

LEARNING VOCABULARY THROUGH SITUATIONAL
GAMES BY PUPILS OF MIXED ABILITY IN LOWER
PRIMARY CLASS III.

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BY
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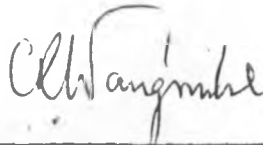


Miss Mubina Hassanali

" This thesis has been submitted for examination with my approval as University Supervisor."



Mrs Alice Nabwera



Mr Christopher Wangombe

Everything must go wrong
As soon as any one
Has had power for days

(Ella Germain)

This is happens with individual
help, aid, assistance, support
a major role. Systems therefore
such type of co-operation.

I am indebted to the following
contributions towards by Charles, William
and John Hagedorn.

TO MY MUM

AND

IN LOVING MEMORY OF MY DAD

Mrs Alice Hagedorn

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Mr J. Crawford

Mr Peter

Mr John Hagedorn

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Everything must go wrong
As soon as any one
Man took power for himself.

(Zola Germinal)

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TO COMMEMORATE
THE INTERNATIONAL YEAR OF THE CHILD - 1979

"

You may give them your love but not your thoughts,

For they have their own thoughts.

You may strive to be like them, but seek not to make them like you.

For life goes not backward nor tarries with yesterday.

You are the bows from which your children as living arrows are sent forth.

The Archer sees the mark upon the path of the infinite, and He bends you with His might that His arrows may go swift and far.

Let your bending in the Archer's hand be for gladness;

For even as He loves the arrow that flies, so He loves also the bow that is stable. "

From: 'THE PROPHET' By Kahilil Gibran.

1979 - INTERNATIONAL YEAR OF THE CHILD



gw

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A B S T R A C T

The study is school based to investigate the relative effectiveness of two different teaching strategies of learning vocabulary. Standard III pupils of both sexes, average age $8\frac{1}{2}$ years were the subject and the project was carried out in primary schools in Nairobi. See Appendix II.

The Objectives of the study were :-

1. To evaluate the relative effectiveness of a formal method, intending to typify currently prevailing model of instruction in Kenyan primary schools and

An innovatory method based on situational games.
2. To assess the relative retention of learning vocabulary under the two strategies.

From the provided list of City Education Primary Schools, two schools were selected which did not differ to a great extent in size, location, provisions and as a minimum requirement had two streams at standard III level. One of the two schools was also used for Pre-test trials and practice lessons. Standard III pupils were chosen with consideration to the intellectual ability of age level. The pupils at this stage have also acquired certain graphic and language skills enabling them to understand instructions put forward by the researcher.

On the basis of the Pre-tests and in situ teachers' records 3 groups of matched pupils were identified.

The group size was 11 in one school and 12 in the other. Group A (experimental) was exposed to the innovatory method. Group B (control) was exposed to the formal method. Both groups A & B were taught by the researcher. Group C (teacher's) formed a second control group, and was taught by the class teacher.

The word list from which items were selected for teaching and testing were taken from Progressive Peak Course Book 3. The Progressive Peak Course is the recommended course for the first three years of primary English and Book 3 was therefore considered appropriate source of word items for this project. Detailed plans for eight lessons in each of the two methods were drawn up after consultation with the selected schools to ensure that the words to be used were ones that would have been introduced at the time of the project in any case. Eight 40 minute lessons were given to each of the groups and the principal objective was to teach meanings of about 5-8 selected words. Reliability of the Post-tests was evaluated by drawing up a table of item analysis during the trial period. The effectiveness of the lessons was evaluated by administering modified Post-test P I and P II to each group after the 4th and 8th lessons respectively. To evaluate retention, a third Post-test which was a composite of the first two Post-tests was administered after a period of 4 weeks after the 8th lesson. The student t-test for matched pairs was used to measure the relative effectiveness of the two teaching strategies.

The following conclusions were drawn :-

1. There was significant difference in performance on Post-test PI and PII between the experiment and control group at a level greater than 0.01.

(iii)

There was no significant difference in performance on Post-tests I I and PII between the Control and Teacher's group.

2. There was significant difference in performance on Retention tests RI and RII between the experiment and control group at a level greater than 0.01.

There was no significant difference in performance on Retention tests RI and RII between the Control and Teacher's group.

A discussion of the possible sociological and cultural bases of resistance to the adoption of innovatory method in Kenya, together with a feasible mechanism of implementation and erosion of the negative attitude towards this method is presented.

Audio-Visual material in the form of cassette, video-tape, and 8mm. colour film as auxillary illustratory matter are available in conjunction with the thesis.

CHAPTER I

PSYCHOLOGICAL AND PHILOSOPHICAL BASES OF THE STUDY

Language skills (speech, writing, spelling, reading, listening) are an essential component of primary education and this project focuses on one vital element underlying the mastery of these skills, namely, vocabulary. The study concentrates on a particular language skill. It is however supported by knowledge and ideas derived from a number of disciplines viz:

Psychology of children's learning

Educational Methodology

Educational Policy in Kenya

Language teaching

Instructional materials

Games and contests in language teaching

Consequently, the first chapter attempts to review literature covering the above areas and traces the psychological and philosophical rationale on which this project is based.

1.0 REVIEW OF RELATED LITERATURE

The relationship between the development of language and thought in young children has been studied by various eminent psychologists amongst whom the writing and thinking of Piaget has had considerable impact and influence in modern approach to education and it is appropriate to begin the review with a consideration of his work.

Piaget (1951) (1) deals with child learning between ages 7 - 11 years. He asserts that during this particular stage the child becomes increasingly advanced in reasoning.

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He understands the actual process of building complexes of concepts through, 'Concrete Operations' (2) When provided with a practical problem or situation the child can operate by concreting or massing together concepts. The child does this by manipulating the situation through his sensory organs and gradually develops it into an intellectual activity. Piaget later in 1960 calls the above process, 'Operational thought' (3) since the child can reason by operating the material in his mind. It therefore influences the nature of learning through manipulating the situation. Piaget describes the process of assimilation in children by emphasising play. In play he states that the child is free to contribute creatively and find out what meaning the game has for him. The child learns inventively using symbols for what he means and so digests the situation thoroughly.

Effective learning is therefore possible when a child is allowed to play in a created situation. Though Piaget's work was at a clinical level, the above criteria can be of significant educative value. Piaget's work has been supported by a number of psychologists in the Western world and also in Africa.

Berlyne (1957) (4) in his survey, 'Recent developments in Piaget's work' discusses the stage 7-11 years on similar lines as explained by Piaget. He emphasizes the necessity of providing the child with a coalesced situation for preliminary examination. Berlyne interprets the process of 'Concrete Operations' as a

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basic stock of reliable percepts becoming organized into coherent systems so that the child can perceive the situation, clarify concepts and reason about them.

Peel (1959) (5) at Birmingham wrote an account of an experimental examination of some of Piaget's work concerning children's perception and thinking and discussed its educational significance. He stressed the importance of experience, for it was through experience that the child was provided with the opportunity to perceive through the sensory organs.

Similar suggestion was put forward by William (1961) (6) while concluding a symposium at London University. Basing the argument on his Ph. . research findings that there was rapid increase in word recognition between the ages 7 and 8, he reinstated the pertinence of utilizing this age level opportunity and provide ample experience to help children attain optimum learning. William reported that more research on speed of progress in vocabulary at age 8+ was required.

The maturation of word-recognition in children aged 8 was also established by Case and Collinson (1962) (7) in their report at Birmingham on the development of formal thinking and verbal comprehension. They carried out experiments based on Piaget's stages of thought and used as subject 90 children from primary and secondary schools. They concluded that formal thought in language was affected by cultural background

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and experience.

Pickard (1970) (8) reflecting Piaget's work stated that children aged 8 - 12 years could carry out all forms of reasoning provided the problems were sufficiently simple and they were provided with actual situations, which children could manipulate before they internalized and organized concepts for complex reasoning. While tracing the studies carried on children's psychology of learning, Pickard explained the urgency of teachers carrying out research along the line of Piaget's work so that teachers could themselves see the ways in which children of differing ages and abilities worked out problems. This he suggested would acquaint teachers with the real nature of children's learning with reference to learning situations.

The African view point as portrayed by Fox (9), Durojaiye (10) and Ocitti (11) are consistent with the works of Piaget and other Western psychologists, in that they consider manipulation of environment through play an integral consideration in child's learning.

In the book, 'African Childhood' edited by Fox (1967) (12), Lijembe and Apoko describe their childhood experiences while growing up amongst the Baluhya and the Acholi respectively. Lijembe relates his favourite play time which included collective games in the village. Looking back through these play activities he comments,

" I developed my imagination, made discoveries about the world of nature" (13).

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Later during his primary school years he realized the educative value of play.

Apoko recollected the Acholi children improvising or making toys out of local materials such as leaves, tins, maize cobs. She remembers it as inducing total involvement and enjoyment amongst the children. An aim which most educators hope to achieve within classroom situations.

Durojaiye (1976) (14) dealt with educational psychology in the African context with a purpose to understand how learning processes in African children could be effectively guided by taking into account the special circumstances of the African setting. He stipulated the need to organize relevant situations for meaningful learning to take place. The experience gained by manipulating such situations would allow all round development in children. Durojaiye suggested that teachers should introduce suitable learning experiences, preferably pleasurable, to make it easy for the child to the attainment of the developmental goals.

The significance of environment and play in learning has also been discussed by Ocitti (15) while reporting on the Acholi children. Citing environment as the prime factor in Education, he related its use, which thus provided scope, outlets, ideas and channels of exercise and allowed varied possibilities of human development. Ocitti explained that

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through the medium of play, children learned how to manipulate materials and acquire skills for future adult activities. Children learned all types of shapes, sizes, colours and textures of objects. He concluded that play constituted a very important aspect of social environment of the growing Acholi children.

The concept of play in children with reference to its educational value is therefore received favourably by most African psychologists. However, concern is shown by Geber (1962) (16) over lack of such a stimulus amongst most African children especially after the age of three, which led to a considerable decline in their physical growth. Geber found that at a younger age the child not only exhibited rapid physical development but was able to communicate with others. To study the physical development of the African child, Geber used a series of Gessell tests on children from birth to more than three years of age. The trend shown in her statistics indicated that the younger the African child, the more advanced he was over his European counterpart. However, after weaning the African child showed a marked difference in behaviour and Geber attributed this to the change of attitude in the mother towards the child. There is difference in cultural approach to child rearing amongst the Africans and Europeans. Traditionally, in the former the childhood span is considered to end after weaning, resulting in withdrawal of attention and treating the child more as

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an adult.

Similar concern has been shown by Ferron (1964) (18) while looking at the intellectual growth of West African children. He concluded that the existing child rearing practices in West Africa were detrimental to the growth of western skills. Some of the practices that Ferron saw as contributing to low quotients included a lack of verbal stimulation, the relative absence of an atmosphere of approval and encouragement, lack of adult attention, mechanical approach to learning, lack of encouragement to children to ask questions and explore their environment.

In view to child rearing practices therefore the African psychologists have to persuade the parents that the child is a child and not an adult.

Considerable amount of literature on modern methods of teaching has been written advocating child - centred education. The aim is to replace the old approach to teaching which made the teacher focus of attention. The current trend is to make the child responsible for his own learning through discovering and participating actively in learning situations. Implementation of activity methods have infact been proposed by such influential authors as Ace (19), Bruner (20), Gage (21) and Halliday (22).

Ace (1956) (23) at Plymouth made a comparative study of two methods of teaching in two different

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remedial centres, over a period of 117 sessions in the first half of 1955. He used the mixed method which included a phonic approach and display of sentences for children to 'Look and Say' (24). The Moxon Method was a visual approach and required children to participate actively. The Moxon Method made significantly more progress.

Bruner (1961) (25) suggested that a child should be involved in learning through discovering situations. Such a method he explained would help to increase the learner's ability to relate learnt material to other situations. It fostered the child's interest in the activity itself rather than the reward which may follow from the learning. It developed ability to approach problems in a way that would more likely lead to a solution and the material learned was easier to retrieve or reconstruct.

Gage (1963) (26) highlighted the problem of implementing activity methods. This he complained was because teachers' class activities are never consistent and teachers themselves suffer from the dualism of what they are expected to do and what they actually do.

Halliday (27) a linguistics scholar specified seven models which indicate some of the ways in which children learn. The last three stages in the model, namely heuristic, ('Tell me why'), imaginative ('Let's pretend'), and representational ('Let me tell you') (28)

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are consistent with the activity methods. The child through investigating his environment learns to reason, identify and relate his experiences more effectively.

The educative value of Halliday's imaginative model has been probed into further by Imbuga (1976) (29) who has concentrated on one particular aspect and that is the technique of Improvisation with reference to school situation. His study contributes a lot if extended into the area of methodology. Since emphasis is laid on relating education to life experiences, improvisation can at a substantial level promote human creativity and enhance deeper understanding of the learnt concepts.

" Improvisation may be effectively used as means of discovering the meanings and implications of the content of the text instead of merely interpreting them through discussion of the written word... Improvisation is a richer and more practical way of feeling than being tickled by mere words".
(30).

The above comment was made by Imbuga on the spur of controversy regarding usage of improvisation for understanding literature texts. He postulated that parts of literature could be improvised to gain better understanding of the text. Improvisation therefore fits well into activity methods because it allows the learner to operate the situation fully and through the experience gained, come to meaningful

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understanding of people and events.

Currently, there is a preponderance of teacher centred/book centred classroom situations in Kenyan Primary Schools and consequently research and reports on educational policies in Kenya reveal dissatisfaction to an extent in the methods being used. Complaints have been staged in the educational reports on use of methods by teachers which are likely to turn pupils into passive receivers of knowledge. Over-emphasis on drill methods too have been criticised. Emphasis on modern child-centred approach and suggestions of activity methods have been recommended as early as 1952 in the Binns Report.

The Binns Report (1952) (31) which surveyed educational policy and practice in British Tropical Africa credited on instigating a revolution in teaching methods. The purpose was to improve the quality of teaching.

" Changes in primary schools should have their expressions in colleges where teachers are trained. The classroom situation should be pupil-centred and not teacher dominated. The release of pupils' eager desire for knowledge and skill must be sufficient to carry them through the drudgery of repetition. Imitativeness should be balanced by creative work. The quiet hum of group conversation should be more usual than the silence or chanting of the whole class in unison. Discussion should replace questions and answer and

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pupil work by pairs or groups or individuals should be more usual by class" (32).

The Binns Report also showed concern over learning of second language.

" Perhaps the main damage from one teaching medium to another has lain in the loss of meaning" (33).

To avoid such a loss it suggested that language symbols should be learnt by associating them with experiences so that they are found in the right context.

The first Teacher Education Conference (1956) (34) re-affirmed the recommendation made by the Binns Report on the need for teaching through activity. The conference however, tackled the problem of quality at a much superficial level by directing it to Teacher Colleges without examining the actual classroom practice in primary schools.

The Kenya Education Commission Report I (1964) (35) chaired by Ominde, was the first general educational survey after Independence since the English medium programme had been introduced. While it reported on some good progress made in the quality of teaching it disapproved of the prevalent formal approach to presentation of materials.

" Nobody who is familiar with the primary school will be unaware of the occurrence of the the drill methods of teaching, of an authoritarian

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tone of voice on the part of the teacher, of a neglect of activity methods and pupil participation, of little attempt of grouping The fact is that most important reform of all is still lacking. Not until our education is truly child-centred, will these difficulties of approach finally be overcome". (36).

The report stated its concern over lack of research being undertaken into problems of educational psychology in an African context and against the African background. It was essential for the teacher to shift his attention to the child, learn his play habits and guide this into constructive channels.

New directions in teacher education and teacher education conferences between (1964 - 1971) (37) discussed problems of teacher education and proposed educational programmes with the aim of improving the quality of teaching in schools. This was also the time when New Primary Approach in lower classes was further encouraged.

The success of New Primary Approach was later indicated by the study of the Curriculum Development in Kenya (1972) (38). It stated that child activity and discovery methods had replaced the traditional and formal class teaching. The study however, fails to support it with any statistical proof and the dissatisfaction in the quality of teaching was once again revealed by the Gachathi Report. Report of the National Committee on

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educational objectives and policies (1976) (39) chaired by Gachathi pointed out that the qualitative attributes of the teacher were paramount in determining the quality of education. Improvement in the quality of education was regarded by the committee as one of the important priorities. The report declared the basic requirement of making education relevant to the day to day problems. This, it was suggested would enable the students to be actively involved in observing, gathering and interpreting data about the environment and solving problems. Such a suggestion reflected further the need of child-centred education oriented with active participation by the learner in relevantly created situations.

The discontent accentuated by the reports since the 1950's on the quality of education led Sifuna (1973) (40) to carry out a survey on the impact of New Primary Approach on the quality of teaching in primary schools of Kenya. His conclusions revealed a lack of children-centred lessons, and stressed the need of activity methods since they were in line with the educational aims.

Persistent concern over the quality of education in primary schools therefore justifies the rationale to carry out research on teaching methodology so as to work out suitable teaching strategies which support the Kenyan educational objectives.

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There is an existing body of resource materials suited to the modern teaching style relating to Language skill acquisition.

A number of books on English Language have been prepared specifically to help learners acquire vocabulary. A wide variety of methods are suggested ranging from use of dictionaries to a list of interesting word-games.

Witty and Grotberg (1964) (41) advanced two ways in which vocabulary could be improved. These were by (a) learning new words and (b) learning new ways to use the words. The first section of the book entitled, 'Building your Vocabulary' (42) concentrates on techniques of adding new words through synonyms, roots, context clues and use of dictionary. The second section, 'Enriching and Sharpening your Vocabulary' (43) suggests how new and old words can be used more effectively. The book is meant for individuals aiming to acquire vocabulary at their own pace and time. Picturesque illustrations are provided with the purpose of helping learners clarify work-concepts. The word building exercises provided at the end of each chapter are useful in establishing a vast word repertoire.

Rodgers (1965) (44) wrote a book intended to teach words efficiently, deliberately, systematically and in impressive numbers. It is also a practical book building gradually from facts to insights, from principles to techniques, from knowledge

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about words to knowledge of words. Its overall objective is to elevate the normal and natural method of learning words to the status of a self-conscious art. To this end it examines the nature, function and uses of words, the various ways and degrees of knowing them and the conditions under which they can be learned. It also provides a series of exercises intended to carry the theoretical material of the text into the realm of immediate practice. Rodgers has also suggested games like Scrabble, Anagrams, Tumble-Word, Spill - and - Spell to induce vocabulary learning.

Hill (1969) (45) prepared an illustrative picture book of 1,040 pictures for elementary school children. A question is stated at the top of each picture. A typical question format is as follows :-

Question	- What is this?
Expected Response	- It is a horse.

Most pictures require one word answers. The pictures offer a visual challenge to the pupils. Brief discussion could be encouraged for teacher/pupil or pupil/pupil interaction.

The first two books by Witty and Grotberg (46) and Rodgers (47) are meant mainly for adults. They are useful for those who aim at building vocabulary at their own pace. The picture book by Hill can be helpful in teaching children words in isolation. The children are expected to recognize the picture and respond by calling out an

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appropriate word for it. From the literature available on English Language Vocabulary not much can be traced to help children learning English as a second language. This illustrates a need to prepare material which will help these children learn vocabulary both interestingly and meaningfully through its usage in the right context.

