledge, choose the activity, define criteria, create performance rubrics and carry out assessment. Assessment in grades one, two, and three are required to follow the guidelines mentioned above.

Assessment is guided by objectives of learning.

2.2.1 Kenya National Educational Objectives

The Kenyan government has set objectives for primary schools. Amongst these, there are those that are vital for grades 1 and 2 that are in line with mental developmental theory of Piaget. These are:

a) To acquire numeracy, literacy, creativity and communication skill

b) To enjoy learning and develop desire to continue learning.

c) To develop awareness and appreciate the environment

d) To develop individual talents. (K.I.E syllabus-1992)

2.2.2 Specific Objectives for Mathematics Grade One

1) Pre-Number Activities.

a) Group objects according to colour, shape, size and texture.

b) Pair and match objects

c) Order groups of objects according to size

2. Whole numbers

a) Count whole numbers from 1 to 99

b) Order, read and writer symbols from one to 99

c) Read and write numbers 1 to 9 in words

d) Recognize and identify place value

e) Count and group in tens up to 90

3. Operations

a) Work out addition problems with sums up to 99 vertically and horizontally without carrying.

b) Add up to 3 single digit numbers without carrying.

c) Subtract numbers not exceeding 99 vertically and horizontally without borrowing

d) Add multiples of 10 up to 99

e) Subtract multiples of 10 not exceeding 90

f) Identify relationship between addition and subtraction

4. Measurement

a) Compare and measure length using arbitrary units

b) Compare mass of objects

c) Compare capacity of containers

d) Recognize, identify and use Kenya currency coins

e) Recognize time and relate it to daily events and days of the week

5. Geometry

a) Recognize and identify straight and curved lines

b) Recognize and identify rectangular, triangular and circular shapes

2.2.3 Objectives of mathematics grade II

1. Whole numbers

a) Count, read and write numbers in symbols up to 999

b) Recognize and identify place value up to hundreds

c) Read and write numbers in words up to 99

2. Operations

a) Add numbers up to sums not exceeding 999 with one carrying

b) Subtract up to a 3-digit member from up to a 3-digit number without borrowing

c) Work-out problems involving addition and subtraction using missing numbers

d) Multiply numbers up to 5x5 through counting

e) Multiply single digit numbers by 10 up to 9x10

f) Divide numbers not exceeding 25 by numbers not exceeding 5 without a remainder

g) Recognize and identify number patterns involving addition and subtraction

3. Measurement

a) Recognize, identify and use the Metre as a unit of measuring length

b) Measure mass and capacity using a fixed unit

c) Recognize, identify and use Kenya currency notes and coins up to shillings 500

d) Work out addition and subtraction involving money in shillings and cents without carrying or borrowing

e) List the days of the week and the months of the year in order

f) Read and tell time by the hour

4. Geometry

a) Recognize and identify rectangles, squares, triangles, circles and ovals

b) Trace and model shapes

c) Make patterns using triangles, rectangles, squares and circles

2.2.4 Lower-Primary assessment

a) Listening and correcting exercises

b) Arranging alphabets

c) Random reading

d) Filling in the blanks

e) Answering all the questions

f) Observation

g) Memorization

h) Oral quizzes

i) Marching exercises

j) True or false

k) Continuous assessment tests

(K.I.E. Syllabus 2002)

The teacher orientation of teaching and assessment is guided by what he/she wants the pupils to achieve. For the pupils to benefit from education, what he learns it need the objective of education. This is according to Erickson and Wentling (1978). Martin and Ramsden (1992) said that the difference in how students learn subject matter can be related to how their teachers think about it and how they expect students to learn it. Students may be compelled to give back what they are given by their teachers if their (teacher's) orientation to learning indicates to students what performance is important? Taylor (1996) says teacher's orientation force students to change their learning strategies to obtain the highest possible scores even if the performance is contrary to students really achievement. Putting into consideration this orientation of teachers preferring certain assessment tool and method than the other; does this orientation take care of the learner's interest and capability?

2.3.Types of assessment instruments

As mentioned earlier, learning and assessment aid each other. Learning is concerned with acquiring knowledge and assessment checks what has been acquired. Kimble (1961) defined learning as a relatively permanent change in behaviour which results from a reinforced practice. Practice has to do with performing some activity using the brain and some part of the body. It has to be seen in some behaviors which are referred to as learning outcomes. Bloom (1956) shows three taxonomies of educational objectives. These are cognitive, psychomotor and affective domains. In cognitive domain he showed six main classes. These are knowledge, comprehension application, analysis, synthesis, and evaluation. These classes are arranged from the simple to the most complex. Gagne (1985) explains conditions of learning and puts them in five categories such as intellectual skills, verbal information, and cognitive strategies, motor skills and attitudes

Whatever learning outcome, there must be an assessment strategy which will appropriately test the acquisition of behaviour desired. Gagne, Briggs and Wager (1988) have defined assessment as a direct measure of what has been learned as a result of instruction on specific objectives. Satterly (1989) advises that when choosing an assessment method, it is important to keep in mind the objectives. The method of assessment could be varied on the basis of what responses or activities children are expected to articulate. For example if the teacher wanted children to learn and demonstrate how to organize their own ideas, then essays could be used as an assessment activity. *Student Evaluation Hand Book* (Saskatchewan Education 1983), highlights types of assessment as follows:

i) Oral Assessment Items.

These are items administered by word of mouth .They are used when attributes being tested are best accessed through oral responses. For example, ability to use spoken word correctly, ability to speak second language or debate.

(ii) Performance Test Items.

These are used in assessing students learning progress in tasks that require students to actively engage in some activity manipulating or solving problem. Items test how well a student performs a practiced behaviour. They are used in situations where a student is required to demonstrate competence in a given skill or concept.

(iii)Extended Open - response Items

These types of items require students to respond extensively in written form. They are used to assess student's power of argument, evaluation and synthesis. They are scored using either -**holistic scoring**-outlining attributes to look for and form an impression and award marks in general.

Analytic scoring –assigning a proportion of a mark to attributes as they occur

(iv) Short Answer Items

In this items students supply an answer to a specific question this items test ability to recall knowledge, can also be used to asses attitude and high levels of thinking. They are used to asses how well a student has internalized the content.

(v) Matching Items

In this type of items a list of premises is given with a few more responses than premises. A student is asked to march the premises with responses.

(vi) Multiple Choice Items

A stem of a question is presented followed by a number of possible answers, one of which is correct. These items are used to test students recall and recognition. They can also be used to test high order thinking skills.

(vii) True/False items

Using these items a student is asked to indicate whether a given statement is true or false. These items assess students' knowledge of content. Can also be used to measure abilities in a broad range of thinking levels.

It is therefore important to decide on a measuring tool which measures what one intends to measure. The tool should be valid. Henning-Stout (1994) defines validity as the extent to which an assessment procedure measures what is intended to be measured. It is also important to use a measuring instrument that would give reliable results. Gagne (1988) asks "How does the instructor know the student did not do a required performance by chance or by guessing?" on the other hand, Row tree (1987) asks "would other assessors agree with my interpretation of the student's behaviour and would I myself interpret his behaviour in such a way if I saw it again" (p.10). How will then a teacher determine whether the behaviour he sees is reliable. Henning Stout (1994) says

reliability of an assessment is evident in how consistently that procedure produces same information if it's used again. Teachers therefore direct learning to correspond to assessment procedure they want according to the objective and content to be learned.

Martin and Ramsden (1992) suggest that the difference in how students learn subject matter can be related to how their teachers think about it and how they expect students to learn it. Therefore teachers play an important role in the learning of their students. Taylor (1996) says teacher's orientation of learning indicates to students what performance is important and students change their learning strategies to obtain the highest possible scores. This restricts students to learning only what is important to their teachers.

2.4 Criteria for developing assessment instruments for grades 1 and 2

Apart from Jean Piaget theory of Cognitive development, there are other theories that explain how children store and retrieve information from cognitive structure. Brunner (1966) came up with three models of cognitive development. These are the enactive model: which he said is knowledge derived from actions concerning physical behaviour; second is iconic model; which he says is knowledge derived from organizing images, either visually or by some other senses such as imagining the shortest route to well known parts of ones locality. Third, symbolic; which he says is based on knowledge derived from the use of language, in terms of words or other symbols (such as discussing philosophically the meaning of meaning). Brunner says mental development is gradual. He says thought process evolve as a result of maturation, training and experience through a series of sequential stages mentioned above. This theory appears to contradict Piaget's

which shows development in distinctive steps like a ladder at given ages (0-2 years), (2-7years), (7-11years) and 12 years and above. He called the first stage sensor-motor stage (0-2years), pre-operational stage (2-7years), concrete operational stage (7-11)years and formal stage 12 years and above.