A few books on Instructional Media have been written providing a range of resources that could be utilized in classrooms for teaching English as a second language. These books however focus mainly on the visual approach to teaching language.

Corder (1966) (48) states that Visual methods can be equally effective in teaching language and content subjects. He offers a list of visual materials that could be displayed in the classroom to help children learn meanings of words. His main concern has been on a Visual approach, and therefore he has not included other learning resources that concentrate on sound, tactile senses, improvisation etc., which could prove equally effective in creating situations for learning.

Another useful handbook on preparation and use of Visual aids in foreign and second language teaching has been written by Lee Coppen (1968) (49). The book describes a list of simple and cheap aids thought useful for those training to be teachers. It is however not a book on methodology, though this is given more than a passing glance.

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The list of Visual aids include picture material, flannel boards, plastic boards, puppets, clock-face and material for reading. It provides a helpful guide to those teachers wanting to select Visual approach in classrooms.

Apart from the books mentioned above, not much material on Instructional Media is available for teachers of English. The books offer a wide list of learning resources that could possibly be used for language instruction but fails to guide teachers on how these materials could be presented so that they complement effective situations to assist children learn the language in the right context. The problem of effective use of teaching aids by teachers either in language or other disciplines is in fact creating great concern.

Kafu (1976) (5) carried out an analysis on the Elementary Teachers' rationale concerning their use of various instructional material in elementary school teaching in Western Kenya. His main objective was to identify the reasons why teachers in primary schools, despite the availability of materials, fail to use them effectively. Kafu showed concern over the waste of local resources like games, riddles that previously served the tribal or societal needs, not being put to use to create learning situations. Modern equipment too, he complained, lay idle in the school stores. Kafu scales it down to lack of teachers knowledge on how to operate these

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technological materials.

Educators seem to agree that teachers should be made aware of new equipment materials and systems but at present little is being done to bridge the gap between available knowledge and teachers who actually implement this knowledge on the job (51).

Several books have been written illustrating a stock of interesting games and contests that would possibly be used in teaching of English language. These books are prepared for both young and old with the intention of making language learning a pleasant and a stimulating process.

Bruford (1963) (52), principal of Rose Bruford Training College of Speech and Drama has written a book original in its approach covering games and exercises for speech training and word acquisition. She suggests games centred around :-

- a) naming objects
- b) describing imaginative or experienced events
- c) guessing words
- d) collecting list of games
- e) making puppets

The word-games are offered with a purpose to increase learners vocabulary. Perhaps additional exercises to give practice in contextualizing words would help assure that the learner grasps concepts accurately.

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Smith's book (1964) (53) on 'How to double your Vocabulary' is updated to include an analysis of current dictionaries and new material on the etymology of words. The content includes ways of enriching vocabulary through games, word-play, observation on usage of words etc. Practice quizzes and scoring quizzes are added after chapters to check on the vocabulary progress of the reader (54). The list of quizzes is as follows :-

Word play quiz
 Desk dictionary word quiz
 Working Words quiz
 Magazine Word quiz
 Television Word quiz
 Classical Word quiz
 Word Deviation quiz
 Word Cluster quiz
 Literary Word quiz
 Technical Word quiz

The text is composed of vocabulary and vocabulary exercises meant for adults.

Lee (1965) (55) on the basis of educative significance of games for learning language skills has written a book providing interesting games and game like activities both for young and old. He has categorized games under four areas aimed at developing listening, speaking, and writing abilities. There are also games to give practice in the use of particular language patterns. For acquisition of specific language skills Lee has included oral,

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Reading, writing and spelling games. The games are governed by rules and underlined by competitive contests. A broad range of teaching circumstances are borne in mind, and there are games for large and small classes, games requiring simple or no apparatus, and outdoor and indoor games. Lee's book can be very useful for teachers searching for variety in their teaching. The games offered are both exciting and profitable.

Hill (1974) (56) in his book entitled 'English Language Teaching Games for Adult Students' provides teachers of English to help learners improve the command of the more important and common structures (sentence patterns) of English. In each game the teacher is first given the structure intended for practice. Contrast between two or more structures is practised in each game. For e.g. in game 8 (57), the students are given practice in choosing between,

- a) present perfect active
- b) present perfect passive

The word is therefore contrastive, and it is also contextualized, since each choice between contrastive structure arises from the context in which it is used.

Most of the books on games mentioned above deal with a more general aspect of language and limited material is available on how children can be guided on a particular language skill like vocabulary through game oriented

1.0 REVIEW OF RELATED LITERATURE

situations to give ample practice in using words spontaneously within the right context. This brings to attention the need to try out the success of situational games in learning particular language skills amongst children learning English as a second language.

1.1 RATIONALE OF THE STUDY

The review brings to attention certain psychological factors affecting the child's nature of learning probes into the problems and policies of methodology in primary schools, finally followed by suggestions from various authors on instructional media and teaching strategies in the area of particular language skill viz vocabulary.

The educative value of experience and play in child's learning has been traced consistently in the views put forward by the psychologists. The importance of age level with reference to child's nature of learning sets age as an integral factor in determining the type of teaching strategy to be adopted. Child centred education and activity methods have been viewed favourably for primary schooling by modern educationists. However, conclusions from educational reports warrant discontent in the quality of teaching in Kenyan primary schools.

The reason for studying the relative effectiveness of a particular teaching strategy has dissatisfaction partly with view to the above considerations. Situational games have been chosen as a possible

1.1 RATIONALE OF THE STUDY

teaching method since it strikes a convergent balance between learning from both environment and play in support of the observations made by the psychologists. It is also in line with the preferred child-centred education and activity methods, only that it attempts further to orient learning situations with the recommended activity of play.

During the stage 7-11 years the child is in lesser position to think abstractly (57) and this proves to be a critical period since he is expected to learn various skills which require him to conceptualize abstractly. Unless the child has developed an ability to project himself in imagination beyond the confines of his own environment or his direct experience difficulties must necessarily arise when for example he is required in Geography to visualize countries and conditions with which he is unfamiliar with, in Religious Education and History where he is expected to envisage past eras, and in Science where he has to grasp conceptual models. Similar problems are incurred while acquiring a second or a foreign language since the child is expected to conceptualize meanings of words he is not likely to have experienced in relevant contexts. Most children at this stage therefore face problems of stating clearly their thoughts when relating a story etc., (58). They are usually lost for words and it has therefore been thought appropriate to provide children with concrete play situations in order to manipulate them and gradually form concepts about things and events with relevant vocabulary references.

1.1 RATIONALE OF THE STUDY

On the bases of the above psychological and philosophical rationale an attempt has been made to carry out the study in the area of a particular language skill namely, vocabulary through situational games involving children falling within range 7-11 years. The statement of objective 1.2.1 is thus formulated as follows :-

1.2.1 To evaluate the relative effectiveness in the teaching of vocabulary of two different teaching strategies, viz.

- a) A formal method, emphasising use of words in sentences and deducing meanings, from the context of a passage or a story and
- b) an innovatory method based upon the use of situational games.

1.2.2 To assess the relative retention of learning vocabulary under the two strategies.

1.3 The limited time available in the M.Ed. programme imposed a restriction with regard to the scope of what research could realistically be carried out. The complete nature of the ideologies which are present concurrently in the Kenyan education system and the differing socio-economic circumstances of the schools, together with the limited financial resources available for the research, compounded the problem. With these considerations in mind the project was designed to :-

1.3

fit into the time scale of the M.Ed programme

compare the effectiveness of two extreme pedagogical ideologies which for convenience were labelled the 'formal' and 'innovatory' methods.

Compare matched groups within each School.

involve only schools which were within easy access (ie on a bus route or within walking distance) of Nairobi.

cause the minimum of disturbance to the school programme.

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CHAPTER II
PROJECT DESIGN

Dependent Variable
Achievement in the
final Post-tests

Independent Variables

1. School
2. Pupils
3. Groups Balanced
4. Teacher
5. Time
6. Methodology

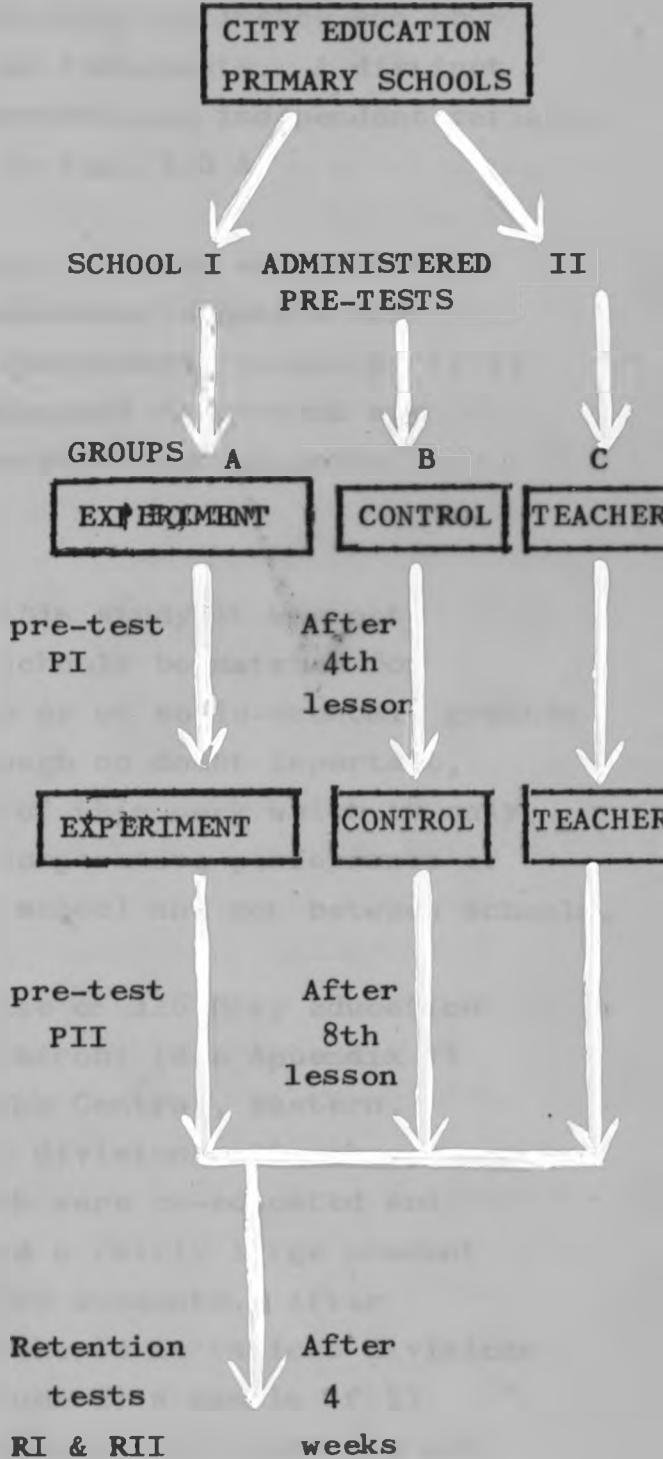


Fig. 2.0 A. ILLUSTRATION OF PROJECT DESIGN IN
SCHOOL I.

The proposed objective evaluating the relative effectiveness of an Innovatory Method as opposed to the Traditional Method necessiated drawing up of a list of variables which might influence and thus distort the results of the Post-tests. A distinct division between the dependent and independent variables was set up as indicated in Fig. 2.0 A.

In accordance to objective 1.2, the only factor required to affect the dependent variable was Methodology. The other independent variables (1-5) therefore had to be, 'balanced' to prevent any possible influence on the dependent variable.

2.1 SCHOOLS

For the purpose of this study it was not essential that the schools be matched for academic performance or on socio-economic grounds as the variables though no doubt important, go beyond the scope of this work which is only concerned with the comparative performance of two groups within a school and not between schools.

From the provided list of 116 City Education Primary Schools in Nairobi (see Appendix II column A) covering the Central, Eastern, Northern and Western divisions, 93 schools were identified which were co-educated and each school contained a fairly large student population of over 500 students. After informal visits to schools in various divisions (see Appendix II column E) a sample of 23 schools was further recognized which did not differ to a great extent in resource materials and as a minimum requirement had two streams at standard III level. The pupils allowed were not streamed on the basis

2.1 SCHOOLS

of their previous academic performances.

For the purpose of the project the researcher had to select schools considering factors such as communication facilities, time etc., discussed in section 1.3. With view to these difficulties a sample of two schools from the same location was thought practical for the project. These two schools were chosen from the Central Division (see Appendix II column F) where the researcher succeeded in establishing a good rapport with the school community and where the facility of a flexible time schedule was feasible. One of these two selected schools was also used for pre-test trials and practice lesson.

2.2 PUPILS

Each of the Standard III classes in the two schools comprised pupils of mixed sex and academic abilities as mentioned in section 2.1. Informal interviews with the school administration and pupils showed that the children belonged to varied social status. The age of the pupils calculated averaged to 8 years 6 months (see Appendix III). Standard III pupils were thought suitable for the project due to the psychological consideration of their age level as discussed in section 1.1. The children at this stage are also more familiar with certain graphic and language skills enabling them to understand instructions put forward by the researcher.

Annual report forms for the previous year were studied and scores were noted down for each

2.2 PUPILS

pupil in the area of language (English) and reading (see Appendix IV).

2.3 GROUPS

As the project was carried out in an identical fashion in both of the selected schools, it is only necessary to describe the procedure to be adopted in one of them. For the purpose of grouping, the finalised Pre-tests I & II were administered to each of two standard III classes the scores of which were noted (see Appendix IV). To minimise disturbance to the organisation of the school, it was necessary for the investigator to deal with separate classes in their entirety rather than to select pupils from different classes to act as subjects. Partly on the basis of performance on these tests, and partly on their annual records and advice of the in situ Teachers and Headmaster, matched pairs of pupils were selected in each of the two classes (see Appendix IV). Two important points need to be made here:

- a) these pupils never knew that they had been selected
- b) the selection was not made on the basis of best performance only, but rather to yield a sample which included students of mixed ability.

Three following groups were formulated each comprising an average of 10 matched pupils thus resolving to a fair distribution.

Group A - Experimental Group .

2.3 GROUPS

- Group B - Control Group
 Group C - Teacher's Group

A group switch method was initiated after teaching of 4 lessons of the whole 8 lesson unit whereby a switch over was conducted so as to make the Experimental Group (A) to act as Control Group (B) and vice versa (see Fig.2.0A). Teacher's Group which acted as a second control group remained unchanged for purposes of comparison with the researcher's own control group.

N.B. The pupils who did not fall under the matched pairs remained with the Teacher's group, but their performances in the Post-tests were disregarded.

2.4 TEACHER

To compensate for the, 'Hawthorne Effect' the researcher herself taught both the Experimental and Control Groups in each of the two schools. The investigator was introduced as a 'student teacher' as opposed to a 'researcher' in order to maintain as normal a classroom situation as possible.

Lesson notes (see Section 2.7 - 2.22), Video-recording (VI), Cassette-recording (CI) formed the data necessary to evaluate the two methods as objectively as possible in determining their relative merits and demerits of the two teaching styles.

Due to the varied nature of this data it was hoped to draw conclusions which were more

2.4 TEACHER

objective than would be the case if they were based solely on the impression of the investigator.

Eight lessons of 40 minutes were given to each of the two classes and the principal objective of each lesson was to teach meanings of selected words. Post-tests were given to the 3 groups after the 4th and 8th lessons. For retention a third Post-test which was a composite of the two first Post-test PI and PII was given to each group after the 8th lesson.

The second control group C of the class-teacher unaffected by the 'switch-group' method (see Fig. 2.0 A) was taught the same list of selected words. The researcher discussed, planned and implemented a method to her own control group B, parallel to that utilized by the class-teacher. A video-recording (VI) focuses the similarity aspect of the traditional method, taught by both the class teacher and the researcher in their respective groups.

2.5 TIME - (Schedule)

The proposed time-table for the project is presented in table 2.5 A and the Experimental and analytic phases is given in table 2.5 B. The scheme of work for the lessons is presented in table 2.5 C and D. The researcher had to adjust to the proposed time-table convenient to the schools and certain delays and overlaps were inevitable. However, the time-schedule set up was closely adhered to.

Nov. Dec.	Jan. Feb. Mar.	April	May June	July Aug. Sept.
Assembling resources Devising Pre-tests, making lesson-plans	Course Work Trial of materials Pre-tests practice lessons	Finalise Pre-tests and administer Pre-tests	Experimental and analytic phase Preparing the first draft on the project	Continue preparation of drafts and writing up the project

Table 2.5 A Time-table of the Project

		Wk 1,2	Wk 3,4	Wk 1,2	Wk 3,4	Wk 1,2	Wk 3,4
School I	Class A(Group A&B)	2	2	2	2	Preliminary analysis of data and revisit schools if necessary. Final analysis of data	
	Class B(Group A&B)	2	2	2	2		
School II	Class A(Group A&B)	2	2	2	2		
	Class B(Group A&B)	2	2	2	2		
T o t a l		8	8	8	8		

Table 2.5 B Experimental and Analytic phases Fig.II

Month	Time	Week	Lesson	Group A,B,C,	Matter to be taught	Method	Ref.	Learning Method
May	40	I	1	A	'The Lost Ring'	Innov.	Prg.Peak BK III pg.20-23	See Less.1
			1	B&C	"	Trad.	"	See Less.1
	"	II	2	A	'In the Town'	Innov.	pg.33-41	See Less.2
			2	B&C	"	Trad.	"	" " 2
	"	III	3	A	'Juma and the Book'	Innov.	pg.44-47	" " 3
			3	B&C	"	Trad.	"	" " 3
	"	IV	4	A	'Shape,Size &Weight'	Innov.	Vocab. Index	" " 4
			4	B&C	"	Trad.	"	" " 4
POST TEST I ADMINISTERED								

Table 2.5 C SCHEME OF WORK SET FOR SCHOOL I (UPTO 4 LESSONS)

Month	Time	Week	Lesson	Group A,B,C	Matter to be taught	Method	Ref.	Learning Method
June	40	I	5	A	'Birds'	Innov.	pg.32-35	See Less.5
			5	B&C	"	Trad.	"	" " 5
		II	6	A	'At the Railway Station'	Innov.	pg.74-75	" " 6
			6	B&C	"	Trad.	"	" " 6
		III	7	A	'Train Journey'	Innov.	pg.76-77	" " 7
			7	B&C	"	Trad.	"	" " 7
		IV	8	A	'The Game Park'	Innov.	pg.86-87	" " 8
			8	B&C	"	Trad.	"	" " 8
POST TEST II ADMINISTERED								

Table 2.5 D SCHEME OF WORK SET FOR SCHOOL I (UPTO 8 LESSONS)

'SWITCH-METHOD' IMPLEMENTED

Experimental Group A switched to Control Group B

Control Group B switched to Experimental Group A

(a) The Method Column in Fig. 2.5 C and 2.5 D is elaborated in the detailed lesson plans as shown in Section 2.7 - 2.22.

(b) A fixed time for the lessons was maintained.

Group A	10.45 a.m. - 11.25 a.m.	(Experiment (Group (switched (timings with
Group B&C	11.30 a.m. - 12.10 p.m.	(Control Group (after 4 (lessons

(c) Equal time of 40 minutes was allocated to each of the 3 groups. An arrangement allowed Control Groups B&C to be dealt simultaneously by the researcher and class teacher.

(d) Availability of different classroom facilities and firm supervision prevented any association between the 3 groups.