Sullivan developed modes theory of development into three stages:

1. Protaxic – knowledge manifested in feelings
2. Parataxic – elementary thinking, concrete manipulation of things.

Syntaxic – logic reasoning. These three theories of Piaget, Brunner and Sullivan point out that developmental stage before adolescence are not able to think abstractly. Therefore learning assumes concrete objects based activity as such assessment should be based on the same concrete based activities. Children in classes 1 and 2 at the age of 6and 7 belong in the group of parataxic stage of mental development. These have elementary thinking which operates on concrete manipulation of things and objects. Knowledge of this helps in planning teaching and assessment of grades 1 and2.

Sullivan's basic modes theory explains three basic developmental stages referred to as modes of thought process for explaining man's cognitive development. He divided the stages as: first, prototaxic- modes: this thought process is manifested in feelings but has no evidence of any definite structure.

Second: parataxis mode – the child differentiates things, has elementary thinking operating on concrete manipulation of things and objects.

Third stage; syntaxic mode; the child has logical thought processes incorporating symbolic representation of images. Mental processes mature with age. Assessment of grades one and should be by age of the children.

2.5 What a pupils in standard one and two requires in order to answer assessment items.

Schwebel, M and Jane Ralph (1974) quote (Piaget, 1970:124) "But from the point of view of the teachers and their social situation, those old educational conceptions, having made the teachers into mere transmitters of elementary or only slightly more than elementary knowledge, without allowing them (children) any opportunity for initiative and even less for research and discovery, have thereby imprisoned them in their present lowly status".

From this quotation Piaget wanted teachers to let pupils explore their environment and discover for themselves.

Kiewra, K.A. and Frank, B.M (1987) found out that "Field dependent learners recalled more of the textual material when provided with structure during both acquisition and recall or when structure was not provided at all. Conversely, field independent learners recalled more of textual material when structure was provided only at acquisition and recall." Learning and recalling is very much pegged on the activity. Ausubel (1968) points out two distinctions in pupil learning.

i. He shows distinctions between reception and discovery; where in reception the learner is expected receive what is given but discovery, a learner learns through an activity

ii. He shows distinction between rote and meaningful learning; where meaningful learning is learning related to meaning known to a learner, and rote is learning associated with previous knowledge.

2.6 Gaps in assessment

Kenya has a body known as Kenya National Examination Council (K.N.E.C) which is entrusted with the authority of setting, examining, marking and grading students taking various examinations. Kenya Certificate of Primary Education, Kenya Certificate of Secondary others. Education, Primary Teacher College Exams, Diploma Teacher College exams, Technical Examinations among Last year 2008 the council organized for a National assessment for grades three and six, In National examinations successful candidates are awarded certificates. High stakes testing-(an exam/assessment with consequences attached) this is using one examination to determine ability of the student. This affects learning such that what (Schwebel et al, 1973) said is that, teaching is now just presenting material to be learned and reinforcing right answers the learner should give back to the teacher; giving back to the teacher what was given by him/her. This kind of assessment fails to articulate the objectives of primary education stated above.

Gagne et al (1988) defines assessment as a direct measure of what has been learned as a result of instruction on specific objectives. This definition does not include what a child

learns on his/her own through activity. It also excludes the learning process itself (assessing the process of learning)

Wittrock (1978, 1986) proposed four ways in which cognitive conceptions of teaching help test development and testing.

i. Pre-conceptions – students models of learning play a credential role in teaching. Teaching should include knowing about student's knowledge and thought processes. Test need to be designed to supply useful information about student's pre-conceptions.

ii. Learning strategies – the students process of learning information. The way how a student learns information influences how he/she will make sense of information and knowledge presented to him/her by their teachers. Test should have a diagnostic aspect that will reveal how a student perceives information.

iii. Meta-cognition – the awareness and control of ones thought processes. Test development can contribute to the improvement of teaching through enhancement of student's self-control of learning.

iv. Affective thought process. This has to do with motivation and anxiety. Students attribute of learning influence their expectation. Test should cause worry and anxiety in students. This affects learning.

The contribution of Wittrock (1986) points to an area which has not been emphasized in test/assessment. Piaget's theory has well been articulated in the cognitive conception of teaching by Wittrock to be based on student's background knowledge, learning strategies, meta-cognitive processes and affective thought process. Grades one, two and three should be assessed according to their level of mental development.

Assessment has not been dealt with thoroughly especially assessment for learning. Most literature deals with assessment of learning – assessment as a product but not as a process. Other methods of assessment such as use of anecdotal records, likert scales, portfolio, reflective journals and the like have not been dealt with by many writers as such most countries including Kenya have not emphasized their use during learning process at school. Much value or recognition have not been placed on them, instead a highstakes examination overshadows these other ways of assessment. Assessment done with a view of awarding certificates doest not capture all that a student acquires in learning process. The exam attributes a failure to the pupils regardless of the poor teaching techniques and testing procedures. What should learners do if failure is caused by the testing procedure or tool that is used or methods or instruction? Teachers are trained how to teach, but less emphasis is put on how to assess learning. Most literature is on assessment of the product not the process.

2.7 Theoretical framework

The theory explains how cognitive development occurs. Piaget (1970) advanced an argument that a newborn baby in the sensory- motor stage has cognitive development organized in reflexes same as other animals. After some time these reflexes develops into cognitive structures of long term memory called schemes. Schemes are organization of information. These schemes are gradually modified and organized as a result of interaction with the environment, (Piaget and Inhelder, 1969). Acquisition and modification of these schemes result into assimilation (existing schemes interpret on going experience to fit into the existing one) and accommodation (schemes are modified to account for the new information which results from existing one). This explains how a child learns new information. Unless schemes assimilate or accommodate information nothing is learnt. Piaget explains that until children construct a certain level of logic from inside, they are conservers because they can only base their judgments on what they see. Theories on cognition show that teacher understanding of what happens in the students brains as he/she processes information to enable learning to take place, assist in designing an assessment instrument that is valid and reliable.

Understanding of children guides teaching and evaluation. Almy et al (1966) say learning has to be an active process because knowledge is a construction from within. Piaget (1964) says learners should have at their disposal concrete material experiences (not merely pictures) from their own hypothesis and verify them through an active manipulation.

Sinclair and Kamii (1970) advocated necessity of letting the pre-operational child go through one stage giving wrong answers before expecting him to have adult logic. Teaching should come to grips with how pre-operational and concrete operational child really thinks. There are errors made in teaching concrete operation children, Piaget (1970) says showing objects but not allowing children to manipulate them is an error in teaching. He says presenting audio-visual belief that the mere fact of perceiving objects and their transformation is equal to direct action is an error.

Enstwistle N.J. (1973) says ideas about stages of thinking (by Piaget) have drawn attention to the importance of linking teaching closely with child's ability to use concepts of increasing degrees of complexity and abstraction. Therefore assessment should be carried out following the trend of teaching that demonstrates understanding of the cognitive development of the child.

Sutherland (1992) explains the need of pitching learning experiences to the right level of the child. He says learning task must take into account the level of biological maturation of the child nervous system and not overreach the child's capacity for information processing.

Piaget's theory advocates for activity based learning which fits the level of cognitive development of the learner. The assessment has to suitable to the age of the children.

Foley, MarryAnn and Marcia, J. (1985) from their experiment on child development; Six and nine olds were as good as adults in distinguishing what they did from what they saw

someone else do. Children had a particular trouble distinguishing what they did from what they imagined doing. This means situations or test items which require children to imagine are not good for children. Children sometimes are seen to make errors when in really sense they don't.

Freeman, N.H. (1985) dealing with 'Reasonable errors in basic reasoning' concluded that "a logical error doesn't necessarily mean that a child's method of reasoning is defective. It may mean that the child is exercising reasoning upon slightly different contents from those typically mentally represented by an adult".

Piaget (1970 proposed that human cannot be given information which they immediately understand and use. Instead humans mush construct their own knowledge through experience by changing, enlarging and making more sophisticated through two complementary processes – assimilation) transforming environment so that it can be placed in a pre-existing cognitive structure; and accommodation (changing cognitive structures in order to accept something from the environment)

Brunner (1966) in his book Toward a Theory of Instruction, advocated for 'structure'; real process of a particular subject should examine real things or objects to get information that can be used to answer questions.

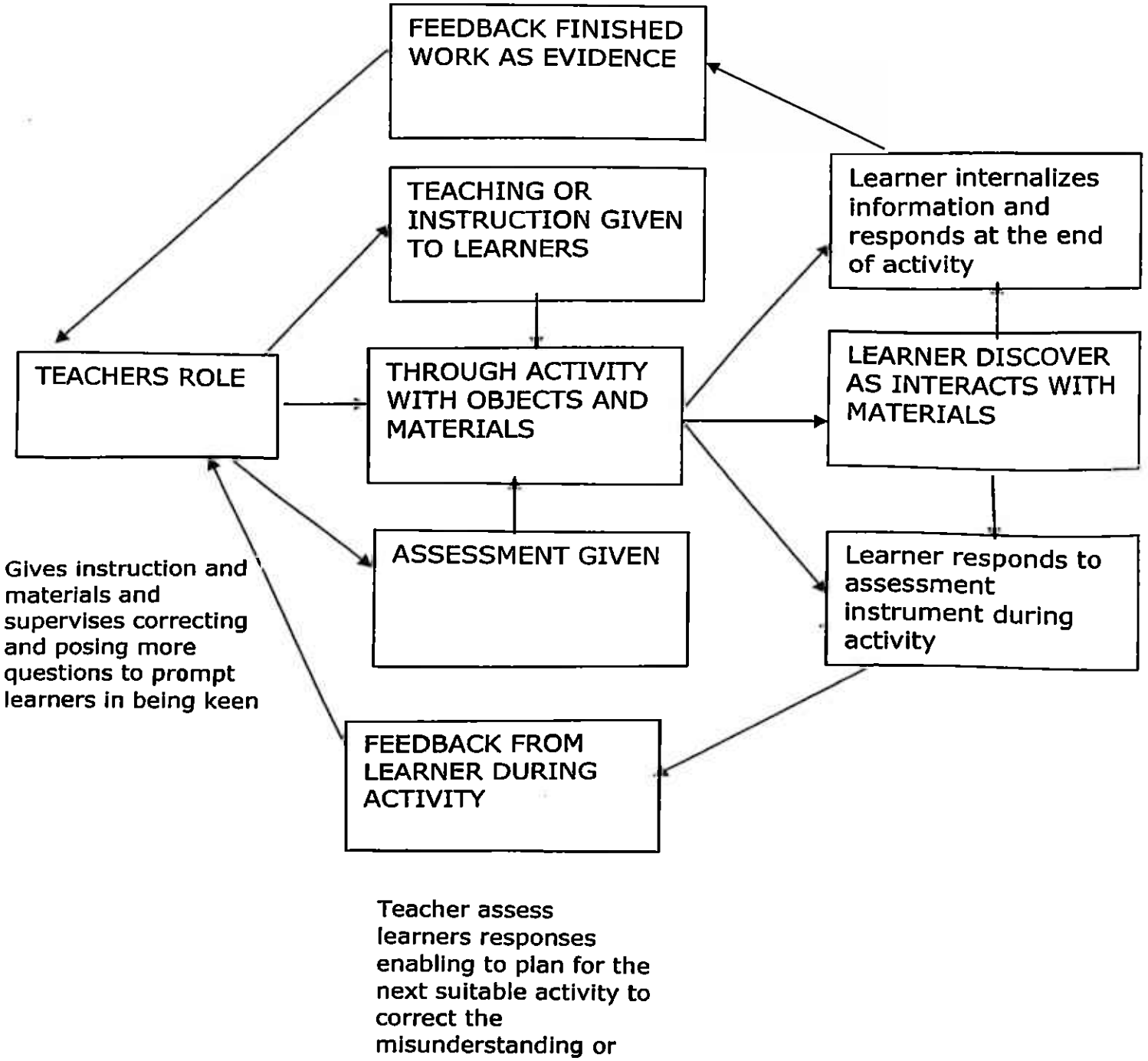
The same is backed by Ausubel (1968) who advanced 'organizer' as a concept that considers impact of prior learning. Advanced organizer is a device or mental learning aid to help 'get a grip' on the new information. He said a real object is used as a device to activate a relevant schema or conceptual pattern.

In assessment especially in a test, children failure is caused by lack of proper assimilation and accommodation of ideas in a question. Therefore items should be presented with a clear view of the child's level of cognitive development.

Piaget (1970) explains further that learning is an active process. Direct experience, making errors, looking for solution is vital for assimilation and accommodation. Learning should be whole, authentic and real not in isolation. Use meaningful activities. Meaning of words should be explained in context.

Vygotsky (1962) proposes that timely and sensitive intervention by adults when a child is on the edge of learning a new task (zone of proximal development) could help children learn new tasks because the adult build upon the knowledge which the children already have and help them learn. Brunner (1966) calls Vygotsky theory 'saffolding' (coming in to help the child when has reached the edge). Testing should take the same cause. Test what the child has or what he is able to have at his level, use of activities interacting with material help the child to get the meaning easily.

2.9 Conceptual framework: Activity oriented assessment



This study was guided by the theory of mental development postulated by Jean Piaget (1969). The theory divides cognitive development into four stages. Sensori-motor (0-2 years), pre-operational stage (2-7 years), concrete operational (7-11years), and formal

operation 12 years and above. The studies main concern is in pre-operation and concrete operation stages focusing on children between 6 and 7 years old. According to Piaget, children are born using reflexes when in sensori- motor stage, the organization of information is in reflexes; as these reflexes develops the information begins to be organized by structures called schemes. The schemes of a child have all information but differ from an adult in the way information is organized. When new information is presented to a child in pre-operation and concrete operation is received by either assimilation; if it's related to what exists in the schemes or accommodation; if it requires a new space in the scheme. He therefore advocates learning through activities to discover using their senses. Children in pre- operational stage learn better when they are involved in activities which enable them modify their schemes to either assimilate or accommodate information. Knowledge of this helps in providing to grades 1 and 2 with materials and activities which enhance learning and appropriate assessment.

From the conceptual framework above, the teachers role is ensuring that there enough learning materials for all pupils related to the subject matter; plan learning activities. Give instructions and question which the will answer from the activities. The teacher then supervises the pupils performing activities posing more questions to pupils who may appear to go astray so they can be kept on track as they carry out activities. During the activity the teacher can also award marks to the performance. The pupil may also be asked to explain the procedure if the activity was a simple one. Learners may answer orally, written work or perform an activity before they are awarded marks. The may choose to get feedback by assessing finished work, listening to an explanation or observing an activity in action.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter was concerned with the description of the research design and methodology and in particular the areas of study, population, sample, instrumentation, procedure of data collection and data analysis. The research was categorized cross sectional survey studying assessment in lower grades (One and two) in primary schools in Bungoma district in Kenya with reference to mental developmental theory of Swiss Psychologist Jean Piaget.

3.1 Research design

The research design used in this study was cross section survey. The design was preferred to census because according to Sounders et al (2007), it is impractical for one to survey the whole population; Budget and time could not allow the survey of the entire population. The study aimed at collecting information from respondents through questionnaire and interview on the assessment orientation of lower grades (1 and 2) in primary schools. It used both primary and secondary data where primary data collected from respondents directly through questionnaire and interview while secondary data was collected from available recorded documents such past test paper.

3.2 Location of Study

Data was collected from Bungoma East district, in western province in Kenya.

3.3 Target population

Population refers to all members of real set of people/objects to which a researcher wishes to generalize the findings of the research, Borg and Gall, (1966). The total number of primary school in Bungoma East District were 117 and 1163 teachers. The sample was a group of respondents drawn from the population in such a way that the information drawn from the sample was generalized on the populations. There were a total of 117 primary schools from which a sample of 39 schools were taken for study. The population of1163 teachers were targeted but only those who taught grades one and two were sampled for the research.

The target population of pupils was 60803 who learning in primary schools in Bungoma East District, but a batch was picked at random for assessment from the target group of the research (grades one and two).

Mueller (1970) and Cohen and Mannion (994) stated that the major reason for sampling in the social sciences is to reduce expenses in forms of time money and effort. In this case, the study included teachers from rural schools and town schools with a purpose of getting information that cut a cross schools.

Rural schools represented the population of schools that had children from low / unstable income group families while town schools represented children form stable / middle income groups' families.

3.4.Sampling technique and sample size

Sampling is used as the process of selecting part of the population for study with intent that the finding from the sample accurately represents characteristics of the population;

3.4.1 Sampling Technique

Stratified sampling was used to select schools to be involved in the study. 117 schools were categorized into:

(i) Boarding schools

(ii) Town schools

(iii) Rural schools

(iv) Private Schools

This was done to capture every category of schools in the district. Simple random sampling was used to select schools after categorization. Simple random sampling was meant to give each item in the population equal chances of being included in the study, Saunders et al (2007).

3.4.2 Sample Size

Sample size is the statistical probability of striking balance between accuracy of research findings and the amount of money and time the researcher invests in the collecting, checking and analyzing the data. (Saunders et al 2007). According to Staley (2003) the recommended size of a sample is a minimum of 30 percent for all cases in that category. The samples were categorized as follows:

Category	Number of schools	Sample size	percent	No. Teachers
Boarding schools	4	2	50	4
Town schools	10	3	30	6
Rural schools	86	28	32	56
Private schools	17	6	35	12
Total	**117**	**39**		**78**

3.5 Research instruments

In this study three methods of data collection were employed. These were interview schedule, questionnaire and documentary review. The combination of several instruments ensured better results than using a single method. Shipman (1992) presented the advantage of using a combination of instruments by conceding that no single technique was necessarily superior to others but all had short comings. If one technique was used alone, other techniques were likely to give undependable results. Multiple cross checking methods were time consuming but had greater chances of proving better results than a single cross checking method.