(e) Consistent follow up of the time-schedule prevented the time variable from affecting the performances on the Post-tests.

After a duration of 4 weeks Retention tests RI and RII were administered to each of the 3 groups in the two schools.

2.6 METHODOLOGY

Methodology was the only independent variable aimed at influencing the dependent variable, since the objective was to evaluate the relative effectiveness in the teaching of vocabulary under two differing teaching strategies (1.2).

Depending on a precise and deliberate variation in Methodology, the achievement in the Final Post-tests would then show the relative effectiveness of the two strategies.

The experimental procedure therefore included:-

- (a) Group A (Experimental) exposed to the Innovatory Method.
- (b) Group B & C (Control) exposed to the Traditional or Formal Method.

The learning situation for Group A comprised:-

- (a) Audio-stimuli - through use of cassette-recorder, and children mimicking sounds to illustrate meanings of words.
- (b) Visual-stimuli - picture cards, flannel-graph, slides, photographs and pictures.
- (c) Manipulative-stimuli - through making simple models with plasticine, manilla paper or clay.
- (d) Mime & drama - role playing or miming meanings of words, using words in a dialogue, doing creative writing in form of play, songs or poems etc.

2.6 METHODOLOGY

The Learning situation for Groups B & C comprised :-

- (a) Sentence formation - using words in sentences to illustrate meanings.
- (b) Contextualization - pupils deducing meanings of words from the context of the passage.

2.7

Lesson Plan 1 Class:III Innovatory MethodSchool : 1Group: A(Experiment)Lesson : 'The Lost Ring' Time : 40 mins.Words to be learnt :

ring, bucket, sharp, shore, shining, washing.

Reference : Progressive Peak(PP) Course Bk III
pgs. 20-23Learning Materials : flashcards, ring, bucket,
wooden knife, clothes.

<u>Time</u>	<u>Learning guidance</u>	<u>Pupil Activity</u>	<u>Objective</u>
	1. Introduce new words orally.	1. Chn.listen to the words and tell meanings of those words they know.	1. Acquaint Chn. orally with the new words.
7 Mins.	2. Show flash cards with new words. 3. Help children to speak them out.	2. Try to recognize new words.. 3. Learn to speak them.	2&3. Help children recognize and learn new words.
10 Mins.	1. Help children orally to build up a play entitled 'At the 'Sea Shore'.	1. Construct short sentences in sequence to build up a play.	To prepare Chn.for the improvised play by using the new words.
15 Mins.	1. Choose characters for play. Provide learning materials. 2. Pose questions while play is on session.	1. Role play and use learnt words in dialogue. 2. Answer questions on the play.	Clarify and internalize meanings of learnt words.
8 Mins.	Guide Chn. write a story.	use learnt words in story.	Relate words to experiences.

2.8 Lesson Plan 1 Class:III Traditional Method
School : 1 Group : B and C (Control)
Topic of Lesson: 'The Time : 40 mins.
 Lost Ring'

Words to be learnt:

ring, bucket, sharp, shore, shining, washing.

Reference : PP Course Bk III Pg. 20-23

Learning Materials : flash cards.

Time	<u>Learning guidance</u>	<u>Pupil Activity</u>	<u>Objective</u>
	1. Introduce new words orally	1. Listen and tell meanings of words they know.	1. Acquaint children orally with new words.
7 Mins.	2. Show flash cards with new words	2. Try to recognize new words.	2&3 To help children recognize and learn new words.
	3. Help Chn.to speak them out.	3. Learn to speak them out.	
10 Mins.	1. Repeat show of flash cards.	1. Look at the flashcards	Learn meanings through context of sentences.
	2. Ask children to make sentences with the new words.	2. Make sentences with new words.	
	3. Help in the meanings of difficult words.	3. Learn meanings of difficult words.	
13 Mins.	Help chn.build up a story orally.	Write a story centred around 'At the sea shore'	Use words in context of a story.
10 Mins.	Help chn. write a story.	Use learnt words in story.	Practice relating words in story.

2.9 Lesson Plan 2 Class:JJI Innovatory Method
School : 1 Group: A(Experiment)
Topic of Lesson: 'In the Town' Time : 40 mins.

Words to be learnt :

traffic, across, (go) past, tidy, cheap, dear.

Reference : PP Course Bk.3 Pgs.38-41

Learning Materials: A simple town plan drawn
 on manilla sheets(See-Video VI)
 toy cars,traffic lights cut
 out of cardboard,improvised
 shops.

<u>Time</u>	<u>Learning guidance</u>	<u>Pupil Activity</u>	<u>Objective</u>
7 Mins.	1. Introduce new words orally.	1. Listen and tell meanings of words they know.	To acquaint chn. orally with new words.
	2. Show flash-cards with new words.	2. Try to recognize new words.	2&3 To help children recognize and learn new words.
	3. Help chn.to speak them out.	3. Learn to speak them out.	
5 Mins.	1. Draw out a simple town plan on the classroom floor and give simple rules about the town.	1. Chn.observe Tch.drawing out a town plan and listen to instructions regarding town rules.	To understand words in a created 'Town situation'
	2. Issue out the materials.	2.Receive materials and get prepared to operate them on roads.	
	3. Choose two characters to role play a visit to the town.	3.Think of simple dialogue and role play.	
18-20 Mins.	Supervise play	Role-play town situation.	Clarify and internalize meanings of words.
10 Mins.	Issue out materials.	Play 'Instructional game'	Further understanding of learnt words.

2.10 Lesson Plan 2 Class:III Traditional Method
School : 1 Group : B&C(Control)
Lesson : 'In The Town' Time : 40 mins.
Words to be learnt :
 traffic, across,(go)past,tidy,cheap,dear.
Reference : PP Course Bk 3, Pgs.38-41
Learning Materials: Flashcards

<u>Time</u>	<u>Learning guidance</u>	<u>Pupil Activity</u>	<u>Objective</u>
7 Mins.	1.Introduce new words orally.	1.Chn.listen to the words and tell meanings of words they know.	1.Acquaint chn. orally with the new words.
	2.Show flash cards with new words.	2.Try to recognize new words.	To help children recognize and learn new words.
	3.Help chn. to speak them out.	3.Learn to speak them out.	
6 Mins.	1.Narrate a short story entitled 'In the town'	1.Listen carefully to the story.	Deepen understanding of words through listening to their use in the context of a story.
	2.Show relevant flash cards.	2.Look at the corresponding cards.	
10 Mins.	Assist chn. build up a similar story.	construct sentences in sequence to formulate a story.	Practice use of words in a story.
10 Mins.	Help chn. make sentences using the words.	Make new sentences using the words.	To practice the use of words in sentences.

2.11 Lesson Plan 3 Class:III Innovatory Method
School: 1 Group: A(Experiment)
Lesson: 'Juma and the Book' Time: 40 mins.
Words to be learnt:
 flour, counter, scales, scratch duster,
 handed, photograph.
Reference: PP Course Bk.3 Pgs. 44-47
Learning Materials: Improvised shop, scales
 duster, photograph, picture, flashcards.

<u>Time</u>	<u>Learning guidance</u>	<u>Pupil Activity</u>	<u>Objective</u>
7 Mins.	1. Introduce new words orally. 2. Show flashcards with new words. 3. Help chn. to speak them out.	1. Chn. listen and tell meanings of words they know. 2. Try to recognize new words. 3. Learn to speak them out.	1. Acquaint chn. orally with new words. Help children recognize and learn new words.
5-7Mins.	1. Mime or point out objects and ask right word. 2. Help build a short play with new words.	1. Chn. repeat mime, or point out objects to say what it is. 2. Build a play orally centred around 'Juma and the Book'.	Help relate words to action or objects. Prepare children for the improvised play by using words.
18-20Mins.	1. Choose a character to play the shopkeeper and customers. 2. Help chn. use the words in dialogue.	1. One child role plays shopkeeper and rest of group act as customers. 2. Use words in the dialogue.	To internalize and clarify meanings of words.
10 Mins.	1. Help chn. discuss experience of play.	Use learnt words in the discussion.	Relate experiences of created situation.

2.12

Lesson Plan 3 Class: III Traditional Method
School: 1 Group: B&C(Control)
Lesson: 'Juma and the Book' Time: 40 mins.

Words to be learnt:

flour, counter, scales, scratch, duster, handed, photograph.

Reference: PP English Course Bk.3 Pgs.44-47

Learning Materials: Flashcards

<u>Time</u>	<u>Learning guidance</u>	<u>Pupil Activity</u>	<u>Objective</u>
7 Mins.	1.Introduce new words orally.	1.Chn.listen to words and tell meanings of the words they know.	Acquaint chn. orally with the new words.
	2.Show flashcards with new words.	2.Recognize new words.	Children recognize a n d
	3.Help chn.to speak them out.	3.Learn to speak them out.	learn new words.
6 Mins.	1.Narrate a short story entitled 'Juma and the Book'	1.Listen carefully to the story.	Deepen understanding of words through listening to their use in the context of a story.
	2.Show relevant flashcards.	2.Look at the corresponding cards.	
10 Mins.	Assist chn.to build a similar story.	Construct sentences in sequences to formulate a story.	Practice use of words in a story.
10 Mins.	Help chn.make sentences using the words.	Make new sentences using the words.	To practice use of words in sentences.

2.13 Lesson Plan 4 Class:III Innovatory Method
 School: 1 Group: A(Experiment)
 Lesson:'Shape,Size and Time: 40 mins.
 Weight'

Words to be learnt:

hard/soft, heavy/light, rough/smooth,
 sharp/blunt, round/square.

Reference: PP Eng.Course 3 (Teacher's copy)
 word list on pgs. 134-135

Learning Materials: stone, ball, round candle,
 a bag, objects in the classroom.

<u>Time</u>	<u>Learning guidance</u>	<u>Pupil Activity</u>	<u>Objectives</u>
7 Mins.	1.Introduce new words orally. 2.Show flashcards with the new words. 3.Help chn.to speak them out.	1.Chn.listen to the words and tell meanings. 2.Try to recognize new words. Learn to speak them.	1.Acquaint chn. orally with new words. Children recognize and learn new words.
15 Mins.	1.Introduce and point at objects within the classroom and ask for words to describe it.	1.Chn.move around in the classroom and through tactile contact describe objects.	To clarify and internalize meanings related to the tactile senses.
10 Mins.	1.Introduce 'blind Man's game. 2.Introduce object in 'mystery bag'.	1.Play the game. 2.Touch object and describe it.	Relate words to tactile senses.
10 Mins.	1.Help name objects.	List objects against learnt words.	Practice using learnt words.

2.14 Lesson Plan 4 Class:III Traditional Method
School: 1 Group: B&C (Control)
Lesson: 'Shape, Size and Weight' Time: 40 mins.

Words to be learnt:

hard/soft; heavy/light; rough/smooth,
sharp/blunt; round/square.

Reference: PP Eng.course 3 (Teacher's copy)
word list on Pgs.134-135.

Learning Materials: Flashcards.

<u>Time</u>	<u>Learning guidance</u>	<u>Pupil Activity</u>	<u>Objectives</u>
	1.Introduce new words orally.	1.Chn.listen and tell meanings they know.	1.Acquaint chn. orally with new words.
7 Mins.	2.Show flashcards with new words.	2.Try to recognize new words.	Help children recognize and learn new words.
	3.Help chn.to speak them out.	3.Learn to speak them out.	
10 Mins.	1.Repeat show of flash cards. Encourage chn. to make sentences.	1.Observe flash cards and make sentences.	Learn and use new words in context of sentences.
	2.Give meanings of difficult words.	2.Learn meanings of new words.	
13 Mins.	1.Tell story of 'blind man'	1.Listen to story.	Relate words to tactile senses.
	2.Introduce 'guessing-game'	2.Play 'guessing-game'.	
10 Mins.	Help'chn. write sentences.	Use learnt words in story.	Relate words to tactile senses.

2.15 Lesson Plan 5 Class:III Innovatory Method
School: 1 Group: A(Experiment)
Lesson: 'Birds' Time: 40 mins.

Words to be learnt:

weaver, beak, tail, wings, bright, dull.

Reference: PP Eng. Course Pgs. 32-35

Learning Materials: Bird puzzle, colour-table drawn on manilla paper, small fill-in cards for children's application work, weaver's nest, tape-recorder with sounds of birds.

<u>Time</u>	<u>Learning guidance</u>	<u>Pupil Activity</u>	<u>Objective</u>
3 Mins.	1.Play the sound of birds on the tape-recorder. 2.Show the weaver bird's nest.	1.Listen to sounds and guess what it is. 2.Observe and tell what bird's nest it is.	To acquaint students to the topic on 'birds' through Aud./Vis. stimuli.
7 Mins.	1.Show flashcards with new words. 2.Help children speak them out.	1.Try to recognize new words. 2.Learn to speak them out.	Help children recognize and learn new words.
10 Mins.	1.Introduce the Bird puzzle.	Chn.fix the puzzle and learn different parts of the bird.	Learn to respond verbally to manipulative stimuli.
10 Mins.	Introduce the colour-table.	Chn.learn to differentiate bright and dull colours.	Learn to respond verbally to a visually created stimuli.
10 Mins.	Issue out fill-in cards.	Paint and label the bird.	Distinguish different colours and parts of bird.

2.16 Lesson Plan 5 Class:III Traditional Method
School: 1 Group: B&C (Control)
Lesson: 'Birds' Time: 40 mins.
Words to be learnt:
weaver, beak, tail, wings, bright, dull.
Reference: PP Eng.Course Bk.3 Pgs.32-35
Learning Materials: Flashcards.

<u>Time</u>	<u>Learning guidance</u>	<u>Pupil Activity</u>	<u>Objective</u>
7 Mins.	1.Introduce new words orally.	1.Chn.listen to the words and tell meanings.	Acquaint chn. orally with new words.
	2.Show flashcards with new words.	2.Try to recognize new words.	To help children recognize and learn new words.
	3.Help chn. to speak them out.	3.Learn to speak them.	
10 Mins.	1.Repeat show of flashcards.	1.Look at the flashcards.	
	2.Ask chn. to make sentences with the new words.	2.Make sentences with new words.	Learn meanings through context of sentences.
	3.Help in meanings of difficult words.	3.Learn meanings of difficult words.	
13 Mins.	Help chn.build up a story orally entitled 'A Bird'	Construct sequential sentences, building up the story.	Learn to use words in a context of a story.
10 Mins.	Help children write sentences.	Write sentences using learnt words.	Practice learnt words.

2.17 Lesson Plan 6 Class:III Innovatory Method
School: 1 Group: A(Experiment)
Lesson: 'At the Railway Station' Time: 40 mins.

Words to be learnt:

Railway Station, railway line, carriage, engine, passengers.

Reference: PP Eng. Course Pgs.74-75

Learning Materials: Toy train, flashcards
 tape-recorder with the sound of the train
 'At the Railway Station'.

<u>Time</u>	<u>Learning guidance</u>	<u>Pupil Activity</u>	<u>Objectives</u>
3 Mins.	1.Play the sound of the train at the Railway Station. Ask questions on it.	1.Listen to the sound and respond to questions.	To acquaint on the topic 'At the Railway Station'
7 Mins.	1.Show flashcards with new words. 2.Help chn. to speak the words.	1.Try to recognize new words. 2.Learn to speak the words.	Help chn. recognize a n d learn new words.
10 Mins.	1.Introduce toy train and create situation of the Railway Station. 2.Issue tag-cards.	1.Observe the created situation. 2.Place cards on parts of the train.	To clarify a n d internalize meanings o f words.
10 Mins.	1.Group chn. in pairs. 2.Display tag-cards.	1.Work in pairs. 2.Discuss parts of train.	U s e words i n created situation.
10 Mins.	1.Issue drawing paper and crayons.	1.Draw and label parts of train	Check understanding of learnt words.

Lesson Plan 6 Class:III Traditional Method
School: 1 Group: B&C(Control)
Lesson: 'At the Railway Station' Time: 40 mins.

Words to be learnt:

Railway Station, Railway line, carriage, engine, passengers.

Reference: FP Eng. Course Bk.3 Pgs.74-75

Learning Materials: Flashcards.

<u>Time</u>	<u>Learning guidance</u>	<u>Pupil Activity</u>	<u>Objectives</u>
7 Mins.	1.Introduce new words orally. 2.Show flashcards with new words. 3.Help chn.to speak the words.	1.Chn.listen to the words and tell meanings. 2.Try to recognize new words. 3.Learn to speak the words.	1.Acquaint chn.with new words. To help children recognize and learn new words.
10 Mins.	1.Repeat show of flashcards. 2.Ask chn.to make sentences with the new words. 3.Help in meanings of difficult words.	1.Look at the flashcards. 2.Make sentences with new words. 3.Learn meanings of difficult words.	Learn meanings through context of sentences.
13 Mins.	Help chn.build up a story orally entitled 'At the Railway Station'	Construct sequential sentences, building up the story centred around the Railway Station.	Give practice in using words in a context of a story.
10 Mins.	Help chn.write a story.	Use learnt words in story.	Practice learnt words.

2.19 Lesson Plan 7 Class:III Innovatory Method
School: 1 Group: A(Experiment)
Lesson:'The Train Journey' Time: 40 mins.
Words to be learnt:
 journey, hills, valley, tunnel, bridge, sea.
Learning Materials: A geographical model,
 toy train, model of a tunnel, a cassette
 with sound of 'The train journey'.
Reference: PP Eng. Course Bk.3 Pgs. 76-77

<u>Time</u>	<u>Learning guidance</u>	<u>Pupil Activity</u>	<u>Objectives</u>
3 Mins.	1.Play the sound of the train on a journey. 2.Ask what is happening.	1.Listen to the sound. 2.Give verbal responses.	To acquaint to the topic 'The train journey' through audio stimuli.
5 Mins.	1.Show flashcards with the new words. 2.Help chn.to speak the words.	1.Try to recognize new words. 2.Learn to speak the words.	To recognize and learn new words.
7 Mins.	1.Introduce the geographical model. 2.Issue tag-cards.	1.Observe the model. 2.Place tag-cards on the appropriate geographical features.	To assist in conceptualizing words in the right visual context.
7 Mins.	1.Create a train journey through use of models and sound.	1.Discuss train journey using learnt words.	To clarify and internalize meanings of words.
10 Mins.	1.Issue out drawing paper crayons.	1.Draw and label things seen on the train journey.	To check understanding of the learnt words in the created situation.

2.20 Lesson Plan 7 Class:III Traditional Method
School: 1 Group: B&C(Control)
Lesson: 'The train Journey' Time: 40 mins.
Words to be learnt:
 Journey, hills, valley, tunnel, bridge, sea.
Learning Materials: Flashcards.
Reference: PP Eng. Course Bk.3 Pgs. 76-77

<u>Time</u>	<u>Learning guidance</u>	<u>Pupil Activity</u>	<u>Objectives</u>
7 Mins.	1.Introduce new words orally. 2.Show flashcards with new words. 3.Help chn.speak new words.	1.Chn.listen and tell meanings of words. 2.Try to recognize new words. 3.Learn to speak the words.	1. Acquaint chn. orally with new words. Help children recognize and learn new words.
10 Mins.	1.Repeat show of flashcards. Encourage making sentences. 2.Give meanings of difficult words.	1.Observe flashcards and make sentences. 2.Learn meanings of new words.	Learn and use words in context of sentences.
13 Mins.	1.Tell a story entitled 'A train Journey' 2.Show flashcards in correspondence to the story.	1.Listen to the story. 2.Observe flashcards.	Listen to words being used in a context of a story.
10 Mins.	1.Help chn.write sentences using the words.	Chn.write sentences using the words.	To check understanding of the learnt words.

2.21

Lesson Plan 8 Class:III Innovatory Method
School: 1 Group: A(Experiment)

Lesson:'At the Game Park' Time: 40 mins.

Words to be learnt:

gazelle, elephant, lion, zebra, rhino, giraffe.

Reference: PP Eng.Course Bk.3 Pgs.86-87

Learning Materials: Cassette with sound of different animals, animal masks, animal models, tag-cards.

<u>Time</u>	<u>Learning guidance</u>	<u>Pupil Activity</u>	<u>Objectives</u>
7 Mins.	1.List names of animals on B.B. 2.Play sound of animals on the cassette-recorder and ask what animal it is.	1.Observe the words. 2.Listen to the sound and give verbal responses.	Acquaint chn. by creating a game park situation through audio - stimuli.
7 Mins.	1.Introduce the animal masks and models. 2.Ask chn.to choose the name of the animals.	1.Observe carefully the provided material. 2.Give verbal responses.	Learn to relate words to a visual created situation.
16-20Mins.	1.Choose characters to mime the animals at 'The Game Park'. 2.Play cassette recorder.	1.Mime various animals. 2.Imitate sound of animals.	To clarify and internalize their concept of animals.
10 Mins.	1.Issue crayons and drawing paper. 2.Play the tape recorder. 3.Display the masks & models.	Get prepared for application work.	Distinguish names of animals through audio and visual stimuli.

2.22 Lesson Plan 8 Class:III Traditional Method
School: 1 Group: B&C(Control)

Lesson: 'At the Game Park' Time: 40 mins.

Words to be learnt:

gazzelle, elephant, lion, zebra, rhino, giraffe etc

Reference: PP Eng. Course Bk.3 Pgs.86-87

Learning Materials: Flashcards.

<u>Time</u>	<u>Learning guidance.</u>	<u>Pupil Activity</u>	<u>Objectives</u>
7 Mins.	1. Introduce new words orally.	1. Chn. listen and tell meanings of words.	Acquaint chn. orally with new words.
	2. Show flash-cards with new words.	2. Try to recognize new words.	Help recognize a n d learn n e w words.
	3. Help chn. speak new words.	3. Learn to speak the words.	
10 Mins.	1. Repeat show of flashcards. Encourage making sentences.	1. Observe flashcards and make sentences.	Learn a n d use words i n context of sentences.
	2. Give meanings of difficult words.	2. Learn meanings of new words.	
13 Mins.	Tell story with flashcards.	Listen and observe flashcards.	Listen to words in context.
10 Mins.	Help chn. use words in sentences and draw favourite animals.	Do application work.	Check understanding of learnt words.

CHAPTER III
TRIAL OF MATERIALS

3.0 The aim of this exercise was to familiarize the investigator with the materials and techniques, to make appropriate modifications in the light of experience, and thereby increase the likelihood of a constant level of performance in the project lessons in the two styles.

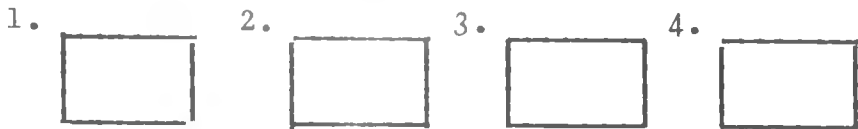
One of the two selected schools of the Project was utilized for Pre-test trials, Practice-lessons and follow up Post-tests.

The word list from which items were selected and tested is given in (Appendix I) and was taken from the Progressive Peak Course Book 3(1). This was in turn taken from the General Service List of English Words which is a catalogue in their commonest uses of the 2,000 English headwords considered by the many scholars who worked on it for a period of nineteen years to be of the greatest general serviceability. The Progressive English Peak Course is the recommended course for the first three years of Primary English and Book 3 was therefore an appropriate source of word items for this project.

A vocabulary Pre-test I and II using a multiple choice and Question/Answer format containing some 20 items in each were constructed from the word list and field tested on the basis of item analysis. The test was modified until a satisfactory diagnostic tool was established.

AN ILLUSTRATORY SAMPLE OF UNMODIFIED
PRE-TEST I (given orally)

3.1 I. Give a word for each of the following picture cards. (postcard size).



II. Point at the correct cards showing :-

- 5. knee
- 6. nose
- 7. feet
- 8. flower



III. Do what I say

- 9. clap your hands
- 10. kneel down
- 11. knock on the door

IV. Give a word for the action that I do

- 12. Tearing the paper
- 13. Pouring tea into the cup
- 14. Scratching the head

V. Give Opposites of :-

- 15. sad/ (expected response (Exp.R) - happy)
- 16. dry/ (" " - wet)

VI. Give a word similar to :-

- 17. expensive (expected response - dear)
- 18. pair (" " - two)

3.1

VII. When a man kills a lion, is he
19 (a) shy (b) angry (c) brave or (d) a
funny man.

20. Go under the table.

TABLE 3.1 A ITEM ANALYSIS PRE-TEST I

Question Item	UPPER(U) 27%	LOWER(L) 27%	U-L	$\frac{U+L}{2}$	Validity
1	100	20	80	60	*
2	100	80	20	90	E
3	90	20	70	55	*
4	90	10	80	50	*
5	80	20	60	50	*
6	80	10	70	45	*
7	70	10	60	40	*
8	100	0	100	50	*
9	100	80	20	90	E
10	80	20	60	50	*
11	80	40	40	60	*
12	100	80	20	90	*
13	100	90	10	95	A
14	80	20	60	50	*
15	10	0	10	5	D
16	0	0	0	0	D
17	10	0	10	5	D
18	20	0	20	10	D
19	90	30	60	65	*
20	90	30	60	65	*

Key to Item Analysis

- E = too easy
D = too difficult
* = A fair question item
A = Ambiguous question item

3.2

VII Where would you go to buy stamps and post your letters? To the

18 (a) Post box (b) shops (c) Post man (d) Post office.

VIII. When a man cannot hear, is he

19 (a) blind (b) deaf (c) stupid or (d) dumb?

IX. 20 Draw a square on this piece of paper.

TABLE 3.2 A ITEM ANALYSIS PRE-TEST 11

Item	UPPER(U) 27%	LOWER(L) 27%	U-L	$\frac{U+L}{2}$	Validity
1	100	70	30	85	E
2	80	20	60	50	✓
3	80	10	70	45	✓
4	20	0	20	10	D
5	70	10	60	40	✓
6	90	20	70	55	✓
7	90	70	20	80	E
8	100	80	20	90	E
9	100	60	40	80	E
10	90	10	80	50	✓
11	80	30	50	55	✓
12	70	30	40	55	✓
13	70	20	50	45	✓
14	70	10	60	40	✓
15	80	10	70	45	✓
16	10	0	10	5	D
17	10	0	10	5	D
18	30	0	30	15	D
19	30	00	30	15	D
20	100	30	70	65	✓

Key to Item Analysis

E = too easy

D = too difficult

✓ = A fair question

3.3 REASONS FOR MODIFYING THE PRE-TESTS

On the basis of item analysis certain items were designated for alterations. Questions (2), (9) in Unmodified Pre-test I and (1),(7),(8),(9) in Unmodified Pre-test II proved too easy, manifesting elimination and replacement with more difficult questions. Similarly review of questions (15), (16), (17), (18) in Unmodified Pre-test I and questions (4),(16),(17),(18),(19) in Unmodified Pre-test II proved too difficult, necessitating revision and modification. In view of the item (13) marked (A) in the item analysis table 3.1A the researcher had contended the ambiguity resulting from the question having more than 1 alternative answer. For e.g. :-

- (B) The common response given for the word pouring was putting.

Amendments thus had to be provided for such an item.

A valuable observation was made on the multiple choice items which required the pupil to select one correct response from the 4 alternatives provided (orally). The child of average age 8 years 6 months failed to retain and select from the 4 proposed alternatives resulting in repetition of the last given alternative, or any of the item he/she remembered, and offered it as an answer. Reduction on the multiple items from 4 to 2 surmounted the problems of retention, and gave each child greater opportunity to balance each item and reach a viable solution.

Certain items elevated communication problems for the children arising from lack of comprehension of the questions posed. Majority for e.g. failed

3.3 REASONS FOR MODIFYING THE PRE-TESTS

to give opposites of given words causing the researcher to give examples and assist in clarifying the terms asked for in the questions. The suitable format derived for these types of questions was :

Researcher : The opposite of good is bad
What is the opposite of hot?

Item No.(11) in Pre-test II made it cumbersome for the children to climb the teacher's table and lie down therefore the researcher succumbed to a more comfortable alternative of showing a picture of a boy lying down and asking for a word describing the boy's action.

A review of the Pre-tests indicated lack of variety and logical criteria in the choice of vocabulary items. Questions on nouns and verbs dominated the Pre-test format. A wider range concentrating on other areas of vocabulary use was considered and included in the Pre-tests as indicated in the table 3.3A.

TABLE 3.3 A. CLASSIFICATION OF WORDS

Classification Vocabulary Sample

1.	Nouns	leaf, saw, dustbin, knee
2.	Verbs	pull, knock, tap, scratching
3.	Prepositions	under, against, through
4.	Adjectives	happy, hot, good, brave
5.	Colour	brown, golden, bright, dull
6.	Number	pair, six(6), nine(9), twice
7.	Shape	circle, square
8.	Time	January, Next
9.	Interjection	Thank you, sorry

3.3 REASONS FOR MODIFYING THE PRE-TESTS





The number of questions asked in each classification depended on the frequency of occurrence of the words in daily speech indicated by the number of words given under each category in the word list (see Appendix I). It will be noticed therefore that more items were devoted to Nouns, Verbs and Adjectives compared to the other listed classifications.

On the basis of item analysis and critical insight gained from experience of Oral Pre-tests, a more appropriate tool of measuring children's level of vocabulary was established.

3.4 MODIFIED PRE-TEST I

I. (Nouns)

Give a word for each of the following picture cards (postcard size).

1.  2.  3.  4. 
- leaf saw kite 69

Point at the correct card showing :-

5. knee
6. feet



II. (Verbs)

Act out the meanings of the following words :-

7. pull your nose.
8. knock at the door.
9. tap the table.

What am I doing?

10. Scratching your hair.
11. Waving your hand.

III. (Adjectives)

The opposite of good is bad. What is the opposite of :-

12. hot/ expected response - cold
13. happy/ " " - unhappy
14. When a man kills a lion is he a
 (a) sad or (b) brave man.

IV. (Colour)

15. What is the colour of this card?
 expected response - Brown.

3.4 MODIFIED PRE-TEST

V. (Number)

16. This is a pair of shoes. Can you name me something else which you wear in pair?
Expected response - socks etc.

VI. (Time)

17. January, February, March - What is the next month
Expected response - April

VII. (Preposition)

Do what I say

18. Go under the table
19. Go between the chair

VIII. (Interjection)





When someone gives you a present what should you tell him?

Expected response - thank you.

3.5 MODIFIED PRE-TEST II





I. (Nouns)

Give a word for each of the following picture cards (postcard size).

1.  2.  3.  4. 
- dustbin plant thief look

From the 4 picture cards point at the

5. Street.

-    
- path street hill city

! Look and Say!

6. What is this?

Expected response - envelope

7. Where would you go to buy stamps and post your letters?

(a) shops (b) Post office.

II. (Verbs)

8. What am I doing? Exp.R. -picking up the book

9. What is the boy doing? " " -lying down on the ground.

10. What am I doing? Exp.R. breathing

11. I want you to lick your finger.

III. (Shape)

12. What is the shape of this circle?

Expected response - round.

13. Draw a square on this piece of paper.

3.5 MODIFIED PRE-TEST II

IV. (Prepositions)

14. Look through this piece of paper.

15. Stand against the wall.

V. (Adjectives)

The opposite of good is bad. What is the opposite of :

16. rich/ Expected response - poor

17. tidy/ " " - untidy

18. When a man cannot hear is he a deaf/blind man.

Expected response - deaf.

VI. (Number)

19. I want you to clap your hands twice.

VII. (Colour)

20. What is the colour of this ring?

Expected response - golden.

3.6 TRIAL OF LESSON PLANS AND MODIFICATIONS

Prior to the decisive planning of the lessons various discussions on material and methodology with supervisors in charge of Educational Methodology assisted the researcher on precise setting of the plans. No major changes were required in the theoretical lay out as indicated in section 2.7 - 2.22.

3.7 Provision of cassette-recording (C I) and video-tape (V I) viewing a few lessons in progress developed further the working rapport between the researcher and the supervisors for critical appreciation and improvement.

Evaluation on the appropriateness of Post Tests PI and PII administered to Groups A,B,C after the 4th and 8th lessons, followed the procedure similar to that of the Pre-tests, namely on the basis of item analysis. Results of the analysis indicated necessity of elimination or alteration of certain items drawn up in the Unmodified Post tests.

3.8 UNMODIFIED POST TEST I (After 4th Lesson)

I. (Nouns)

Display a picture of a shop and ask

1. What is this? - Exp.R. - a counter
2. What is this? - Exp.R. - a duster
3. What does the shopkeeper use for weighing sugar, rice, flour etc? - Exp.R. - scales
4. What is a bucket used for? " " - (carrying water)etc.

5. Show two flashcards



as the child to point at



6. If you went into town you would hear the sound of cars, buses, etc., What is that sound of? - Expected response - traffic
7. What do you use the flour for?
Expected response - making bread, ugali etc.

II. (Verbs)

What am I doing

8. scratching the head.
9. tying a knot.
10. handing the book to me.

What did I do?

11. laid the book on the floor.

Fill in the blank

12. Last night the stars were shining

III. (Adjectives)

Mime cutting of the rope with a blunt knife.

13. I cannot cut this rope because the edge of the knife is blunt.

3.8 UNMODIFIED POST TEST I (After 4th Lesson)

III. (Adjectives) .. cont'd.

' Touch and say '

14. How does the stone feel? rough
 15. How does the sponge feel? soft
 16. How does the paper feel? smooth or light

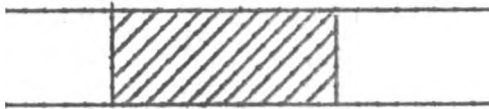
Fill in the blank

17. If I asked you to pick up these pieces
 of paper, the classroom will become, tidy?
 Show two pens (a ball point and a fountain
 pen)
18. This pen costs 1/- and this pen costs 50/- .
 Therefore this (fountain pen) is dear?

IV. (Prepositions)

Draw a Zebra Crossing on the floor

19. Go across the Zebra Crossing.



20. Go past the desk.

TABLE 3.8 A IITM ANALYSIS - POST TEST I

Question Item	UPPER(U) 27%	LOWER(L) 27%	U-L	$\frac{U+L}{2}$	Validity
1	70	20	50	45	✓
2	100	90	10	95	E
3	70	10	60	40	✓
4	80	10	10	45	✓
5	50	10	40	30	D
6	30	0	30	15	D
7	90	20	10	55	✓
8	100	90	10	95	E
9	90	70	20	85	E
10	80	0	80	40	✓
11	90	70	20	80	✓
12	100	30	70	65	✓
13	90	20	70	55	✓
14	10	0	10	5	D
15	80	20	60	50	✓
16	10	0	10	5	D
17	70	30	40	50	✓
18	100	80	20	90	E
19	30	10	40	20	D
20	70	20	50	45	✓

Key to the Analysis - Post Test I

E = too easy

D = too difficult

✓ = A fair question item

3.9 UNMODIFIED POST TEST II (After 8th Lesson)

(Nouns)

Play the cassette-recorder with sounds of animals at the game park, and ask the names of the animals.

What animals could be making this sound at the game park?

Expected responses-

1. lion
2. elephant
3. zebra
4. monkey

Display picture of an animal and ask

5. What animal is this? - Exp.R. - gazzelle

Display picture of a train passing over a tunnel between the hills. Point and ask

6. What is this? - Exp.R. - carriage
7. What is this? - Exp.R. - engine
8. Who sits in the carriage? - passengers
9. On what is the train moving? - railway line
10. What will the train go into? - tunnel
11. What are these? - hills
12. What is between the hills? - a valley

(Colours)

Look at these colours. I want you to point at a

13. bright colour.
14. dull colour.
15. Name me another bright colour.
16. Name me another dull colour.
17. You eat with your mouth. What does the bird use for eating? - Exp. R. - beak
18. What does it use for flying? - Exp.R. - wings

3.9 UNMODIFIED POST TEST II (After 8th Lesson)

19. Why is weaver bird called by that name?

Expected response - because it weaves
its nest.

20. If you went to Mombasa and you saw something blue, what do you think it would be?

3.9 A ITEM ANALYSIS - POST TEST II

Question Item	UPPER(U) 27%	LOWER(L) 27%	U-L	$\frac{U+L}{2}$	Validity
1	90	80	10	85	E
2	90	60	30	75	E
3	70	10	60	40	✓
4	80	20	60	50	✓
5	90	70	20	80	E
6	100	30	70	65	✓
7	90	20	70	55	✓
8	100	80	20	90	E
9	90	20	70	55	✓
10	80	10	70	45	✓
11	100	90	10	95	E
12	70	20	50	45	✓
13	90	30	60	60	✓
14	90	10	80	50	✓
15	70	50	20	60	R
16	80	60	20	70	R
17	90	80	10	85	E
18	100	90	10	95	E
19	70	10	60	45	✓
20	20	0	20	10	D

Key to the Item Analysis

- E = easy
D = difficult
✓ = A fair question item
R = repetitive

3.10 REASONS FOR MODIFYING THE POST TESTS

The item analysis on the Unmodified Post Tests signified the necessary verifications to be made. Items No. (2),(8),(9),(18) in Post Test I and items No. (1),(2),(5),(8),(11),(17),(18), in Post Test II required elimination because they proved to be too easy. Items No.(5),(6), (14),(16),(19), in Post Test I and items No. (15),(16),(20), in Post Test II were concluded too difficult, repetitive or deviating from the initial objective, denoting alterations. For e.g. item No.(5) in Post Test I, tested spelling recognition rather than conceptual understanding of a word. Added verbal and graphic cues prompted, assisted children to comprehend questions, and give appropriate responses. Questions were also set to follow the Lower order of questions as indicated in the Bloom's Taxonomy (2). See Table 3.11A and 3.12A.

3.11 MODIFIED POST TEST PI

(Nouns)

Display a picture of a shop and ask

1. What is this? - Expected response -a counter
2. What does the shopkeeper use for weighing things like rice, flour, sugar etc? -Expected response - Weighing Scales
3. What is a bucket used for? -Exp.R. -carrying water etc.
4. If you went into town and there were lot of cars, buses, lorries (Mime the sounds), and you couldn't cross the road, you would say that there is lot of _____
Exp.R. traffic
5. Show a photograph and a picture.
If you use a camera (show a picture of the camera) what would you get out of it? What is it called? - Exp.R. - photograph
6. If you went to the sea shore what sort of things would you find there?
Exp.R. - shells, sand etc.
7. What do you use the flour for?
Exp.R. - bread, ugali etc.

(Verbs)

8. If you wanted to join these two ropes (show ropes) what would you do?
Exp.R. - tie a knot.

What have I done?