3.5.1 Interview schedules

Interview schedule was a self-reporting instrument used for gathering information about the variable of interest of the investigator. It consisted of a number of questionnaires as explained by Tuckman (1978 the purpose of using interview schedule was to enable the researcher to get extra information and clarification on some questions or issue. Gall,

M.D (1996) argued that one of the most important aspect of the interview is, flexibility of questions, can be repeated or their meaning explained in case they are not understood by the respondent. Interview was also used to press for additional information when the responses seemed to be incomplete or not entirely relevant.

A total of twenty-five interview items were used to collect data from each of the seventy-eight teachers from thirty-nine sampled schools representing 117 schools in Bungoma East district.

3.5.2 Questionnaire

Questionnaires are preferred in data collections argued by Leeds (1980) because it is easy to administer to a good number of respondents, who respond in private setting. A questionnaire is a way of getting data about person by asking them rather than watching them behave, Tuckman (1987). Both closed and open-ended questions were used. The questions covered teacher's qualifications, information about the schools and the class, curriculum instruction and assessment .A total of ten questionnaires were given to teachers. Five were on background information while the other five were on assessment tests given to pupils of grades one and two.

3.5.3 Documentary schedule

This refers to direct observation of past things through existing written material. This included assessment records kept by teachers and test paper or questions used previously. The score records were used to compare performance of model test and school test, while test papers were to compare construction of test items for the school test and model test.

3.6 Reliability

This refers to consistence with which a measuring instrument produces the same results every time it is used. .

Reliable instrument produces stable scores of comparable results (Cohen and Mannion, 1994).

Reliability of the research instruments was tested during the pilot study. Those research instrument items that gave inconsistent responses were removed.

3.7. Validity

Validity of an instrument is based on how an instrument fulfils the functions it is supposed to perform (Kerlinger, 1973) and Cohen and Mannion, 1994). In evaluating the research instrument to ensure validity, pretest which was to cover deficiencies in the measuring device was done. Pilot study was done to bring confidence in the instrument. Also the researcher sought advice from the specialist on the validity of the instrument. .

3.8 Data collection procedure / Techniques

The researcher sought permission to carry out this research and was issued with a letter introducing the research to the participant involved in teaching and assessment in grade one to three in primary schools. The researcher then familiarized himself to the concerned and briefed them of the intended research. The dates for visiting the schools were be fixed after permission from both the District Education Officers and choose schools head teachers. The researcher then chose some two schools for a pilot study.

The questionnaire captured information one the educational background of the interviewee and instructional and assessment activities in the school.

3.9.Data analysis procedure

Miles and Huberman (1994) stated that data analysis comprises of three concurring sub processes. These are data reduction, Data display and Drawing and Verification of conclusion.

Data was subjected to qualitative and quantitative analysis. Quantitative analysis was presented in tables, pie charts and Graphs from which generalization and conclusions were made. Qualitative analysis was incorporated in the researcher's interpretation on the basis of the reviewed literature and field observations and experiences.

Data was collected using interview schedule, questionnaire and data records and coded manually. Was coded under variables namely, educational background, models of instruction and assessment procedures;

CHAPTER FOUR

DATA PRESENTATION, INTERPRETATION AND DISCUSSIONS

4.0 Introduction

The purpose of the study was to find out the use of Jean Piaget's mental developmental theory in testing pupils of grades one and two in Bungoma East District.

The study involved a sample of 39 out of 117 schools, 33percent of the total population .This comprised of 39 teachers for grades one and 39 teachers for grades two which made a total of 78 respondents. The researcher used questionnaire, interviews and documentary evidence to collect data from 39 primary schools both public and private. Teachers for grades one and two were the targeted group. A batch of grades I and 2 pupils were also tested using the model test of Mathematics.

The study was mainly concerned with finding out whether those who test grades 1 and 2 tests with regard to cognitive ability of children of grades under study.

The study was guided by the following questions:

- What were the objectives of the assessment in lower grades one and two in primary schools in Bungoma East district?
- What were the type of assessing instruments used in assessing lower grades one and two in Bungoma east district?
- What was the criterion used to develop instrument for assessing standard one and two in Bungoma East district?
- Was there relationship between the assessment instrument and Piaget's theory of mental development?

- What theories did teachers apply when teaching and assessing grades one and two in Bungoma East district.

In this chapter the researcher has presented data captured from the field, its analysis and discussions. Tables, bar charts and pie charts were used to present information.

4.1 Background information.

The study revealed that most of the teachers who taught grades one and two were females (70 out of 78), and all of them were above 35 years old. All of the respondents in the sample were trained teachers.58 out of 78 (74percent) were form four leavers while 20out of39 (26percent) were form six leavers. Enrolment varied from school to school but it was noticed that private schools had a low enrolment of between 20 and 30pupils per stream while public schools had an average of 85 pupils per stream. From background information it was noted that there were no pupils learning under trees in all schools visited.

4.2.1 Objectives of assessing grades one and two

78 teachers from 39 schools who taught grades one and two were asked reasons for assessing grades one and two. The categorized responses revealed reasons as shown in the table below

Table 4.1: Objectives used by teachers to assess grades one and two.

Reason	Responses	Percent of responses
For promotion	6	7.7
Checking pupils ability	58	74.4
Checking teaching methods	0	0.0
Checking syllabus coverage	14	17.9
Total	78	100

From the table above the study revealed that the major reason for assessing grades one and two was checking ability of pupils.74 percent of the responses from the sample indicated that teachers concern was on pupil's performance. The aspect of teacher using tests to check their methods of teaching had no response. Checking syllabus coverage using tests received 17.9percent responses while promotion as a reason for testing had 7.7 percent. When the similar question was asked through interview, teachers gave similar reasons. These were: to be able to assist the weak pupils, give more work to bright pupils and discuss pupil's problems with parents. The researcher also got interested in knowing the number of times the teachers assessed their pupils in a term. 52 respondents representing 67percent of the total respondents indicated that they tested twice because they lacked enough funds in conducting more tests.26 respondents (33 percent) indicated that they tested thrice to take care of those who missed one of the tests.

4.2.2 Types of testing instruments

Respondents who answered by questionnaire from categorized responses indicated their preference of tests as shown below:

Table 4.2 Type of tests used to assess standard one and two

Types of tests	Respondents	percent
Oral	0	0
Written	78	100
Practical	0	0
Project	0	0
	78	100

The teachers who were interviewed also gave similar response whereby 100percent indicated that they used written work to assess standard one and two. When they were asked reasons why they preferred written tests20 out of 78 (26percent) indicated that written work assessed reading. 26 out of 78 (33percent) indicated that written work assessed wide area of work covered while 32out of 78 (41percent) indicated that written work was used because of the large enrolment they had in school. (See figure 4.1)

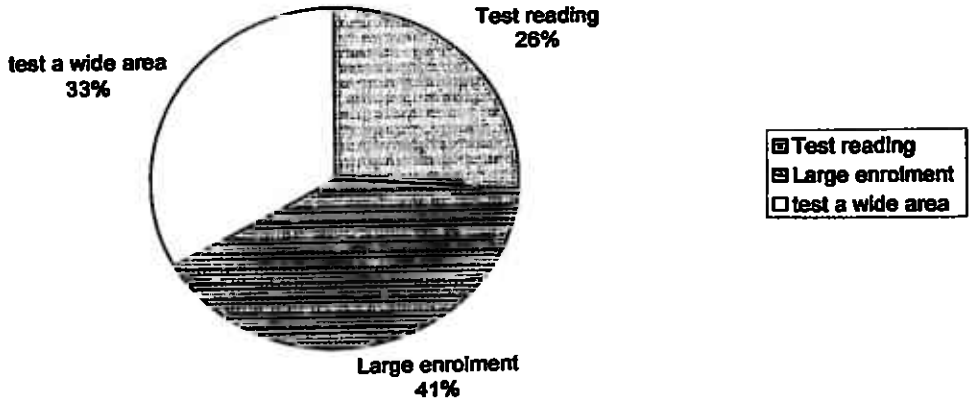


Figure 4.1: Reasons for using written tests for assessment

The researcher through interview asked respondents the type of tests which was least preferred by them. They gave their views as indicated in the table below:

Table 4.3 Assessment test least preferred by teachers

Types of tests	Respondents	percent
Oral	8	10.2
Practical	12	15.4
Project	58	74.4
	78	100

4.2.3 Criterion of developing assessment instrument.

The researcher gave questionnaires which had categorized questions. The respondent's choices were indicated as in the table below.