9. _____ the book on the floor -Exp.R.(laid)
10. _____ the book to me - Exp.R. (handed)

(Adjectives)

Mime cutting a piece of meat with a blunt knife.

11. I cannot cut this piece of meat because the edge of the knife is _____ Exp.R. - blunt

3.11 MODIFIED POST TEST PI

(Adjectives) .. cont'd.

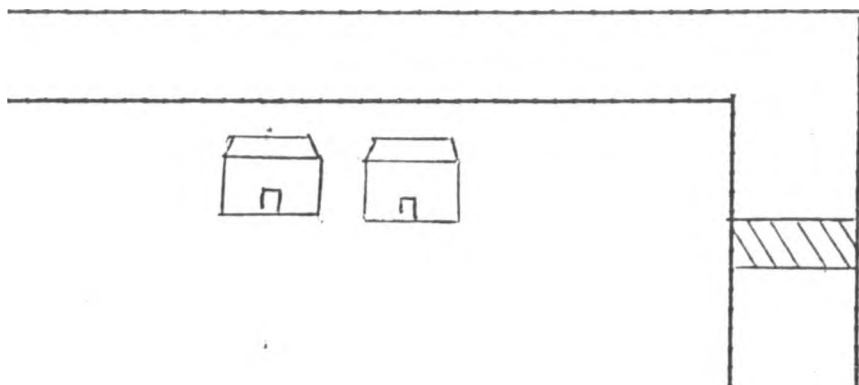
Show objects for children to feel.

12. This stone is rough, but what about this glass? - Exp.R. - smooth.
13. This table is heavy, but what about this pen? - Exp.R. - light.
14. This table is hard (knock on the table), name me something which is soft?
15. If I asked you to pick up all these pieces of paper and dirt from the classroom, the classroom will become _____? Exp.R. - tidy.
16. If I polish this ring what do you think will happen to it? - Exp.R. - shine.

(Prepositions) Instructions: - Using chalk

Draw clearly on the floor part of the town showing joint roads and a Zebra crossing with a car awaiting. Draw also some shops.

Say to the child :-



17. I want you to go across the road.
18. I want you to go past the shops.

3.11 MODIFIED POST TEST PI

(Number)

19. Show two pens (a ball point and a fountain pen). This pen costs 1/- and this pen costs 10/-. Give me a price which is cheaper than 10/-?

(Colour)

20. What do you think is the colour of the sand on the sea shore?

Expected response - yellow, brown.

The items in modified Post-test PI and modified Post-test PII see section 3.11 and 3.12 were selected in accordance to objective 2.1.1. The questions prepared aimed at evaluating the relative effectiveness in the teaching of vocabulary of two different teaching strategies. Considering the age level of the students the investigator chose the lower order of questions as proposed in the Bloom's Taxonomy see section 3.0 with the purpose of examining the students in their recognition, comprehension, and application of words in different situations. This resulted in categorizing the items in the Post-tests into knowledge, comprehension, and Application type of questions as indicated in table 3.11A and 3.12A.

TABLE 3.11 A : CATEGORIZATION OF QUESTIONS - POST TEST PI.

Knowledge	1 *	2 *	3	4	5	6	7	8	9	10 *	11 *	12	13	14	15	16	17 *	18 *	19 *	20
Comprehension					*	*		*	*			*	*		*	*				*
Application			*	*			*							*						

Knowledge - 7 questions

Comprehension - 9 questions

Application - 4 questions

Table 3.11A indicates with asterisks the categorization of each of the 20 items in Post-test PI. Questions 1, 2, 10, 11, 17, 18, 19 for the knowledge type of questions. Items 5, 6, 8, 9, 12, 13, 15, 16 and 20 refer to the comprehension questions. And items 3, 4, 7, 14 refer to the Application type of questions. More items were allocated for knowledge and comprehension compared to Application since the former were less difficult, and helped the researcher determine whether the student had grasped the concept of the learnt words.

3.12 MODIFIED POST TEST II

(Nouns)

Play the cassette-recorder with sounds of animals at the game park, and ask the names of the animals.

What animal could be making this sound at the game park?

Expected responses :-

1. Tiger
2. Zebra
3. Rhino(cerous)
4. Monkey
5. Name me another animal which looks almost like a deer or an antelope? -Exp.R. -gazzelle

Now listen to the sound of the train at the railway station.

6. Who do you think could be making that sound? - Exp. R. - passengers
7. Listen to the sound of the train passing through something, what is it passing through? - Exp.R. - a tunnel.

Look at the picture of the train. What is this?

Expected responses :-

8. carriage
 9. engine
 10. Who sits in the engine? -Exp.R. - driver
- Look at those hills
11. What is between the hills? - Exp.R. - valley
- Look at this model (Display a car over the railway line).
12. What do you think is wrong with it?
Exp. R. - the train moves on the railway line.

3.12 MODIFIED POST TEST II

(Verbs)

13. Why is the Weaver bird called by that name? - Exp. R. - because it weaves its nest.
14. Name me anything else which can be weaved? - Exp.R. - mat, sweater etc.

(Adjective)

15. Why is the Zebra crossing called by that name? - Exp. R. - because it is striped or painted black and white.
16. When the sun is shining, how would the water pond at Uhuru Park look like?
Expected response - (bright)

(Colour)

17. What is the colour of the smoke bright or dull? - Exp.R. - (dull)
- Look at this colour table. Point at the
18. bright colour.
19. dull colour.

(Preposition)

20. When would the train move slowly up the hill or down the valley?
Expected response - up the hill.

TABLE 3.12 A : CATEGORIZATION OF QUESTIONS - POST TEST PII.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Knowledge	*	*	*	*					*	*					*	*				
Comprehension					*		*	*			*	*		*			*			
Application						*							*					*	*	*

Knowledge - 8 questions

Comprehension - 7 questions

Application - 5 questions

Table 3.12A indicates with asterisks the categorization of each of the 20 items in Post-test II. Questions 1, 2, 3, 4, 9, 10, 15, 16 were set for the knowledge type of questions. Items 5, 7, 8, 11, 12, 14 and 17 refer to the comprehension type of questions. And items 6, 13, 18, 19, 20 refer to Application type of questions. Similar to Post-test PI more questions were allocated for knowledge and comprehension compared to Application since the former were less difficult and helped the researcher determine whether the student had grasped the concept of the learnt words.

REFERENCE

1. C. Brasnett and L. Wandera, The Progressive Peak English Course (Nairobi: Ministry of Education and Oxford University, 1977).
2. B.S. Bloom, Taxonomy of Educational Objectives (New York: D. Mackay, 1956).

CHAPTER IVResults and Analysis on the Post-tests and Retention tests

On setting the Post-tests PI and PII as shown in Chapter III Section 3.11 and 3.12, the investigator administered orally the tests on each of the pupils in matched groups in the two schools namely, Nairobi Primary and Moi Avenue Primary. Post-test PI and PII was given after the groups had gone through a learning period of 4 lessons and 8 lessons respectively. The total number of questions in each Post-test was 20. Each being an objective item and referring to the lower order of questions as indicated in Section 3.10, equal weight was therefore placed on each item. A composite score of 1 was considered appropriate for each of the 20 items. On administering the tests the investigator set up the tables of results 4.1 A - 4.3 B indicating the scores for the experiment, control and Teacher's group. A pupil reference number was given to indicate the matched pupils in the 3 groups (see Appendix IV). The mean score (M) and the Standard Deviation, σ was worked out and shown below each table of results.

Each table of results 4.1A - 4.3D was divided into 3 major columns indicating the raw scores out of 20 for the Experimental Group, Control Group and Teacher's Group. Preceding each score column is the column relating the pupil reference number. In order to read the tables see 4.1A Page 93 for example matched pupils with reference numbers 6, 14 and 30 obtained scores 17, 15 and 11 respectively. Due to the application of switch-group method see Section 2.3 Page 31 pupils belonging to the experiment group were transferred after the first Post-test to the control group, resulting in pupil with reference number 6 for example shifting from experiment group in table 4.1A to control group in table 4.1B. The same is true for all pupils in the subsequent tables. It was noticed from each table of results that the Mean Score (M) for the experiment groups was comparatively higher than that of the control and Teacher's groups. The mean score for the experiment group see 4.1A is 16.27 whereas for the control and Teacher's group is 10.82 and 10.18 respectively. Minor difference was seen in the mean score between the control group and Teachers' group, which both underwent the same formal method of learning.

Following the administration of the second Post-test II, a lapse of 4 weeks was given after which Retention test RI and RII were carried out. The content of the Retention tests was similar to that of the Post-tests. A similar composite score of 1 for each item in the two tests was maintained. Tables of results 4.1C - 4.3D were drawn up for experiment group, control group and Teachers' group. They were on parallel basis as those shown for the Post-tests. The reference number for the pupils remained the same. The mean score (M) and the Standard Deviation σ was calculated and indicated below each table of results.

RESULTS AND ANALYSIS ON THE POST TESTS

4.0 Tables 4.1A to 4.3D contain the performances (out of 20) of matched pupils on the post-tests as indicated.

TABLE 4.1A POST-TEST PI - NAIROBI PRIMARY

Pupil Ref.	Exp.Group	Pupil Ref.	Control Group	Pupil Ref.	Teacher's Group
6	17	14	15	30	11
1	20	3	12	4	14
10	17	13	14	7	10
11	18	12	7	25	10
9	10	8	7	5	10
2	13	32	2	29	6
19	14	18	11	17	10
23	19	24	11	31	12
27	20	16	12	26	12
21	17	22	10	15	9
23	14	20	8	28	8
Mean	16.27		10.82		10.18
	3.16		2.07		2.13

Pupil Ref.	Exp.Group	Pupil Ref.	Control Group	Pupil Ref.	Teachers Group
14	18	6	18	30	10
3	17	1	17	4	13
13	18	10	9	7	11
12	12	11	11	25	9
8	14	9	9	5	5
32	17	2	7	20	7
18	16	19	11	7	10
24	16	23	14	31	13
16	19	27	15	26	11
22	20	21	10	15	10
20	15	23	5	28	9
Mean	16.27		10.82		10.18
	3.16		2.07		2.13

TABLE 4.1B POST-TEST PII - NAIROBI PRIMARY

TABLE 4.2A POST TEST PI - MOI AVENUE PRIMARY

Pupil Ref.	Exp. Group	Pupil Ref.	Control Group	Pupil Ref.	Teacher's Group
23	15	5	12	24	12
15	19	10	19	1	13
22	17	4	16	6	14
30	15	28	9	27	11
21	17	16	9	29	9
2	18	7	16	14	16
17	20	3	13	31	12
8	18	20	9	11	9
9	11	25	11	12	10
13	15	26	8	32	15
18	17	19	14	33	16
Mean	16.54		12.36		12.95
σ	20.46		3.58		2.58

Pupil Ref.	Exp. Group	Pupil Ref.	Control Group	Pupil Ref.	Teacher's Group
5	19	23	13	24	10
10	19	15	18	1	12
4	17	22	16	6	15
28	15	30	10	27	10
16	17	21	14	29	8
7	20	2	16	14	14
3	18	17	13	31	14
20	17	8	13	11	11
25	15	9	6	12	13
26	12	13	6	32	16
19	17	18	12	33	13
Mean	16.91		12.95		11.87
σ	2.26		3.94		2.18

TABLE 4.2B POST TEST PII - MOI AVENUE PRIMARY

TABLE 4.3A POST-TEST I - MOI AVENUE PRIMARY

Pupil Ref.	Exp. Group	Pupil Ref.	Control Group	Pupil Ref.	Teacher's Group
16	17	31	10	33	8
11	10	20	11	24	7
5	19	4	11	36	13
35	17	34	5	6	6
18	8	8	10	3	9
14	14	15	10	12	7
26	19	29	9	13	5
8	15	17	6	23	6
25	19	21	15	19	12
7	17	9	11	28	7
27	15	30	8	32	9
1	20	2	12	22	20
Mean	15.83		9.83		4.08
σ	3.71		2.66		2.28

Pupil Ref.	Exp. Group	Pupil Ref.	Control Group	Pupil Ref.	Teacher's Group
31	16	16	5	33	8
20	16	11	6	24	6
4	18	5	9	36	7
34	6	35	10	6	8
8	17	18	5	3	7
15	14	14	7	12	6
29	12	26	10	13	3
17	9	8	7	23	4
21	18	25	11	19	9
9	12	7	6	28	4
30	14	27	3	32	8
2	18	1	10	22	9
Mean	14.17		7.42		6.58
σ	3.83		4.01		2.02

TABLE 4.3B POST-TEST PII - MOI AVENUE PRIMARY

TABLE 4.1C RETENTION TEST RI - NAIROBI PRIMARY

Pupil Ref.	Exp.Group	Pupil Ref.	Control Group	Pupil Ref.	Teacher's Group
6	15	14	10	30	5
1	20	3	7	4	13
10	17	13	9	7	8
11	14	12	3	25	10
9	8	8	6	5	4
2	11	32	7	29	4
19	14	18	7	17	7
23	16	24	8	31	7
27	19	16	10	26	5
21	13	22	7	15	7
33	13	20	6	28	2
Mean	14.54		7.27		6.57
σ	3.44		2.00		3.08

Pupil Ref.	Exp.Group	Pupil Ref.	Control Group	Pupil Ref.	Teacher's Group
14	15	6	13	30	8
3	13	1	16	4	10
13	17	10	7	7	5
12	10	11	6	25	8
8	8	9	3	5	3
32	15	2	3	29	5
18	16	19	7	17	4
24	13	23	12	31	9
16	18	27	10	26	8
22	19	21	6	15	7
20	15	33	12	28	3
Mean	14.45		8.64		6.36
σ	3.29		4.25		2.46

TABLE 4.1D RETENTION TEST RII - NAIROBI PRIMARY

TABLE 4.2C RETENTION TEST I.I - MOI AVENUE PRIMARY

Pupil Ref.	Exp.Group	Pupil Ref.	Control Group	Pupil Ref.	Teacher's Group
23	15	5	10	24	11
15	19	10	13	1	10
22	15	4	12	6	2
30	12	28	4	27	7
21	17	16	7	29	6
2	18	7	13	14	15
17	20	3	10	31	10
8	15	20	5	11	6
9	10	25	6	12	6
13	10	26	7	32	12
18	17	19	11	33	10
Mean	15.18		8.90		9.45
	3.51		3.24		2.91

0

Pupil Ref.	Exp.Group	Pupil Ref.	Control Group	Pupil Ref.	Teacher's Group
5	18	23	9	24	5
10	19	15	14	1	11
4	16	22	10	6	15
28	14	30	7	27	7
16	16	21	13	29	5
7	19	2	12	14	12
3	18	17	10	31	12
20	15	8	9	11	6
25	14	9	4	12	7
26	11	13	3	32	11
19	17	18	9	33	9
Mean	16.09		9.09		8.37
	2.47		3.42		3.31

TABLE 4.2D RETENTION TEST R.II - MOI AVENUE PRIMARY

TABLE 4.3C REPEITION TEST RI - MOI AVENUE PRIMARY

Pupil Ref.	Exp.Group	Pupil Ref.	Control Group	Pupil Ref.	Teacher's Group
16	11	31	7	33	3
11	6	20	9	24	3
5	18	4	7	36	6
35	15	34	2	6	11
18	8	8	4	3	4
14	12	15	8	12	5
26	13	29	7	13	4
8	14	17	2	23	3
25	16	21	13	19	10
7	16	9	7	28	5
27	15	30	6	32	3
1	19	2	9	22	15
Mean	13.58		6.75		6.33
σ	3.85		3.08		3.70

Pupil Ref.	Exp.Group	Pupil Ref.	Control Group	Pupil Ref.	Teacher's Group
31	10	16	2	33	
20	16	11	2	24	4
4	15	5	6	36	5
34	5	35	5	6	3
8	12	18	3	3	6
15	11	14	3	12	1
29	11	26	4	13	2
17	6	8	2	23	3
21	17	25	9	19	3
9	12	7	3	28	3
30	11	27	2	32	4
2	15	1	7	22	8
Mean	11.75		4.00		4.00
σ	3.54		2.30		2.09

TABLE 4.3D RETENTION TESTI RII - MOI AVENUE PRIMARY

The same procedure is to be followed for the reading of the tables as described for the Post-tests. From the tables of results on the Retention tests it was noticed that the mean scores for all the groups were relatively lower than those calculated for the Post-tests. However, the mean scores for the experimental group was still comparatively higher than those for the control and Teachers' groups. The mean score for the experiment group see 4.1C for example is 14.54 compared to 7.27 and 6.57 for the control and Teacher's group respectively. Minor difference was seen in the mean scores between the control and Teachers' groups which underwent the same formal method of learning.

In order to carry out the statistical analysis the Researcher had to select a method which would help in determining the difference in performances of matched groups exposed to either the innovatory or formal method. The t-test technique was considered appropriate. For the purpose of analysis the following data was required for each experiment group, control group and Teachers' groups viz the number of students (N) in each group; their mean scores (M), the Standard Deviation (σ) and the standard error of means ($\sigma_{\bar{x}}$). Since the group size was less than 30 the formula for the Standard Deviation used was :-

$$\sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{N-1}}$$

The correlation coefficient between each group was obtained by using the following formula :-

$$r = \frac{\sum xy - n \bar{x} \bar{y}}{n \sigma_1 \sigma_2}$$

The standard error of difference was calculated by the formula below :-

$$\sigma_D = \sqrt{\sigma_{\bar{x}_1}^2 + \sigma_{\bar{x}_2}^2 - 2 \cdot r \cdot \sigma_{\bar{x}_1} \sigma_{\bar{x}_2}}$$

Finally, to compare the difference in performance between the matched groups the t-value was worked out by the following method.

$$t\text{-value} = \frac{(M_1 - M_2)}{\sigma_D}$$

and the level of significance was stated.

Section 4.4 shows an example illustrating the statistical analysis of one particular school namely, Nairobi Primary using Post-test PI. Similar procedure was followed for the remaining groups in the two schools.

Comparing 2 and 3

$$\sigma_{\bar{D}} = 0.908$$

$$t - \text{Value} = 0.64/0.908 = 0.7 \quad (\text{ten degrees of freedom})$$

(this difference could arise 50 times out of hundred by chance)

As indicated in example 4.4 the number of students (N) in each group was 11. The mean scores (M) for the experiment, control and Teacher's group was 16.27, 10.82 and 10.18 respectively. The Standard Deviation (σ) for the respective group was 3.16, 2.64 and 2.13. The standard error of means $\frac{\sigma}{\bar{x}}$, for the experiment group was 0.953, 0.796 for control and 0.642 for the Teacher's group. The gains between the experiment and control group ($M_1 - M_2$) was 5.45. And between control and Teacher's group ($M_2 - M_3$) was 0.64. The correlation coefficient between the experiment and control group r_{12} was worked out as 0.366 and between control and Teacher's group r_{23} was 0.217. The standard error of difference between the experiment and control group was calculated as 0.993. Finally the t-value for the above two groups was realized as 5.49 at 10 degrees of freedom. This was found significant at 0.005 level meaning the difference could only arise some 5 times out of 1,000 by chance. The standard error of difference between the control and Teacher's group was calculated as 0.908. The t-value obtained between the control and Teacher's group was 0.7 at 10 degrees of freedom. The difference could arise 50 times out of 100 by chance.

Finally, detailed table of results was drawn 4.5A - 4.5C to indicate the results obtained from the Statistical Analysis for all groups in each school.

TABLE 4.5A RESULTS FROM THE STATISTICAL ANALYSIS - NAIROBI PRIMARY

School	Test	Group & No. In Group	M Mean Score	$\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{N}}$	Gains	r	σ_D	t-value	Statistical Significance	
NBI PR.	P1	Exp. 11	16.27	3.16	0.953	5.45 0.64	0.366 0.217	0.993 0.908	5.49 0.70	0.01
		Cont. 11	10.82	2.64	0.796					
		Teach. 11	10.18	2.13	0.692					
NBI PR.	PII	Exp. 11	16.54	2.296	0.692	4.18 2.18	0.16 0.175	1.185 0.919	3.52 1.77	0.01
		Cont. 11	13.36	3.59	1.080					
		Teach. 11	10.18	1.78	0.537					
NBI PR.	RI	Exp. 11	14.54	3.44	1.040	7.27 0.73	0.426 0.177	1.040 1.194	6.99 0.61	0.01
		Cont. 11	7.27	2.00	0.603					
		Teach. 11	6.57	3.08	0.929					
NBI PR.	RII	Exp. 11	14.45	3.297	0.994	5.81 2.28	0.128 0.526	1.730 1.320	3.36 1.73	0.01
		Cont. 11	8.64	4.25	1.281					
		Teach. 11	6.36	2.46	0.741					

TABLE 4.5B RESULTS FROM THE STATISTICAL ANALYSIS - MOI AVENUE PRIMARY

School	Test	Group & No. In Group	M Mean Score	σ	$\frac{\sigma}{x}$	$\frac{\sigma}{N}$	Gains	r	$\frac{\sigma}{D}$	t-value	Statistical Significance
<u>Group I</u>											
Moi Av.	PI	Exp. 11	16.54	2.46	0.742		4.18	0.925	1.018	4.11	0.01
		Cont. 11	12.36	3.58	1.080		1.0	0.515	0.952	1.05	
		Teach.11	12.95	2.58	0.778						
Moi Av.	PII	Exp. 11	16.91	2.26	0.681		4.46	0.757	0.808	5.52	0.01
		Cont. 11	12.95	3.94	1.190		0.63	0.161	1.260	0.408	
		Teach.11	11.87	2.18	0.657						
Moi Av.	RI	Exp. 11	15.18	3.51	1.060		6.28	0.638	0.872	7.2	0.01
		Cont. 11	8.90	3.24	0.977		0.55	0.644	0.787	0.698	
		Teach.11	9.45	2.91	0.877						
Moi Av.	RII	Exp. 11	16.09	2.47	0.745		7.00	0.755	0.676	10.35	0.01
		Cont. 11	9.09	3.42	1.030		0.36	0.346	1.160	0.31	
		Teach.11	8.37	3.31	0.998						

TABLE 4.5C RESULTS FROM STATISTICAL ANALYSIS - MOI AVENUE PRIMARY

School	Test	Group & No. In Group	M Mean Score	σ	σ	$\frac{\sigma}{N}$	Gains	r	σ_D	t-value	Statistical Significance
		<u>Group II</u>									
Moi Av.	PI	Exp. 12	15.83	3.71	1.070	6.00	0.166	1.209	4.960	0.01	
		Cont. 12	9.83	2.66	0.768	0.75	0.947	0.256	2.930		
		Teach.12	9.08	2.28	0.658						
Moi Av.	PII	Exp. 12	14.17	3.83	1.106	6.75	0.031	-1.625	4.150	0.01	
		Cont. 12	7.42	4.01	1.157	0.84	0.052	1.270	0.662		
		Teach.12	6.58	2.02	0.583						
Moi Av.	RI	Exp. 12	13.58	3.85	1.111	6.83	0.113	1.342	5.088	0.01	
		Cont. 12	6.75	3.08	0.889	0.62	0.389	1.092	0.568		
		Teach.12	6.33	3.70	1.068						
Moi Av.	RII	Exp. 12	11.75	3.54	1.020	7.75	0.450	1.099	7.050	0.01	
		Cont. 12	4.00	2.30	0.664	0.00	-	-	0.000		
		Teach.12	4.00	2.09	0.603						

Referring to the table of results 4.5A - 4.5C the first column shows the name of school either Nairobi Primary or Moi Avenue Primary. The second column refers to the type of test whether it was Post-test PI or PII or Retention test RI or RII. The third column stands for the type of group whether experiment, control or Teacher's and the number of children in each group. The columns following it states respectively the Mean Score (M) the Standard Deviation (σ) the standard error of means ($\sigma_{\bar{x}}$), the gains, the correlation coefficient (r) and the standard error of difference σ_D between the experiment/control and control/Teacher's group. The next column records the t-value followed finally by the column stating the level of significance of results.

The conclusions and observations drawn from the statistical analysis are set down in the next chapter.

CHAPTER VCONCLUSIONS AND PERSONAL OBSERVATIONS

5.0 Tables 4.5A ~ 4.5C contain all the data relating to the performances on Post-tests PI and PII and Retention tests RI and RII. The last column in the tables indicate that :-

- 1) There is significant difference in performance on Post-tests PI and PII between the Experiment and Control Group at 0.01 level.
- 2) There is no significant difference in performance on Post-tests PI and PII between the Control and Teacher's Group.
- 3) There is significant difference in performance on Retention tests RI and RII between the Experiment and Control Group at 0.01 level.
- 4) There is no significant difference in performance on Retention tests RI and RII between the Control and Teacher's Group.

Objective 1.2.1.

Conclusion No.1 indicates success in performance of the Innovatory method compared to Traditional method.

Objective 1.2.2.

Conclusion No.3 indicates that children exposed to Innovatory method retain relatively better than those exposed to Traditional method.

The results should be read with consideration to the experiments and tests administered to the 9 groups in 2 schools, a sample deemed sufficient for this project regarding limitation of time and other constraints mentioned in 1.3.

- 5.1 From the observations made on the two teaching strategies (see Video-tape VI) it can be concluded that the result of the Innovatory method resulted primarily from play, an activity which the children found both natural and enjoyable. It aroused their curiosity motivating them to active and total participation. It also helped the children to relax and overcome inhibitions arising from their language difficulties, unselfconsciously making verbal contributions, giving the researcher opportunity to trace individual problems. It was also noticed that children in the Experimental Group felt less embarrassed when corrected than those in the Control Group.

The creation of concrete situations in the Experimental Group helped to engage children in learning meanings of words through manipulating these situations, assimilating through use of all their sensory organs. They explored by looking, touching, smelling, listening etc. They handled whatever was at hand, seeing what it would do and what they themselves could do with it.

Greater peer interaction was witnessed amongst children exposed to the Innovatory method. Whilst exploring, constructing and playing creatively children talked, expressed surprise, disappointment,

excitement, often asked themselves questions and thought of possible solutions and spontaneously practised language in the right context. They also willingly communicated and cooperated with each other.

5.2 Play activity method also goes a long way in an attempt to exercise practically, suggestions highlighted in the Gachathi Report (1976). The child has the opportunity to participate both as an individual and as a group thus promoting the full development of his talents and personality with the context of mutual social responsibility (2). It also instils in the student positive attitudes towards cooperative effort and mutual social responsibility by encouraging the project approach to primary teaching (3). The play activity method concentrates on creating a situation for the learner, a situation which he experiences as realistically as possible. From this comes both understanding of meaning and confidence in communication (4). Since play is a preferred way of learning for most children play deserves consideration as a method of teaching (5).

It also asserts problem-solving teaching methods that have a bearing on the real life situation of the Kenyan environment (6).

Play activity method could also serve as a possible solution to ease certain psychological problems faced by Kenyan pupils in schools. Dr. Samuel Gatere, a Consultant in Psychology at Kenyatta National Hospital, made an appeal in July, 1979 to the Ministry of Education whilst addressing a meeting held by Kenya National Heads of Schools Association to start a school psychology service as a matter of urgency to help teachers in their work. He noted that the psychological problems amongst pupils was on the increase. About four youngsters were

5.2

received at the Mathare Mental Hospital daily. This could possibly be due to the neglect over the area of individual development and experience, a concern shown by the Psychoanalyst, Winnicott (1971) (7) while treating mentally disturbed people. He prescribed 'play' for his patients for he stated that it was while playing that the patient had the opportunity to become creative. Play activity method could provide a similar therapy in schools, since it allows individual growth and encourages social adjustment.

Despite the evidence supporting the play activity method few countries have adopted it seriously into their educational systems. This reluctance arises from a widespread suspicion that there is an inconsistency between enjoyment and learning. Such a view is paralleled in the notion that a medicine cannot be effective unless it is extremely unpleasant.

Until the past decade, educators believed that games, whether they are produced locally or commercially, were frivolous, ornamental and meaningless artifacts that detracted from the solemnity of educating the nations youth. Even now, regardless of what earlier investigators have demonstrated about the Instructional impact of gaming devices on the educative process, school administrators seem to reflect the notion that games can be useful in instruction. College Instructors question the soundness of using gaming devices and classroom teachers deny their educational usefulness. Parents consider games as extracurricular home-oriented devices and activities that help the family

5.2

pass the time pleasantly in fun-fulfilled entertaining ways. Regardless of demonstrated instructional value, games are often not appropriate for classroom use (8).

The attitude of Kenyans towards play can be rationalized on the basis of culture which draws a distinct difference between work and play. Work being considered to be a productive enterprise in contrast to play which is believed to be a non-productive activity (9). Integration between work and play is therefore viewed as a contradiction. Traditionally formal schooling lays heavy emphasis on book learning and play activity method which lays less stress on book learning is not so readily accepted as a valid means of education. A further difference between the conventional classroom and play activity situation emerges with respect to maintenance of discipline. In the former case the teacher is responsible for imposing and preserving discipline where as in the later case discipline arises from the situation itself and the role of the teacher shows viz a change from a central, authoritarian one to a peripheral and a guiding one. Play activity method assists youth to grow into self-disciplined, self-respecting and law abiding mature-minded and creative people (10). The important consideration is surely that discipline is a form of order, and order is a

5.2

state of mind. Accordingly while in the play activity class a greater degree of pupil movement and a higher level of noise is to be expected than in the Traditional classroom, this should not be misinterpreted to imply confusion or chaos. It is the responsibility of the teacher in the Innovatory class situation to ensure that the activities in which the pupils are engaged are goal oriented.

Kenya has inherited a system of education left over during the colonial era. It has deemed it more appropriate to continue with the system and gradually implement changes aimed at making education more relevant to Kenya's needs and aspirations. The first priority set down in the 1974 to 1978 Development Plan is the seven year basic education for every child (11). This has continued to encourage quantitative expansion both at 'Harambee' and Government level to absorb the increasing proportion of entries into primary schools. After achieving this educational equity by 1978, the Government has intended to restrict capital investment in education to those projects which are most likely to improve the quality and content of the education system.

" We interpret this to mean that capital investment of public funds was to be directed to the improvement of the quality and content of education as a priority rather than to expansion of education as such".
(12).

Suggestions to the Government therefore to the type of innovations to be implemented

5.2

after the year 1978 especially in areas aimed at improving the quality of education would be both timely and useful. It is therefore hoped that this project proves meaningful and practical to fulfil to an extent the set down objective on qualitative enhancement in education.

The coming of Western influence in Kenya and other African countries has led to a considerable loss of indigenous cultural practices and values. J.M. Antikola, Secretary of the Nigerian Educational Research Council in Lagos showed a need to combat wastefulness of Innovative cultural ideas intrinsic in African situation (13). Kenyan culture has a rich stock of folk-lore myths and games like 'shilembe', 'wetee', 'kongolo' (14) which could be reinforced where appropriate into play activity lessons. Incorporating such traditional practices into the present system of education would promote traditional practices that have educational and occupational values (15) and also integrate traditional practices with modern, scientific and technological development (16).

The conclusions drawn from this study justify further work on larger scale research programmes on more general application of situational games to learning. Such projects could be concentrated upon an extension of this work on vocabulary,

5.2

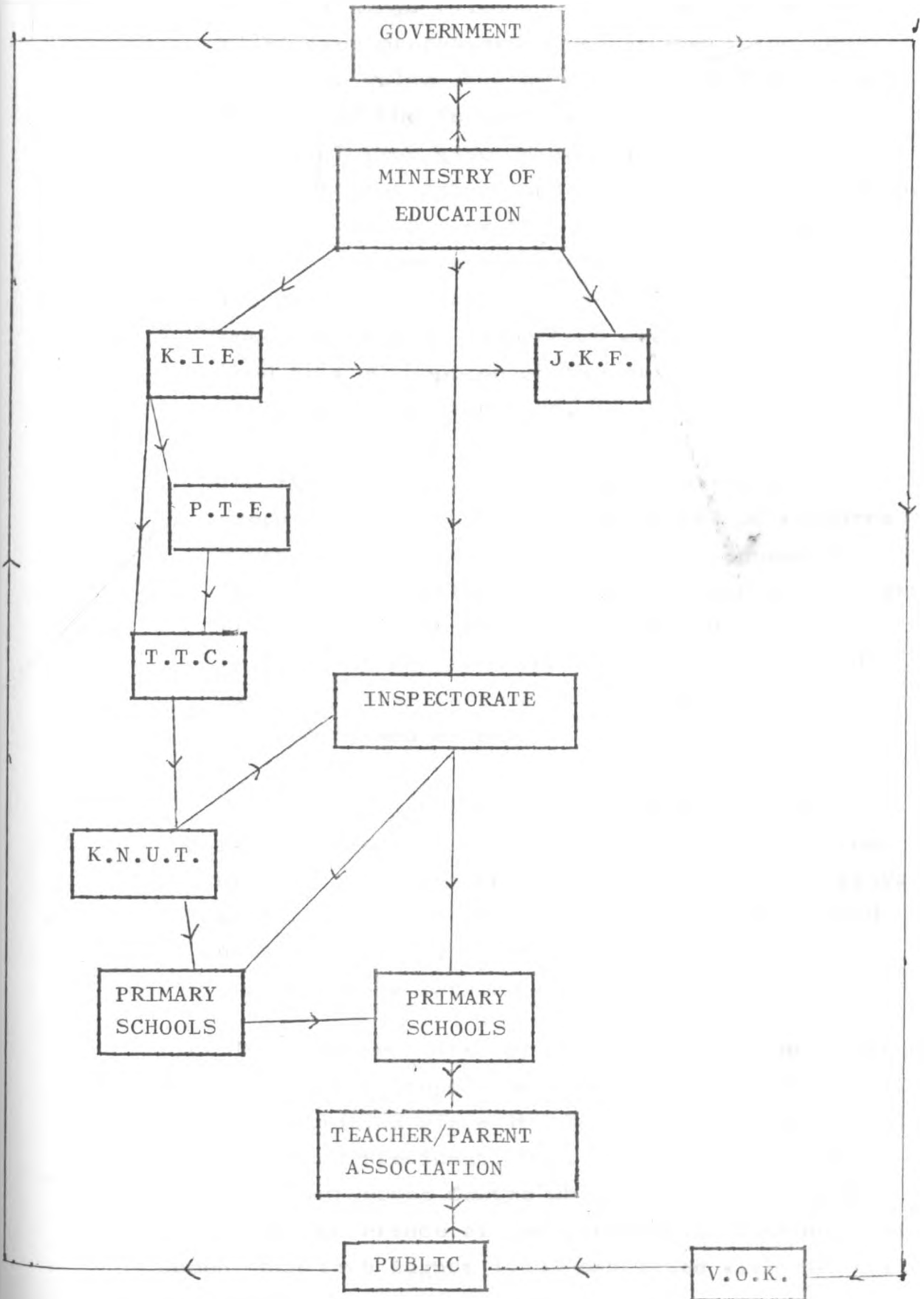
other language skills like comprehension, composition etc., and into other disciplines. If the same findings are borne out from this extensive research than the question of implementing this innovatory technique arises.

5.3 Mechanism Of Implementation

The administrative machinery (see fig.5.3A) exists in Kenya in the form of Kenya Institute of Education (K.I.E.) working under the auspices of Ministry of Education. There have been many curriculum development projects in Kenya since independence and the Jomo Kenyatta Foundation has considerable experience in publishing and marketing of such resource materials and therefore one would anticipate no technical difficulties to arise from this aspect of the programme.

There is a big step between the conception of a teaching strategy and its implementation in practice and it is quite likely that this particular innovation would meet with resistance from some parents and established educators as previously discussed. In order to bring about a change in attitude towards this approach a programme directed at educating the general public and the professional educators as to the true philosophical and pedagogical basis of the approach would have to be implemented. This would involve the K.I.E. and the Kenya National Union of Teachers (KNUT) arranging in-service courses and setting up workshops for teachers to attend. The Government, in conjunction with Ministry of Education, could also direct the

FIG. 1 THE ADMINISTRATIVE HIERARCHY



5.3

Voice of Kenya (V.O.K.) to prepare radio and television programmes aimed at educating the public on value of play in childrens' learning. Members of the Inspectorate could address Teacher Parent Association with a view to inform both teachers and parents on the importance of play and guiding them to provide suitable school and home environments for the children. Evaluation of lessons in schools and constant encouragement by Inspectors would gradually lead to the adoption of the desired teaching strategy by the teachers.

The staff at K.I.E. could be involved in preparation of Teacher Guide books and resource materials related to play activity approach. The courses availed for Teacher Training Colleges (T.T.C.) and for Primary Teacher Educators (P.T.E.) at Kenyatta University College could extend further instruction in play activity philosophy and method.

The Ministry of Education would also have to consider ways of compensating for better terms of service likely to be put forward by the Kenya National Union of Teachers which in turn would assist in improving quality of teaching by organizing in-service courses.

Finally to commemorate 1979, the International Year of the Child, it is hoped that such a project would witness further promotion since it also hails the recent call by the Kenyan President, Hon. Daniel Arap Moi at Kenyatta Conference Centre while opening the 22nd Triennial Conference of the International Council of Women (8th-18th August 1979) concerned with the child

welfare. The President stated that we should give the child what he wants. By introducing play activities therefore we shall fulfil to a great extent the child's favourite necessity and direct it to achieve more fully the educational goals.

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APPENDIX I.

WORD LIST (from Progressive Peak Course 3)

I after a word indicates that it was introduced in Standard One and II that it was introduced in Standard Two. Standard Three words are followed by the number of the Lesson in which they were first introduced in this book.