Table 4.4: Criterion used to develop assessment instruments.

What was considered	Number of respondent's	percent
Syllabus coverage	50	64
Age of pupils	0	0
Grade and level	0	0
Topics covered	28	36
	78	100

Table 4.4 indicated that 64percent of the sampled schools used the syllabus coverage to develop assessing instruments while 36percent used topic covered as guides to assessing their pupils. From the response however, the age of the pupil and the grade level were not used as guide to setting assessment questions. From the interview carried out by the researcher, 16 respondents indicated that they used age of the pupils as a guide in setting questions for assessing standard one and two pupils. The figure below show findings

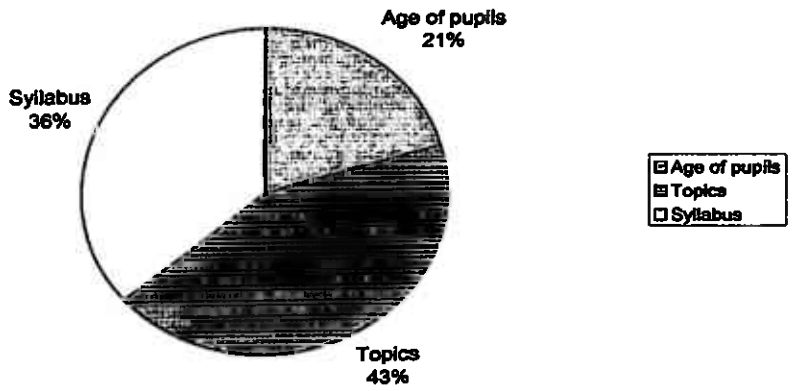


Figure 4.2 Basis for setting questions for grades 1 and 2

The interview findings differed from the questionnaires findings such that64percent of questionnaire respondents indicated syllabus coverage as guide and 36percent topics coverage as a guide while responses from the interview carried out indicated that 43percent used topics covered as guide, 36 percent syllabus coverage and 21percent used the age of the pupil as guide. The researcher had also asked for documentary evidence which showed questions the schools used to assess the students. Comparing the question items with topics coverage in schools who teachers had indicated that they were halfway the work of the grades 1 and 2, the researcher found out that questions were covering the entire syllabus for grades one and two. Questionnaire findings and the documentary evidence concurred, but the interview responses differed much on this item.

4.2.4 What are pupils required to do in order to answer assessment items

The researcher categorized response on what a pupil was required to do in order to answer assessment questions. The table below showed how the respondents answered the questionnaires.

Table 4.5. What a pupil does in order to answer assessment items

What questions required	Respondents	percent
Recall of knowledge	44	56.4
Memorization	0	0
Performing tasks (hands on)	20	25.6
Reasoning	14	18.0
	78	100.0

The interview question on the same item confirmed that a high percentage of schools (52percent) of the sample used test items that required recall of knowledge; 31percent used items that involved performance of tasks while a low percentage (18percent) used items that required reasoning.

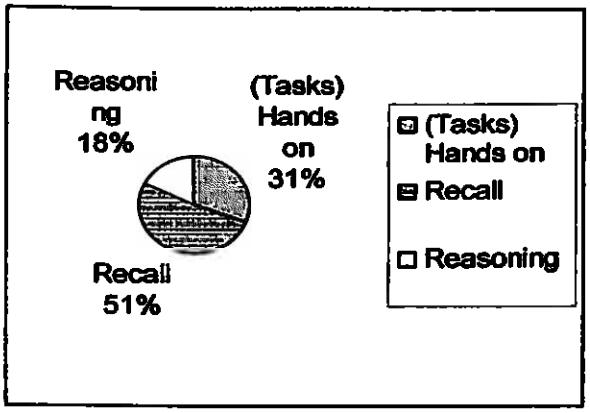


Figure 4.3. What are pupils required to do in order to answer assessment items

The findings from the document also indicated that most of questions required recall of knowledge while a few required some activity, for example, activities that were expected to done by pupils in maths were, counting given drawings and the like that a child could use to get the answer for some items. Also, findings indicated that there were questions that required reasoning of the child to come up with the answers.

For example; **what is the next number? 4, 8, 12,**

(Appendix 7-school evaluation test mathematics standard two term two-2009).

The researcher also got interested in finding out the number of questions used to assess pupils as he interviewed respondents. This was done to see whether they considered the mental age of the pupils as shown by mental developmental theory of Jean Piaget. The following were the responses.

Table 4.5-Number of questions given

Number	Responses	percent
1-20	8	10.25
21-30	22	28.21
41-50	48	61.45
	78	100.00

The table indicated that most schools gave 50 questions to their standard one and two pupil. The researcher also got interested in finding out who set questions for their pupils. Findings indicated that private schools set their own questions while public schools bought commercial papers and either picked what they preferred or gave the whole paper the way it was set.

4.2.4 School test and model test

18 pupils of grade 1 and 20 pupils of grade 2 were selected randomly as a batch from class of 56 and 80 respectively. They were given materials and instructions on assessment. They were then given test items where they performed activities to get the answers, the teacher observed and awarded marks. See (appendix 6 and 7). At the end of assessment process bathe researcher compared the score of schools tests and the model tests of hands on items. The scores indicated a substantial improvement of a mean score of 18percent and 16percent where the low performers in the school test registered greater improvement than high scores...

4.2.5. Teachers knowledge of Piaget mental development theory

In responses to questionnaires with categorized responses, the respondents indicated that they did not know or recall what Piaget theory said. They also indicated that they did not know any other theory on mental development of the child.

From the research findings 8 out of 78 teachers who were interviewed indicated that they had heard about Piaget while at college but could not remember what it was all about. 2

out of 78 confused Piaget theory with Pavlov (Classical conditioning) where he used food and bell to condition a response in a dog.

4.3.1 Problem in testing

The researcher asked his respondents if they had any problems in assessment of standard one and two. Their responses were as shown in the following figure;

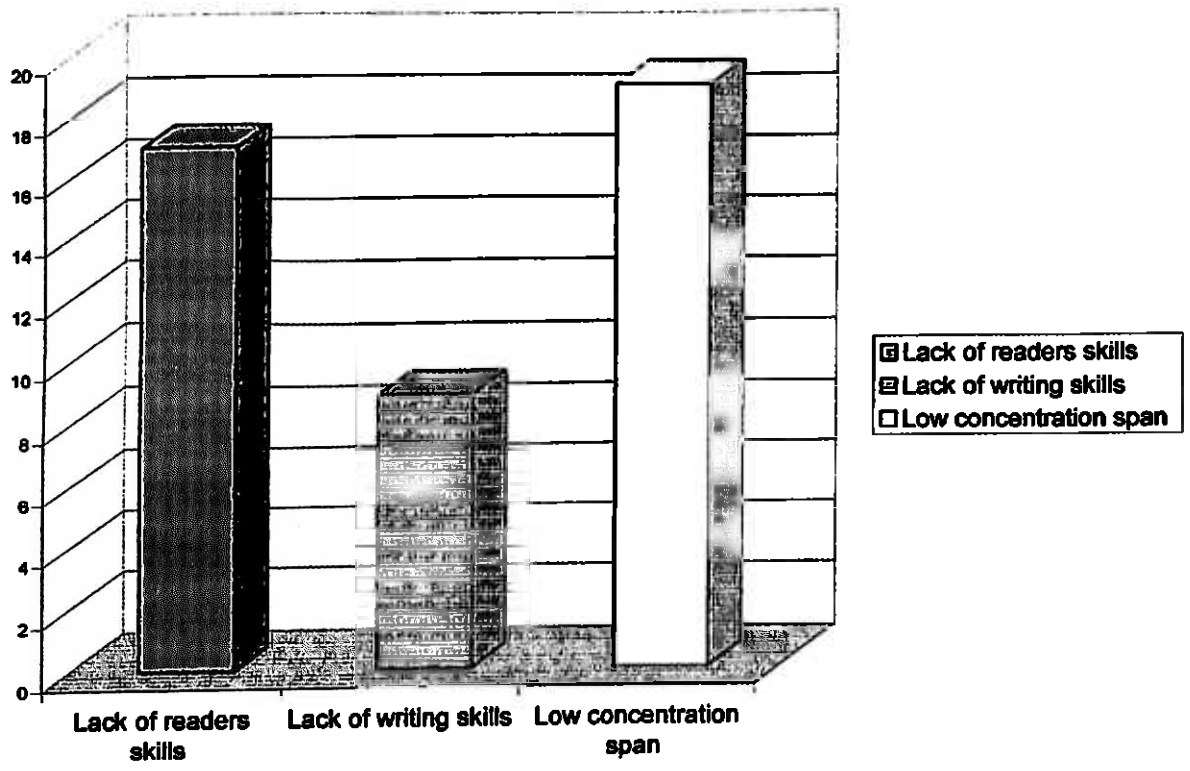
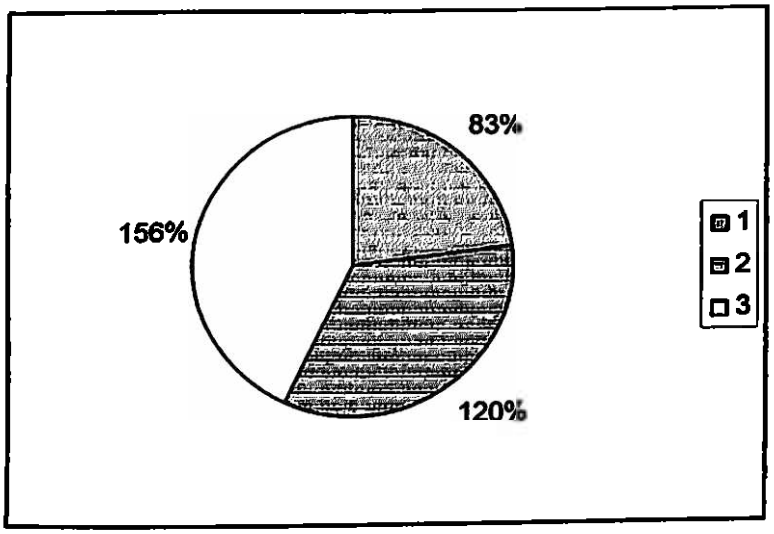