Verbs

Whenever an irregular past tense or past participle form has been introduced, that form has been given here. All forms of be have been introduced.

able (in be able to)	13	clean	I	finish	II
ache	29	climb	II	fix	II
add	II	close	I	fly flew	II
agree	13	comb	II	flown	20
allow	44	come came	I	fold	II
answer	I	cook	II	follow	II
arrive	39	cost cost	II	forget forgot	II
ask	I	could	13	get off got off	II
bandage	29	count	II	get on got on	II
bathe	43	cross	II	get ready	II
be	I	cry	I	get to got to	II
been	II	cut cut	I	get up got up	II
beat (=strike)	11	cut down	II	give gave	I
become	30	damage	27	given	II
begin began	II	dance	12	go went	I
behave	14	die	11	gone	21
belong	13	dig dug	II	go away	went away II
bend	28	divide	32	grow	II
bite bit	18	do (does) did	I	guess	42
bleed	29	done	II	hand	II
blow	8	draw drew	I	handle	27
boil	II	drawn	II	hang	5
(be) born	30	dress	II	happen	27
borrow	13	drink drank	I	harm	42
break broke	26	drive	I	have (has) had	I
breathe	28	drop	II	hear heard	II
bring brought	I	dry	II	help	II
brush	II	dust	II	hide hid hidden	II
build built	20	eat	I	hit hit	II
burn burnt	II	ate eaten	II	hold held	I
buy bought	II	empty	II	hope	33
call (=summon)	II	enjoy	14	hunt	II
called (=named)	7	equal	32	hurry	22
can	II	escape	18	hurt hurt	II
(can't)	II	expect	36	join	II
carry	I	fall fell	II	jump	I
catch caught	I	feed fed	II	keep (=continue)	II
change	II	feel felt	II	keep (=remain)	9
chase	II	fetch	20	keep (e.g. chickens)	24
check	37	fight	29	kick	I
choose chose chosen	II	fill	II	kill	44
clap	I	find found	II	kneel	II

knelt	8	pour	I	stand	stood	I	
knit	II	press	37	start	II		
knock	II	pretend	25	stay	II		
knock in	II	promise	25	steal	8		
know	I	pull	I	stick	stuck	I	
last	42	push	I	stop	I		
laugh	I	put	put	stretch	II		
lay (egg)	II	put away	II	subtract	32		
lay (=set down)	12	put in	II	suck	18		
lead	II	put on	II	swallow	18		
lean	39	rain	II	sweep	22		
lean out	39	raise	28	swim	swam	swum	10
leave left	I	reach	II	swing	24		
lead	13	read	read	take	took	I	
let let (=allow)	18	receive	37	taken	II		
let go	let go	remember	II	take away (=subtract)			
Let's	II	remind	25	take (took taken)			
lick	37	repair	34	care of	27		
lie (down)	II	rest	39	take off	took off	II	
lift	II	ride	rode	talk	II		
light lit	II	ring	rang	tap	I		
like	II	rise	43	taste	II		
listen to	I	roar	II	teach	I		
live (=dwell)	II	roll	26	taught	23		
live (opposite of die)	11	row	11	tear	tore	torn	II
lock	27	rub	II	tell	told	II	:
look after	II	run	ran	thank	4		
look at	I	rush	8	think	II		
look for	II	sail	10	thought	13		
look like	II	save (from danger)	II	throw	threw	I	
look out of	II	save (e.g. money)	35	throw (thrown) away			
lose lost	II	saw (wood)	II	tidy	19		
love	18	say said	I	tie	II		
make made	II	scratch	II	touch	I		
mark	26	see saw seen	II	travel	34		
may (probability)	8	sell sold	II	try	13		
mean	22	send sent	15	turn off	II		
measure	II	shall	II	turn on	II		
meet met	4	shake shook	4	turn over	II		
mend	II	sharpen	37	turn round	I		
might	33	shine shone	II	turn to	II		
mix	II	shoot	44	understand	II		
move	9	shout	II	unlock	27		
multiply	32	show	I	use	7		
must	II	shut	shut	visit	II		
need	II	sign	36	wait	II		
open	I	sing sang	II	wake up	woke up	II	
ought	28	sit sat	I	walk	I		
owe	13	sleep	II	want	II		
pack	34	slept	39	wash	II		
paint	II	slide	24	watch	II		
pass	II	slip	26	wave	II		
pay paid	II	smell	smelt	wear	wore	I	
pick (e.g. fruit)	6	smile	II	weave	20		
pick up	I	speak	spoke	weigh	23		
plant	II	spell	31	whisper	31		
play	I	spend	spent	will (won't)	I		
play (music)	12	spoil	spoilt	would	II		
point at	I	spread	38	win	won	II	
post	37	stamp	II	wind (wound)	round		

healthy	29	
heavy	II	
heavier	23	
ber	I	
high	II	
hilly	40	
his	I	
hot	II	
hungry	II	
ill	II	
interesting	19	
its	II	
kind	II	
large	14	
last (=preceding)	II	
last (opposite of first)	II	
lazy	II	
less	II	
level	40	
light (not dark)	II	
light (not heavy)	II	
lighter	23	
little	I	
long longer longest	II	
loose	12	
loud	II	
low	II	
lucky	36	
male	20	
many	II	
more	II	
most	17	
much	II	
my	I	
narrow	15	
nasty	II	
near nearer	II	
new	II	
next	II	
nice	II	
noisy	II	
old (not new)	II	
old (eight years old)	II	
old (not young)	II	
older oldest	3	
opposite	38	
orange	II	
other	II	
our	I	
own	5	
palm	6	
pleased	4	
police (+car)	II	
polite	4	
poor	25	
present	II	
pretty	19	
quick	15	
quiet	II	
rain	9	
rainy	9	
ready	II	
red	I	
rich	25	
right (=correct)	II	
ripe	6	
rocky	41	
rough (not smooth)	II	
rough (not calm)	II	
round	15	
rowing	11	
rubber	II	
rude	4	
sad	II	
safe	II	
sailing	11	
same	II	
sea	11	
shallow	10	
sharp	14	
short (of things)	II	
short (of people)	II	
shorter shortest	II	
sick	II	
silver	42	
sleepy	II	
slow	II	
small smaller smallest	II	
smooth	II	
soft	II	
some	I	
sorry	II	
square	15	
stiff	29	
straight	15	
strong	II	
stupid	19	
sure	13	
surprised	33	
tall taller tallest	II	
tame	24	
that	I	
their	I	
these	I	
thick thicker	II	
thin (of things)	II	
thin (of people)	II	
thinner thinnest	II	
thirsty	I	
this	I	
thorn	41	
those	I	
tidy	19	
tight	12	
tired	II	
ugly	19	
unhappy	II	
unkind	19	
unlucky	36	
untidy	19	
useful	38	
useless	38	
warm	5	
well	II	
wet	II	
what	I	
which	II	
white	I	
whole	17	
whose	I	
wide	15	
wild	24	
wooded	41	
worse worst	31	
wrong	II	
yellow	I	
young	II	
younger youngest	3	
your (sg & pl)	I	
Adverbs		
about	II	
again	II	
ago	I	
almost	II	
aloud	31	
already	17	
also	I	
altogether	II	
always	II	
anywhere	II	
away	II	
back	II	
backwards	II	
badly	30	
carefully	II	
clearly	31	
close	18	
down	I	
early	II	
enough	II	
especially	18	
even	4	
ever	II	
everywhere	21	
far (farther) away	II	
fast	II	
faster	26	
forwards	II	
gently	27	
half past	I	
hard	II	
here	I	
how	36	
how (+many)	I	
how (+much)	II	
inside	I	
instead	42	
just (=exactly)	II	
just (of time)	17	

trousers II
 Tuesday I
 tunnel 40
 tyre II
 umbrella 9
 uncle II
 valley 40
 vegetable II
 verse II
 village 10
 visitor II
 voice II
 wall I
 warden 44
 waste-paper-basket II
 watch (wrist-watch) II
 water I
 wave 11
 way (=direction) II
 weaver (bird) 20
 Wednesday I
 weed 5
 week I
 wheel II
 whisper 31
 wife I
 wind 8
 window I
 wing 20
 winner II
 wire II
 wood (material) II
 wood (=small forest) 41
 wool II
 woman I
 women II
 word II
 work II
 worker 17
 wrist 28
 year II
 zebra II
 zebra crossing 22

Pronouns

all II
 anybody II
 anything II
 both II
 each II
 everybody 21
 everything 21
 few 39
 he I
 her I
 hers I
 herself II
 him I
 himself II
 his I

I I
 it I
 me I
 mine I
 most 17
 myself II
 nobody II
 nothing II
 one II
 ours I
 ourselves 14
 she I
 some II
 somebody II
 something II
 that (demonstrative) I
 that (relative) 38
 theirs I
 them I
 themselves 14
 these I
 they I
 this I
 those I
 us I
 we I
 what I
 which 38
 who (interrogative) I
 who (relative) 34
 you (sg & pl) I
 yours (sg & pl) I
 yourself II
 yourselves 14

Adjectives

able 13
 absent II
 afraid II
 alive 11
 all II
 all right 38
 alone 18
 angry II
 another II
 any I
 asleep II
 awake II
 back II
 bad II
 worse worst 31
 bad (rotten) II
 beautiful 40
 better 30
 best 31
 big I
 bigger biggest II
 black I
 blind 30
 blue I

blunt 14
 brave II
 bright 8
 broken II
 brown I
 busy 19
 calm 11
 careful II
 cheap II
 clean II
 clear 31
 clever 19
 cold II
 cool 5
 cruel 44
 dangerous 19
 dark II
 dead 11
 deaf 30
 dear (=expensive) II
 dear (form of address) 36
 deep 10
 different II
 dirty II
 dry II
 dull (e.g. of colours) 15
 dusty II
 each II
 easy II
 either 6
 empty II
 enough 17
 every I
 excited 33
 exciting 33
 expensive 23
 far (farther) away II
 fast II
 faster fastest 26
 fat fatter fattest II
 female 20
 few 93
 fierce 44
 fine 9
 fresh 28
 front II
 full II
 gentle 44
 glad 36
 gold 42
 good I
 better 30
 best 31
 grassy 41
 grateful 25
 green I
 grey 9
 happy II
 hard (=difficult) II
 hard (not soft) II

wind (wound up) II
 wipe II
 work II
 write wrote I
 written II

Note:
 Irregular plural forms are given.

accident II
 address 36
 aeroplane 34
 afternoon II
 age (of person) 39
 air 28
 air mail 37
 ambulance 30
 animal II
 ankle 28
 answer I
 anybody II
 anything II
 April II
 arm I
 August II
 aunt II
 baby I
 back (of class) II
 back (of body) II
 bag I
 ball I
 banana I
 band (=rubber band) 7
 bandage II
 barber II
 basin 30
 basket I
 battery 7
 beach 43
 beak 20
 bean II
 bean-bag I
 bed II
 beginning II
 bell II
 belt II
 bicycle I
 bird II
 blackboard I
 blade 14
 blood 29
 blouse II
 boat 10
 body 28
 bone 7
 book I
 bookshop 23
 bottle I
 bottle-top I
 bottom I

bowl I
 box I
 boy I
 branch I
 bread II
 break II
 breakfast II
 breath 28
 brick II
 bridge 40
 brother I
 brush II
 bucket II
 building 22
 bundle 34
 bus I
 bush II
 butcher II
 button I
 cabbage II
 calendar 32
 camera 7
 can II
 car I
 card I
 cardboard I
 carpenter II
 carriage 35
 carrot II
 cart 22
 case (=suitcase) 34
 cassava II
 cat I
 cave 41
 cent II
 centimetre 17
 centre 18
 chair I
 chalk I
 chance 42
 change II
 charcoal II
 chicken II
 child children I
 chocolate 18
 cigarette 23
 circle I
 class II
 classroom I
 clock II
 cloth II
 clothes II
 cloud II
 Coast 35
 coat II
 coconut 6
 coffee II
 coin 23
 colour I
 comb II

corner I
 cotton II
 counter (in shop) II
 country (not city) II
 country (e.g. foreign) 43
 countryside 40
 cousin 3
 cow I
 cross 38
 cup I
 cupboard I
 cupful II
 cut 29
 cutting 6
 dance 12
 danger II
 date 32
 daughter I
 day (e.g. Monday) I
 day (not night) II
 daytime II
 December II
 desk I
 dinner 16
 dirt 22
 ditch 5
 doctor II
 dog I
 donkey 24
 door I
 dress I
 dresser 30
 driver I
 drum 12
 dust II
 dustbin 7
 duster I
 ear I
 earth 5
 edge 14
 egg II
 elbow 28
 elephant II
 end II
 engine (of car) 34
 engine (of train) 35
 English I
 envelope 33
 estate 6
 evening 8
 everybody 21
 everything 21
 exercise 28
 eye I
 face I
 family 3
 father I
 feather 20
 February II
 field II

fight 29
 finger I
 fist II
 fire II
 firewood II
 fish 10
 fisherman 10
 flag 7
 flap 37
 floor I
 flour 23
 flower II
 food II
 foot I
 feet II
 football II
 footstep II
 forest 6
 Friday I
 friend I
 front II
 fruit II
 fun 14
 fur 24
 game I
 game park II
 game warden 44
 gate 27
 gazelle 24
 giraffe II
 girl I
 glass (drinking) I
 glass (material) II
 goat II
 grandchildren II
 granddaughter II
 grandfather II
 grandmother II
 grandparents 3
 grandson II
 grass I
 ground II
 group I
 grown-up 3
 guess 42
 gum I
 gun 44
 hair I
 half II
 hammer II
 hand I
 handkerchief 29
 handle 14
 handwriting 31
 hare 24
 hat II
 head I
 headmaster I
 headmistress I
 health centre 29

hill II
 hillside 41
 hole II
 holiday II
 home I
 hospital 30
 hour I
 house I
 hurry 22
 husband I
 hut 42
 ink I
 insect 6
 iron (material) II
 island 43
 January II
 journey 34
 jug I
 juice 6
 July II
 jumper (garment) II
 June II
 key 27
 kilo (gram) II
 kind 20
 knee II
 knife 14
 knitting II
 knitting needle II
 knock II
 knot II
 ladder 7
 lake 10
 lamp II
 land (piece of) 5
 leader II
 leaf leaves II
 leather 7
 left I
 leg I
 lesson II
 letter (of alphabet) I
 letter (by post) 33
 lid 7
 light II
 lightning 9
 line (drawn) I
 line (for washing) II
 lion II
 lip I
 loaf II
 lock 27
 lorry II
 lot (a lot of) II
 lunch 16
 madam I
 maize II
 man I
 men II
 mango 6

March II
 mark 26
 market II
 mat II
 match I
 matchbox I
 May II
 meal 16
 meat II
 mechanic 34
 medicine II
 metre 17
 middle II
 milk I
 minute 32
 mirror II
 Miss I
 mistake 31
 Monday I
 money II
 monkey 24
 month II
 moon II
 moonlight 8
 morning II
 mother I
 mountain 40
 mouse, mice II
 mouth I
 Mr I
 Mrs I
 mud II
 music 12
 nail (finger) I
 nail (iron) II
 name I
 neck I
 needle II
 nest 20
 net 10
 newspaper I
 night II
 nobody II
 noise II
 nose I
 note (=written message)
 note (=banknote) 23
 nothing II
 notice 27
 notice-board 27
 November II
 number II
 nurse II
 nut (groundnut) II
 oar II
 October II
 office I
 oil II
 opposite 38
 orange II

packet II
 padlock 27
 page I
 paint II
 painting 31
 pair I
 paper I
 passenger 35
 parcel II
 parents 3
 part 17
 patch II
 path 15
 patient 30
 paw 7
 pen I
 pencil I
 people II
 photograph 7
 picker 6
 picture I
 piece I
 pill II
 pin I
 place II
 plan 25
 plant 5
 plastic II
 plate II
 playground II
 plenty 17
 pocket I
 point II
 police (man) II
 pool 43
 postcard 36
 post office 37
 pot II
 potato II
 present 4
 promise 25
 pupil I
 quarter II
 question I
 race II
 radio II
 rail 35
 railway 35
 rain 9
 rat 24
 reel (of cotton) II
 rest (=remainder) 17
 rest (=relaxation) 39
 rice II
 right (not left) I
 river II
 road II
 rock 41
 roof II
 room II

root 6
 rope 7
 row 5
 rubber II
 rubbish 7
 rule 44
 ruler I
 runner 26
 sail 10
 salt II
 sand 43
 Saturday I
 saw II
 scales (for weighing) 23
 school I
 schoolboy I
 schoolgirl I
 scissors I
 screw II
 screwdriver II
 sea II
 sea-shell 35
 seaside 35
 seat 35
 seed II
 September II
 servant 25
 shade 5
 shadow 9
 sheep sheep 24
 shelf shelves II
 shell 35
 shilling II
 ship 43
 shirt I
 shoe I
 shop II
 shopkeeper II
 shore 10
 shorts I
 shoulder II
 side II
 sir I
 sister I
 size II
 skirt II
 sky II
 sleep II
 smell II
 snake 24
 soap II
 sock I
 somebody II
 something II
 son I
 song II
 sound II
 soup II
 space 36
 spelling 31

spoon II
 spoonful II
 square 15
 stamp (postage) II
 Standard II
 star 8
 station II
 step (=doorstep) II
 step (=pace) II
 stick I
 stone I
 storm 9
 story II
 stranger 25
 street 22
 string II
 strip II
 stripe II
 sugar II
 sun II
 Sunday I
 surprise 33
 Swahili I
 sweeper 22
 sweet 18
 swimmer 10
 table I
 tail II
 tailor II
 tape measure II
 taste II
 tea I
 teacher I
 teeth II
 thief 8
 thing 5
 thorn 41
 thread 12
 thumb II
 thunder 9
 Thursday I
 tick (mark = correct) 38
 ticket 35
 tide 43
 tile II
 time I
 times (e.g. 3 x 2) 32
 tin II
 toe I
 tool II
 toothbrush II
 top I
 towel II
 town II
 toy II
 traffic 22
 traffic lights 22
 train 35
 trap 43
 tree I

late II
 loudly II
 nearly II
 never II
 not I
 now I
 nowhere 21
 often 16
 on time II
 once (= one time only) II
 only II
 outside I
 perhaps 8
 quickly II
 quietly II
 roughly 27
 round I
 sideways II
 slowly II
 so (do I) 18
 sometimes II
 somewhere II
 soon II
 still II
 still (unmoving) 9
 suddenly 8
 then II
 there I
 there + is/are I
 today I
 together II
 tomorrow I
 tonight 8
 too (= as well) I
 too (excessive) II
 up I
 usually 16
 very II
 when I
 where I
 why II
 yesterday I
 yet 17

Numerals
 one—fifty I
 fifty—one—a hundred II
 first—thirty—first II
 once, twice,
 three times II

Prepositions
 about (= concerning) 4
 above 5
 across II
 after (time) II
 after (place) II
 against (= close beside) 8
 along II
 among 38

around II
 at (place) I
 at (time) II
 before (time) II
 behind I
 beside II
 between (place) I
 by (place) I
 down II
 during 16
 except I
 for II
 from I
 in I
 in front of I
 inside I
 into I
 like II
 near II
 of I
 off II
 on I
 out of I
 outside I
 over II
 past (time) I
 past (place) II
 round II
 since 16
 through 12
 till 16
 to I
 towards 12
 under I
 until 16
 up II
 with (accompanying) I
 with (by means of) I
 without 37

Conjunctions
 after 21
 although 26
 and I
 as II
 because II
 before 21
 but II
 if 44
 like II
 or II
 so 25
 than II
 that 36
 when 3
 while 5

Articles
 a (an) I
 the I

Particles
 No I
 o'clock I
 Yes I

Interjections
 Aaa! II
 Aha! II
 Good! I
 Goodbye I
 Good night II
 Hallo I
 Oh! II
 please II
 Sssh 9
 Thank you I
 What! II

APPENDIX IILIST OF CITY EDUCATION PRIMARY SCHOOLS

<u>A</u> <u>Central Division</u>	B No. of Chn.	C Type of School	D Sample (93) Sch.	E Sample (23) Sch.	F Sample (2) Sch.
1. Nairobi Primary	805	Co-educ.			*
2. Bohra Road Prim.	201	"			
3. Catholic Parochial	428	"			
4. C.G.H.U. Primary	495	"			
5. Dr. Aggrey Primary	851	"			
6. Muranga Road Prim.	820	"			
7. Moi Avenue Primary	583	"			*
8. Islamia Primary	326	"			
9. Khalsa Racecourse	502	"			
10. Kongoni Primary	808	"			
11. Langata Rd. Prim.	616	"			
12. Langata West Prim.	873	"			
13. Madaraka Estate Prm.	930	"			
14. Mariakani Primary	697	"			
15. Mbagathi Rd. Prim.	1346	"			
16. Muslim Primary	874	"			
17. Muthurwa Primary	896	"			
18. Nairobi South Prim.	944	"			
19. New Pumwani Prim.	848	"			
20. Riverbank Primary	847	"			
21. S.S.D. Girls Sch.	281	"			
22. St. Brigid's Prim.	910	"			
23. St. George's Prim.	963	"			
24. St. Peter Claver's	1026	"			
25. Langata High School	316	"			
<u>Eastern Division</u>					
26. Bahari Uhuru Prim.	497	Co-educ .			
27. Buru Buru Primary	839	"			
28. Canon Apolo Prim.	497	"			

cont'd...