Figure 4.4 Problems in testing

4.3.2 Suggested remedy by teachers

The researcher got interested during the research to ask teachers to suggest ways of handling the problems they had during assessment. Their responses were as shown in the figure below;



1. Carry out remedial work
2. Discuss with parents about weak children
3. Give fewer question

Figure 4.5 suggestion by teachers on how to sort out problems they encounter in testing

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS.

5.0 Introduction

This chapter summarizes findings of the study; it has included conclusions and recommendations of the study.

5.1 Summary of findings of the study.

On the background, it was established that the majority of schools 90percent have female teachers teaching grade one and two in Bungoma east district. It was also established that public schools were over-enrolled in class averagely 85 per stream while private schools had low enrolment of averagely 25 per class. It was also established that teachers who were teaching both public and private schools were trained. They were either form four or form six levels of education.

- It was also established that schools' main objectives of assessing grades one and two was to check pupils' ability on syllabus coverage.
- Written work was the only instrument used to test grades one and two without materials or activities involved during assessment.
- Syllabus was the guiding factor for selecting assessment instruments for pupils of grades one and two.
- When a model test was given to pupils who were involved in performing some activity in order to get the right answers to the questions, low performers of the school tests improved substantially on the scores as compared to the high

performers in the school tests. However, those who had high scores in the school tests remained with high scores even in the model tests. The performance indicated that those who improved much on assessment were the low performers in the school test.

- It was also established that teachers in both public and private schools were not aware of mental development theory postulated by Jean Piaget as such did not use it in teaching and assessing grades one and two.

5.2 Conclusion

Based on the findings the following conclusions were made:

Schools lacked adequate staff for handling standard one and two to enable streaming of classing to manageable teachers pupils ratio.

There were inadequate teaching and learning resources especially in public primary schools to ensure that lessons are actively oriented where children were to interact with materials to internalize what was taught such that pupils could explain the answer because of practicing what they learned.

- The teachers were only interested in testing the ability of their pupils on syllabus coverage. There was no indication of considering the age of children nor checking teaching methods which if done could improve children's' understanding of subject matter.
- The items used to assess standard one and two test only recall of knowledge with no regard to skills than children need to acquire and use for solving related or new problems

- Test items used in assessing standard one and two were guided by the syllabus coverage with no regard to children's age to address the mental ability of the children. Including items that require reasoning in tests was revealed. It does not heed to theories of mental development which advocated for hands on learning
- The number of questions given to standard one and two are fifty in public schools. They are bought by schools. This practice does not consider what the teacher has covered with his or her classes as such disadvantage children who are tested on topics they have not learned. Low performers in the school test improved significantly in a model test which involved activities in the assessment items. This indicated that with activities most of pupils in grades one and two understood well than when they were subjected to items that required the use of abstract thinking to get answers.
- . There was no use of Piaget's theory of mental development which would have guided teachers towards understanding of their learners in order to plan appropriate methods, suitable activities for instructions and assessing instruments that would be suitable to the level of their children.

Theories of mental development were either not taught or not given emphasis in primary teacher training college to enable teachers to practice them in the field. Taking into considerations that standard one and two are children whose mental development is not yet mature to think in abstract terms, hands- on assessment indicated that if it was used, it assisted low performers significantly than high performers. Hands- on assessment improve the scores of low performers.

5.3 Recommendations

There is need to improve in teacher pupil ratio so that teacher may handle a manageable class to enable teachers to attend individual children as required.

Teachers need to use materials during assessment to make the process activity oriented to draw pupil's interest and also to develop their talents and problem solving skills.

- As much as the teachers asses pupils to check their ability, assessment could also be used to check teaching methods so that they can vary their teaching approaches/methods as guided by the performance of pupils in assessment.

  Test instrument should not just be use to test recall of learned knowledge which promotes rote learning. Instead activities should be used to enable children discover new information by themselves rather than depending only on what the teacher tells them.
- Tests are to involve most of the hands-on items to keep children busy and motivated as they interact with materials. This would make them enjoy answering assessment questions, and answer with understanding such that they could explain or demonstrate how they arrived at their answers.
- Setting of assessing instruments should be pegged on the level of mental development of the child, set in way the child could be able to understand. Items should also take to consideration concentration span of the children such that they should not be too many as 50 like those of K.C.P.E. The children are still in pre-operational stage where their schemes are still developing as such their structures of organizing information were still developing.

- Test item should not just be guided by the syllabus coverage but by the mental maturity of the children. Considering mental maturity would enable the setting of questions on topics in the syllabus to be set in a way that they are accompanied by activities which would make the child find the answers easily without involving reasoning? .

  Activities used in teaching and assessment should be suitable to the mental level of children in pre-operational stage (6-7) in grades one and two.
- The syllabus for primary teacher's colleges to include and put more emphasis on mental developmental theories of children to enable qualifying teacher be equipped with knowledge and skills of handling children in low grades of which their course entails.
- The Education Ministry could organize for in-service for teachers who were practicing so that they can apply this mental developmental theory knowledge in their teaching and assessment processes.

5.4 Areas for further Research

i. Similar research to be carried out in other districts in Kenya.

ii. A study on cause of primary schools preferring commercial papers for assessing pupils especially grades one and two instead of their own teacher made tests.

Compare performance of pupils that use teacher made tests and commercial tests

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APPENDIX 1

QUESTIONNAIRE FOR TEACHERS

BACKGROUND INFORMATION

I am Mutembete Cosmas Juma, a master student at the University of Nairobi taking Measurement and Evaluation Course. I do request you to answer the following questionnaire to help me get information that will enable me in my research. Information in this questionnaire shall be treated as confidential and will not be given out to anybody. Information will only be used for research purposes.

Please answer by ticking in box corresponding to your answer [V]

A. GENDER Male [ ]

Female [ ]

B. AGE 22-31 [ ]

32-41 [ ]

42-51 [ ]

52 and Above [ ]

(C) HIGHEST EDUCATION LEVEL

Form Four [ ]

Form Six [ ]

University [ ]

(D) COLLEGE TRAINING

Trained [ ]

Training [ ]

Untrained [ ]

(D) HIGHEST INSTITUTION

Certificate College	[ ]
Diploma College University	[ ]
Degree	[ ]
Masters Degree	[ ]

(E). ENROLMENT PER STREAM

	CLASS 1	CLASS 2	CLASS 3
(30- 40)	[ ]	[ ]	[ ]
(41- 50)	[ ]	[ ]	[ ]
(51- 60)	[ ]	[ ]	[ ]
(61- 70)	[ ]	[ ]	[ ]
(71- 80)	[ ]	[ ]	[ ]
(81- 90)	[ ]	[ ]	[ ]
(91 and above)	[ ]	[ ]	[ ]

QUESTIONAIRE FOR TEACHERS ON ASSESSMENT

PLEASE ANSWER Q1-5 BY TICKING THE MOST APPROPRIATE OPTION.

1. What is the major reason for testing class 1 and 2 in your school?

(A)Promotion to the next class

(B) Checking pupils ability

(C) Checking teaching methods

(D) Checking syllabus coverage

2. Which of the following tests do you use most frequently in your school for class 1 and 2?

(A) Oral work

(B) Written work

(C) Practical work

(D) Project work

3. What do you consider most when setting questions for standard 1 and 2 in your school?

(A) Syllabus coverage

(B) Age of the pupils

(C) Class/grade level

(D) Topics covered

4. What do most of the test items you use for assessment require children to do in order to answer them?

(A) Recall of knowledge

(B) Memorization

(C) Manipulation of objects

(D) Reasoning

5. What theories do you put in use when teaching and assessing grades 1 and 2? (Tick those applicable)

A. Sullivan theory

B. Piaget's theory

C. Brunner's theory

D. Dewey theory

E. Others (specify)

Question 6 – 10 answer by filing in the blank spaces

6. Do you test class 1 and 2? _____

What is the reason to your answer? _____

_____

_____

7. What methods do you use more frequently when you want to judge the progress and ability of the pupils?_____

_____

_____

8. What are some of the important things you consider on your pupils when designing test items for item?

_____

_____

_____

9. What do you involve your children in doing before and during assessment exercise?

_____

_____

10. What important points would you consider for using each of the following theories in assessing std 1 and 2

Sullivan theory _____

Piaget theory_____

Brunner theory_____

Dewey theory _____

APPENDIX (II)

INTERVIEW SCHEDULE

(A).**Objectives for assessing grades 1 and 2 in Bungoma district**

(a) How frequent do you assess your pupils in a term?_____

_____

_____

(b) What makes you administer such number of assessments?_____

_____

_____

_____

(c) What do you do with the results from assessments you carry out?_____

_____

_____

_____

(B). **Types of assessing instruments used in assessing grades 1 and 2.**

1 (a) How frequent do you assess in your subject? _____

_____

_____

_____

(b)Which one of these tests do you prefer most when testing pupils [oral, written, practical or project?] _____

_____

(c) What is the reason for your preference? _____

_____

_____

(d)Which one of the tests in (b) above do you prefer least? _____

_____

_____

_____

(e) What are the reasons for not preferring it? _____

_____

_____

_____

(C) Criteria used to develop assessment instruments

i) Who sets assessment questions for your class? _____

(2)Are your tests multiple choices, structured, or essay type?

_____

_____

_____

(3)What makes you prefer such tests?

_____

_____

(4)What guides you when choosing questions for assessment?_____

_____

_____

(5) What is the reason for your answer?_____

_____

_____

_____

_____

D) Relationship between assessment instrument Piaget's Theory.

I. (a).How many subject's do you teach? _____

_____

_____

(b)How do you tell whether your pupils have understood your lessons?_____

_____

_____

_____

(c)How many questions do you give to your classes?_____

_____

(d) Do most of the questions you use require tasks to be performed before one gets answers or do they require thinking to get answers?_____

_____

e) What materials and apparatus do you use when carrying out assessment exercise?

_____

_____

_____

_____

(E)Piaget's theory and assessment of grades 1 and 2

(1) How do you conduct your assessment process in class?_____

_____

_____

(2)Do children take tests individually or in groups?_____

_____

_____

(3)What makes you have such approach in testing 1 and 2 grades?_____

_____

_____

(4)What are other ways of assessing ability of grades 1and 2? _____

_____

(5) (a)What theories do you put into use when teaching and assessing grades 1 and 2

(b) What makes you prefer the tests commonly used in assessing grades 1 and 2?

(c) What problems do you encounter in assessing classes 1 and 2?

(d) What do you recommend as ways of addressing the problems you encounter?

APPENDIX (III)

Sample of a Model test for mathematics grade one

(Materials to be used in the test: counters, bottle tops, small stones, sticks, number cards, symbol cards such as 

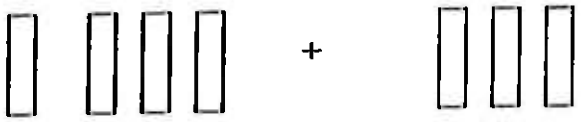
, colored objects, objects of different sizes, abacus, containers of capacities, coins of different values, straight sticks, curved sticks, Rectangular shapes triangular shape) Note: **The objects should be enough for every pupil.**

1. Group objects given according to colour. (Coloured objects are provided to pupils. The teachers, instructs observes and awards marks)

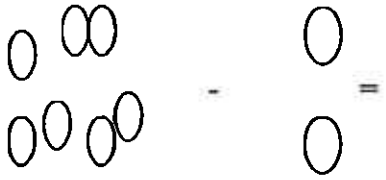
2. Pair group of objects according to size (objects of five varied sizes are provided. Teacher instructs observes and awards marks.

3. Count orally from 1-50 (teachers listens to every pupil and awards marks for every correct tens.)

4. Arrange number cards from 1-50 (teachers observes arranged cards and award marks)

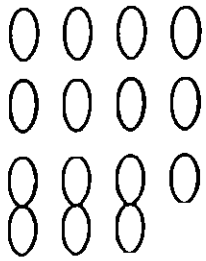
5 

(Child answers by drawing seven sticks)



(Child answers by drawing the objects for the answer)

7. How many objects are these?



(Child counts and writes a symbol for the answer)

8. Arrange the number cards in order

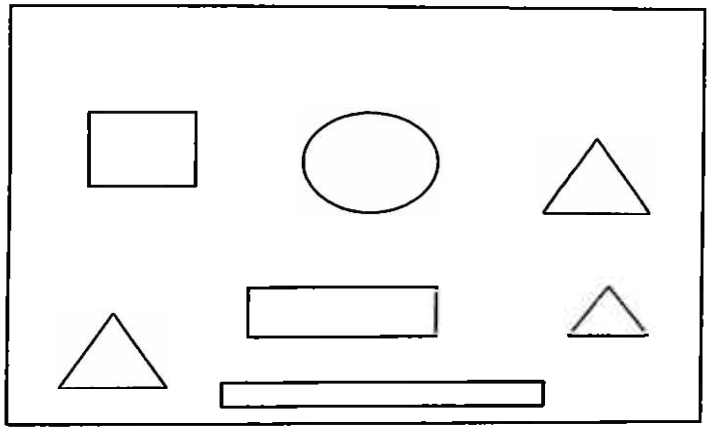
Five	Nine	Seven	One	Four	Two	Six	Three	Eigh

(Child arranges cards; the teacher observes and awards marks)

9 How many sticks ▭ are there from the front to the back of the class?

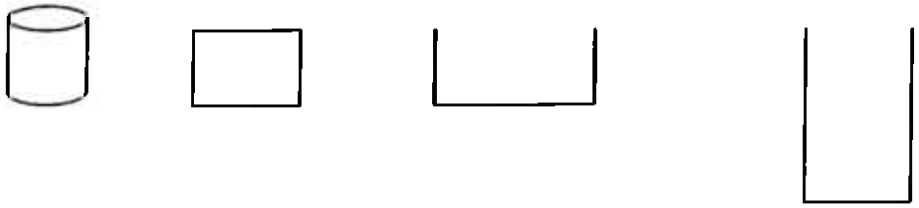
(Child uses a long stick to measure and writes the answer; teacher observes as the pupils measures)

10 How many triangular objects are there in the set?



(The child writes the answer, teacher observes and awards marks)

11. Which contain holds more water use  to fill the containers



1 2 3 4.

Count the number of cups to fill each contain

Appendix (IV)

Std 2 Mathematics model paper

Provide enough materials to all pupils

Bottle tops, number cards, word cards, glasses, containers, metre rule clock faces, calendars, geometrical shapes

1. Put together

000 0

\+ =

00 00

(Pupil draws an answer. Teacher observes and awards marks)

2. Arrange number cards from the smallest to the largest

18 23 14 195 103 21

(Teacher observes arranged cards and awards marks)

3. Match number card with word card

19	Fifty eight
58	Seventy
70	

(Teacher checks finished work and awards marks)

4. What is 5*3?

00000

00000 5*3 =

00000

5. How many groups of three are there in the set?

000000

000000 15/3=

000

6. Count hundreds up to 900

(Teacher listens and awards marks)

7. Arrange Days of the week in order

Friday	Monday	Saturday	Thursday	Sunday	Tuesday

APPENDIX (V)

Standard 1 Mathematics

Name	Test used at school percent	Model Test percent	Positive Deviation
1. Mofat	84	84	0
2. Nekoye	80	84	4
3. Samuel	76	80	4
4. Mercy	74	88	14
5. Wafula	56	67	11
6. Emily	52	78	26
7. Dorcas	46	84	38
8. Irene	45	66	21
9. Mutenyo	42	70	28
10. Joseph	40	74	34
11. Emmanuel	38	62	24
12. Barnabas	36	68	32
13. Shadrack	34	52	18
14. Sarah	32	60	28
15. Karen	28	50	22
16. Franco	24	50	26
17. Martha	12	40	28
18. Simiyu	08	40	32
Total	**807**	**1134**	**227**
Mean	**44.83**	**63**	**18.17**

APPENDIX (VI)

Std II Mathematics

Name	Test used at school percent	Model Test percent	Positive Deviation
1. Stephen	72	80	8
2. Barasa	68	76	8
3. Stella	66	70	4
4. Patrick	62	72	10
5. Joan	60	70	10
6. Jane	58	72	14
7. Judith	56	68	12
8. Daniel	52	60	8
9. Phillip	50	68	18
10. Rose	42	60	18
11. Jentrix	40	54	14
12. Isaac	40	68	28
13. Wekesa	38	50	12
14. Wafula	30	52	22
15. Naliaka	28	40	14
16. Tadi	26	40	14
17. Mary	20	48	28
18. Annet	16	36	20
19. Dick	16	44	28
20. Tonny	08	32	24
Total	848	1160	
Mean	42.4	58	+16percent

APPENDIX (VIII)

TRIAL SERIES

STD 1 - END OF TERM 2 - 2009

MATHEMATICS

Name ..... *School* .....

Add

1.  = _____

2. 4 + 3 = _____

3. 5 + 4 = _____

4. 4 + 4 = _____

5. 3 + 6 = _____

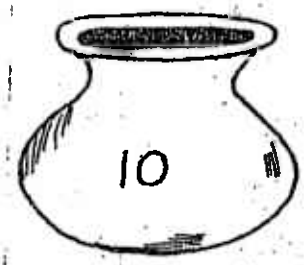
6. 7 – 6 = _____

7. 9 – 8 = _____

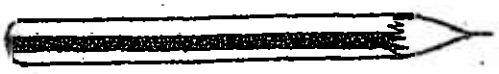
8. 4 – 3 = _____

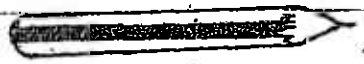
9. 6 – 3 = _____

10. 10 – 4 = _____

11. 

Which holds less? _____

12. A 

B 

Which one is longer? _____

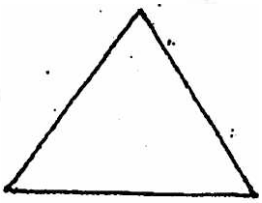
Write in words

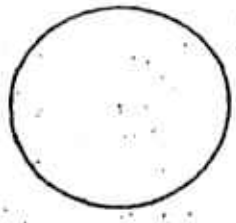
13. 2 - _____

14. 6 - _____

15. 7 - _____

Name the shapes

16.  _____

17.  _____

18.  _____

19.  _____

(star, circle, rectangle, triangle)

20. I have _____ eyes.

21. 6 + 13 = _____

22. 3 + 11 = _____

Write in symbols

23. Seven = _____

24. Eight _____

25. Ten _____

Write the missing numbers

26. 1 ___ 3 ___ 5 ___ 7 ___ 9 ___

27. 11 ___ 13

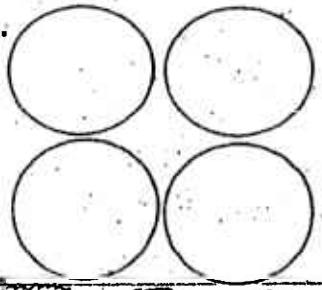
28. 3 tens 7 ones = _____

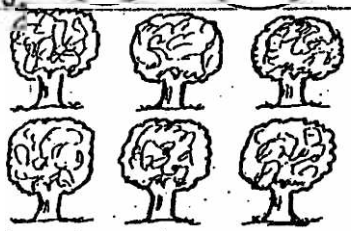
29. 1 tens 5 ones = _____

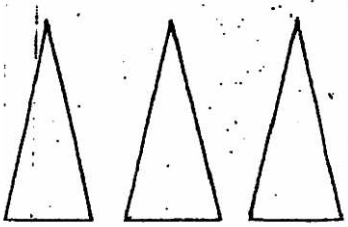
30. 25 = _____ tens _____ ones

31. 38 = _____ tens _____ ones

Count and write the number

32.  = _____

33.  = _____

34.  = _____

35. 40 + 0 = _____

36. 3 – 0 = _____

37.
$$\begin{array}{r} 14 \\ +\ 4 \\ \hline \end{array}$$

38.
$$\begin{array}{r} 22 \\ +\ 2 \\ \hline \end{array}$$

39. 12 + 11 = _____

40. 5 + 31 = _____

41. A triangle has _____ sides. **(three, five, four)**

42. Write in order.

5, 6, 7, 9, 4, 10, 1, 3, 2, 8

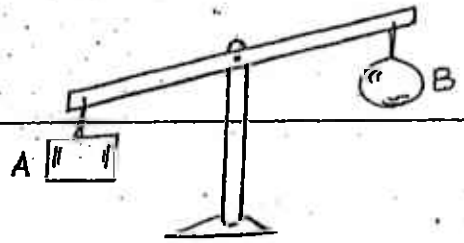
_____

43. There are _____ days in a week. **(7, 5, 4)**

44. 7 + ☐ = 8

45. 3 + ☐ = 5

46. Which one is heavier?



47. This is a _____ line

(straight, curved)

48. Monday, _____, Wednesday **(Tuesday, Sunday)**

49. A cow has _____ legs. **(2, 4, 6)**

50. 2 + 2 + 2 = _____

APPENDIX (IX)

PACESETTER SERIES-004

SCHOOL EVALUATION TEST
STD 2 TERM 2 - 2009
MATHEMATICS

NAME SCHOOL DATE

1. 155 + 215 = _____

2. 762 - 341 = _____

Write in words

3. 33 _____

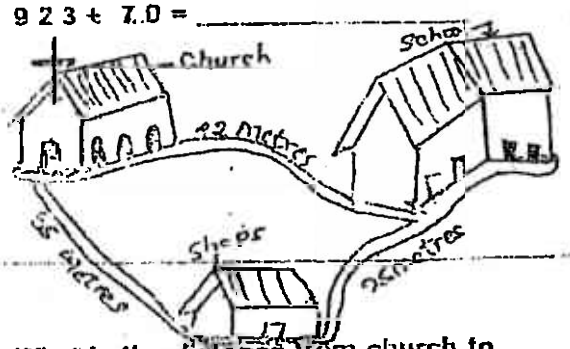
4. 52 _____

5. 62 + 505 = _____

6. 716 + 203 = _____

7. 318 + 161 = _____

8. 923 + 70 = _____



9. What is the distance from church to school? _____

10. Njeri went from church to the shop then to school. How many metres did she cover? _____

11. 12 ÷ 3 = _____

12. 56 − 50 = _____

13. 25 ÷ 5 = _____

14. 16 ÷ 4 = _____

15. 20 ÷ 4 = _____

16. 10 ÷ 5 = _____

17. 4 multiply by 3 = _____

18. Multiply 6 by 2 = _____

19. 12 + ☐ = 35

20. 855 + 30 = _____

21. 666 - 456 = _____

22. 19 - 6 = _____

23. What is the next number?
4, 8, 12, _____, _____

24.

Sh.	Cts
10	40
+ ?	30

_____

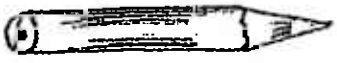
25.

Sh.	Cts.
30	20
+ 10	40

_____

26. Which one is longer?

A. 

B. 

27. Kim had 12 cakes and Charles had 20 cakes. How many cakes did they have?

_____

Take away

28. 20 metres
— 6 meters

29. 19 metres
— 17 metres

30. 169
+ 132

31. 789
+171

32. 247
+136

33. 629
+171

34. 136
— 18

35. 462
—213

36. 792
+43

37. 82
—17

38. A cow has 4 legs. How many legs do 7 cows have? _____

39. Kanji had Sh. 30. He lost Sh. 20. How much did he remain with?

_____

40. Ochieng had Sh. 20. He bought a pencil for Sh. 15. How much change did he get? _____

41. Atieno bought a book for Sh. 18 a a soda for Sh. 25. How much mon did she give the shopkeeper?

_____

42. _____ is the firs day of the week.

43. 14
13
+3

44. 22
14
+9

45. 20 – ☐ = 25

46. ☐ – 16 = 35

47. ☐ + 15 = 75

Write the missing number.

48. 892, _____, _____

49. _____, _____ 890

50. _____, _____, 910

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Date: 3rd September, 2009

Mutembete Cosmas Juma,
University of Nairobi,
Po Box 30197,
NAIROBI

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Use of jean piaget's mental developmental theory in assessment of grades one and two in Bungoma East District, Kenya"*** I am pleased to inform you that you have been authorized to undertake your research in ***Bungom East District*** for a period ending ***30th December 2009.***

You are advised to report to ***the District Commissioner and the District Education Officer Bungoma East District*** before embarking on your research project.

Upon completion of your research project, you are expected to submit two copies of your research report/thesis to our office.

PROF. S. A. ABDULRAZAK Ph.D, MBS
SECRETARY

Copy to:
The District Commissioner
Bungoma East District

The District Education Officer
Bungoma East District