A <u>Eastern Division</u>	B No. of Chn.	C Type of School	D Sample (93) Sch.	E Sample (23) Sch.	F Sample (2) Sch.
20. Dr. Krapf Prim.	1022	Co-educ.			
30. Dr. Livingstone Prim.	949	"			
31. Edelvale Primary	553	"			
32. Embakasi Primary	807	"			
33. Harambee Estate Prim.	488	"			
34. Heshima Rd. Primary	1297	"			
35. Jogoo Rd. Primary	857	"			
36. Kimathi Estate Prim.	902	"			
37. Kariobangi South Prim.	847	"			
38. Makongeni Primary	989	"			
39. Makongeni West Prim.	802	"			
40. Martin Luther Prim.	1049	"			
41. Marurani Primary	878	"			
42. Morrison Primary	614	"			
43. Nairobi River Prim.	320	"			
44. Ofafa Jericho Prim.	796	"			
45. O.L.M. Shauri Moyo	729	Girls			
46. St. Anne's Primary	988	Girls			
47. St. John's Primary	1247	Co-educ.			
48. St. Michael's Prim.	1018	"			
49. St. Patrick's Prim.	1208	"			
50. St. Paul's Primary	1154	"			
51. Rabai Rd. Primary	946	"			
52. Uhuru Estate Prim.	796	"			
53. Umoja Estate Prim.	625	"			
<u>Northern Division</u>					
54. Ainsworth Primary	749	Co-educ.			
55. Baba Dogo Prim.	1454	"			
56. Ruai Primary	286	"			
57. Eastleigh Airport	1257	"			
58. Pangani Primary	817	"			

cont'd...

A <u>Northern Division</u>	B No. of Chn.	C Type of School	D Sample (93) Sch.	E Sample (23) Sch.	F Sample (2) Sch.
59. Garden Estate Prim.	673	Co-educ.			
60. Githurai Primary	312	"			
61. Cheleta Primary	581	"			
62. Juja Road Primary	852	"			
63. Kahawa Primary	940	"			
64. Kamiti Primary	570	"			
65. Kariobangi Primary	1140	"			
66. Karura Forest Prim.	544	"			
67. Kassarani Primary	717	"			
68. Kenyatta College Prim.	118	"			
69. Mathari Primary	602	"			
70. Mahiga Primary	671	"			
71. Muthaiga Primary	720	"			
72. Racecourse Primary	793	"			
73. Mathari Valley Prim.	1274	"			
74. St. Teresa's Boys	583	Boys			
75. St. Teresa's Girls	640	Girls			
76. Thika Road Primary	-	Co-educ.			
77. Dandora Primary	365	"			
<u>Southern Division</u>					
78. Dagoretti Muslim	839	Co-educ.			
79. Gitiba Primary	715	"			
80. Jamhuri Est. Primary	932	"			
81. Karen "C" Primary	441	"			
82. Kagira	601	"			
83. Kirigu Primary	750	"			
84. Kawangware Primary	1228	"			
85. Kibera Primary	1294	"			
86. Kilimani Primary	940	"			
87. Mutuini Primary	835	"			

Contd...

A	B	C	D	E	F
<u>Southern Division</u>	No. of Chn.	Type of School	Sample (93) Sch.	Sample (23) Sch.	Sample (2) Sch.
88. Mukarara Primary	670	Co-educ.			
89. Ndurarua Primary	608	"			
90. Nembu Primary	652	"			
91. Ngong Forest Prim.	634	"			
92. Riruta Satellite Prim.	510	"			
93. St. Mary's Karen	512	"			
94. Toi Primary	663	"			
95. Riruta R-G-M.Prim.	816	"			
96. Kagira Primary	-	"			
<u>Western Division</u>					
97. Aga Khan Primary	1029	Co-educ.			
98. Arya Girls Prim.	707	Girls			
99. Bernard Est. Primary	603	Co-educ.			
100. City Primary	1180	"			
101. Farasi Lane Primary	528	"			
102. Highridge Primary	805	"			
103. Hospital Hill Prim.	740	"			
104. Kabete Vet. Lab. Prim.	980	"			
105. Kangemi Primary	1249	"			
106. Kihumbuini Primary	1135	"			
107. Kileleshwa Primary	520	"			
108. Lavington Primary	818	"			
109. Lower Kabete Prim.	659	"			
110. Muguga Green Prim.	640	"			
111. Muslim Girls Prim.	601	"			
112. North Highridge Prim.	536	"			
113. Parklands Primary	844	"			
114. Park Road Primary	930	"			
115. Visa Oshwal Prim.	1129	"			
116. Westlands Primary	944	"			

APPENDIX III
NAIROBI PRIMARY

	<u>Names of pupils</u>	<u>Sex</u>	<u>Age</u>	
			<u>Years</u>	<u>Months</u>
1.	Robert Maxon	B	8	11
2.	Waweru Noel	B	8	1
3.	Wangoru Shadrack	B	8	3
4.	Oginga Arthur	B	9	0
5.	Oboso Desmond	B	8	5
6.	Njeru Peter	B	8	9
7.	Nderi Patrick	B	8	7
8.	Mutunga John	B	8	8
9.	Murithi Robert	B	8	6
10.	Mujera Ben	B	8	3
11.	Mahinda Mairia	B	8	1
12.	Kibutha Uri	B	9	1
13.	Karithi Kigonde	B	8	11
14.	Githaega Ndiritu	B	8	9
15.	Gacheru David	B	8	0
16.	Gichimu Florence	G	8	1
17.	Gichiru Jennifer	G	7	9
18.	Gakinya Pauline	G	8	3
19.	Irura Charity	G	8	9
20.	Kabogo Elaine	G	8	8
21.	Katodia Jagruti	G	8	8
22.	Mbugwa Olive	G	8	0
23.	Muhuri Sarah	G	8	7
24.	Muria Roseline	G	8	7
25.	Msembi Jane	G	8	9
26.	Mwai Jane	G	7	7
27.	Ndirangu Alita	G	8	7
28.	Njenga Wanjiku	G	8	6
29.	Wambui Christina	G	8	1
30.	Patel Dipti	G	7	10
31.	Ritho Jane	G	8	11
32.	Ruhia Wambui	G	7	8
33.	Roho Caroline	G	8	3

MOI AVENUE PRIMARY

	<u>Name of pupils</u>	<u>Sex</u>	<u>Age</u>	
			<u>Years</u>	<u>Months</u>
1.	Grace Anyiamba	G	8	5
2.	Hezron Karanja	B	8	5
3.	Michael Waweru	B	8	5
4.	Phillis Namachanja	G	8	9
5.	Ian Kamau	B	8	2
6.	Charles Juguna	B	8	7
7.	Mary Wanjohi	G	9	0
8.	Michael Shilavule	B	8	5
9.	Wilfred Muthoni	B	8	8
10.	Caroline Nyambu	G	8	5
11.	Patrick Mdini	B	8	1
12.	Grace Ndungu	G	8	2
13.	Anthony Waweru	B	9	1
14.	Harsha Galoria	G	8	4
15.	Tabitah Mwachao	G	8	1
16.	Mzonde Lungu	B	8	8
17.	Victor Amusale	B	8	6
18.	Joan Kanuki	G	7	6
19.	Catherine Muthoni	G	8	0
20.	Anthony Muriuki	B	8	0
21.	Stella Nyatetu	G	8	5
22.	James Myendo	B	7	9
23.	Paul Njuguna	B	8	1
24.	Patrick Maina	B	8	0
25.	Catherine Njoki	G	8	3
26.	Benedette Wambui	B	8	4
27.	Joyceline Akuta	G	8	6
28.	Allan Kinani	B	8	6
29.	Florence Wairimu	G	8	8
30.	Elizabeth Wairimu	G	8	4
31.	Samuel Gichimu	B	9	9
32.	Edina Okwisa	G	8	1
33.	Perpltua Ojanga	G	8	4

MOI AVENUE PRIMARY (cont'd)

	<u>Name of pupils</u>	<u>Sex</u>	<u>Age</u>	
			<u>Years</u>	<u>Months</u>
34.	John Maina	B	8	4
35.	George	G	8	7
36.	Charles Anthony	B	8	5

MOI AVENUE PRIMARY

	<u>Names of pupils</u>	<u>Sex</u>	<u>Age</u>	
			<u>Years</u>	<u>Months</u>
1.	Itote Mwangi	B	8	7
2.	Macdonald Ludinya	B	8	2
3.	Jennifer Gachenja	G	8	10
4.	Wambui Ndiritu	G	8	4
5.	Joan Mboyi	G	8	2
6.	Wairimu Teresia	G	8	6
7.	Mary Kandesa	G	8	4
8.	Roseline Ogalla	G	8	9
9.	Viney Nadha	B	8	3
10.	Rehema Muluki	G	8	9
11.	Beatrice Wambui	G	8	11
12.	Regina Wambui	G	8	3
13.	Phillipe Atsulu	G	8	9
14.	Kintesh Ambasala	B	8	1
15.	Rizwana Ahmed	G	8	2
16.	Robert Ndungu	B	8	9
17.	Charles Ngau	B	8	0
18.	Eva Lukoye	G	7	6
19.	Agnes Njeri	G	8	11
20.	Ruth Njeri	G	8	1
21.	Winnie Wanjiru	G	8	0
22.	Dipak Kanji	B	8	1
23.	Anne Njeri	G	8	8
24.	Benson Wambugu	B	8	4
25.	Jennifer Shisoka	G	8	5
26.	Esther Wambaa	G	8	6
27.	Mwangi Maina	B	8	11
28.	Peter Masaru	B	8	3
29.	Paul Gacheru	B	8	3
30.	David Thairu	B	8	8
31.	Davies Mwangi	B	8	10
32.	Deborah	G	8	7
33.	Peter Thuo	B	8	5

APPENDIX IV
NAIROBI PRIMARY

	Eng I	Eng II	English	Reading	Grade
1. Maxon Robert	20	20	A	A	16
2. Waweru Noel	10	11	D	D	7
3. Wangoru Shadrack	18	20	A	A	16
4. Oginga Arthur	19	19	A	A	16
5. Oboso Desmond	13	9	C	D	8
6. Njeru Peter	17	17	B	B	14
7. Nderi Patrick	16	15	B	B	13
8. Mutonga John	12	10	C	C	9
9. Murithi Robert	10	11	C	D	8
10. Mujera Ben	16	16	C	B	13
11. Mahinda Maina	17	15	B	C	12
12. Kibutha Uri	16	16	C	C	12
13. Karithi Kigondu	17	17	B	B	14
14. Githaegu Ndiretu	19	17	B	B	14
15. Gacheru David	16	13	B	B	13
16. Gichimu Florence	18	18	A	A	16
17. Gichuru Jennifer	7	14	C	C	10
18. Gakinya Pauline	12	10	B	A	12
19. Irura Charity	15	14	B	B	12
20. Kabogo Elaine	16	14	C	C	11
21. Katodia Jagruti	15	15	B	B	12
22. Mbugwa Olive	18	15	B	B	13
23. Muhuri Sarah	19	16	B	B	14
24. Muria Roseline	17	16	B	B	14
25. Musembi Jane	17	17	C	C	12
26. Mwai Jane	18	18	A	A	16
27. Ndirangu Alita	17	18	A	A	16
28. Njenga Wanjiku	10	14	C	D	8
29. Wambui Christina	11	10	C	C	9
30. Patel Dipti	17	15	B	A	14
31. Ritho Jane	17	18	A	A	16
32. Ruhui Wambui	14	12	C	C	10
33. Roho Caroline	17	11	B	C	12

NAIROBI PRIMARY
NAMES OF MATCHED PUPILS

<u>Peter Njeru</u>	<u>Githaega Ndiritu</u>	<u>Dipti P.</u>
<u>Robert Maxon</u>	<u>Wangoru Shadrack</u>	<u>Oginga A.</u>
<u>Ben Mujera</u>	<u>Kigonda Karithi</u>	<u>Nderi Patrick</u>
<u>Maina Mahinda</u>	<u>Uri Kibutha</u>	<u>Jane Musembi</u>
<u>Robert Murithi</u>	<u>John Mutunga</u>	<u>Oboso Desmond</u>
<u>Noel Waweru</u>	<u>Ruhui Wamoi</u>	<u>Christina</u>
<u>Charity Irura</u>	<u>Gakinya Pauline</u>	<u>Jennifer Gichire</u>
<u>Sarah Muhuri</u>	<u>Muria Roseline</u>	<u>Ritho Jane</u>
<u>Alita Ndirangu</u>	<u>Florence Gichimu</u>	<u>Mwai Jane</u>
<u>Jagruti Katodia</u>	<u>Olive Mbugwa</u>	<u>David Gacheru</u>
<u>Caroline Roho</u>	<u>Elaine Kabogo</u>	<u>Njenga Wanjiku</u>

<u>Pupil Ref.No.</u>	<u>Grade</u>	<u>Pupil Ref.No.</u>	<u>Grade</u>	<u>Pupil Ref.No.</u>	<u>Grade</u>
6	14	14	14	30	14
1	16	3	16	4	16
10	13	13	14	7	13
11	12	12	12	25	12
9	8	8	9	5	8
2	7	32	10	29	9
19	12	18	12	17	10
23	14	24	14	31	16
27	16	16	16	26	16
21	12	22	13	15	13
33	12	20	11	28	8

MOI AVENUE PRIMARY

	Pre I	Pre II	English	Reading	Grade
1. Grace Anyiema	18	19	50	A	16
2. Hezron Karanja	15	14	50	A	16
3. Michael Waweru	15	13	47	A	14
4. Phillis Namachanja	16	14	40	A	14
5. Ian Kamau	15	12	47	A	14
6. Charles Juguna	15	15	46	A	14
7. Mary Wanjuhi	13	9	36	B	11
8. Michael Shilavule	14	14	31	A	13
9. Wilfred Muthoni	10	14	33	B	11
10. Caroline Nyambu	16	15	32	B	13
11. Patrick Mdini	11	12	33	B	12
12. Grace Ndungu	10	10	40	C	9
13. Anthony Waweru	10	13	30	B	10
14. Harsha Galoria	15	15	20	C	9
15. Tabitah Mwachao	9	13	15	B	9
16. Mzonde Lungu	11	12	15	D	8
17. Victor Amusale	16	14	31	B	13
18. Joan Kariuki	16	15	45	A	15
19. Catherine Muthoni	14	9	48	A	13
20. Anthony Muriuki	12	8	47	A	13
21. Stella Nyatetu	13	12	49	A	14
22. James Myendo	19	18	47	A	16
23. Paul Njuguna	11	8	47	A	13
24. Patrick Maina	16	14	27	B	12
25. Catherine Njoki	14	14	49	A	14
26. Benedette Wambui	14	12	37	D	10
27. Joyceline Akuta	12	12	37	B	12
28. Allan Kimani	11	12	32	C	11
29. Florence Wairimu	14	14	35	B	11
30. Elizabeth Wairimu	14	14	35	B	12
31. Samuel Gichimu	9	9	22	C	7
32. Edina Okwisa	14	11	12	B	12
33. Perpetua Ojanga	10	8	21	D	7

MOI AVENUE PRIMARY (cont'd)

	Pre I	Pre II	English	Reading	Grade
34. John Maina	39	12	49	A	14
35. George Njoroge	14	14	46	A	14
36. Charles Anthony	13	15	45	A	14

41 - 50 A	16 - 20 A	A = 4
31 - 40 B	11 - 15 B	B = 3
21 - 30 C	6 - 10 C	C = 2
11 - 20 D	1 - 5 D	D = 1

MOI AVENUE PRIMARYNAMES OF MATCHED PUPILSPupils Matched According To Grades Obtained

<u>Mzonde Jungu</u>	<u>Samuel Gichimu</u>	<u>Perpetua</u>
<u>Patrick Maini</u>	<u>Anthony Muruki</u>	<u>Patrick Maina</u>
<u>Ian Kamau</u>	<u>Phillis Namachanja</u>	<u>Charles Anthony</u>
<u>George Njoroge</u>	<u>John Maina</u>	<u>Charles Njuguna</u>
<u>John Kariuki</u>	<u>Michael Shilavule</u>	<u>Michael Waweru</u>
<u>Harsha Galoria</u>	<u>Tabitah Mwachao</u>	<u>Grace Ndugu</u>
<u>Benedette</u>	<u>Florence Wairimu</u>	<u>Anthony Waweru</u>
<u>Carolone Nyambu</u>	<u>Victor Amusale</u>	<u>Paul Njuguna</u>
<u>Catherine Njoke</u>	<u>Stella Nyatetu</u>	<u>Catherine Muthoni</u>
<u>Mary Wanjoi</u>	<u>Wilfred Muthoni</u>	<u>Avan Kimani</u>
<u>Joyceline Tuta</u>	<u>Elizabeth Wairimu</u>	<u>Edina Okwisa</u>
<u>Grace Anyiamba</u>	<u>Hezron Karanja</u>	<u>James Myendo</u>

<u>Pupils Ref.No.</u>	<u>Grade</u>	<u>Pupil Ref.No.</u>	<u>Grade</u>	<u>Pupil Ref.No.</u>	<u>Grade</u>
16	8	31	7	33	6
11	12	20	13	24	13
5	14	4	14	36	14
35	14	34	14	6	14
18	15	8	14	3	14
14	9	15	9	12	9
26	10	29	11	13	10
8	13	17	13	23	13
25	14	21	14	19	13
7	11	9	11	28	11
27	12	30	12	32	12
1	16	2	16	22	16

MOI AVENUE PRIMARY

	Pre I	Pre II	English	Reading	Grade
1. Itote Mwangi	20	20	50	A	16
2. Macdonald Ludenyo	15	10	49	A	13
3. Jennifer Gachanja	16	15	48	A	15
4. Wambui Ndiritu	15	11	47	A	14
5. Joan Mboyi	15	13	49	C	12
6. Teresia Wairimu	17	12	47	A	15
7. Mary Kandesa	14	11	46	A	14
8. Roseline Ogalla	17	14	27	B	12
9. Viney Nadha	7	3	35	A	10
10. Rehema Muluki	20	20	50	A	16
11. Beatrice Wambui	8	7	47	A	12
12. Regina Wambui	11	5	5	B	7
13. Phillipe Atsulu	13	8	6	D	6
14. Kintesh Ambasala	13	15	49	A	14
15. Rizwana Ahmed	19	20	50	A	16
16. Robert Ndungu	11	11	48	A	14
17. Charles Njau	17	16	48	A	15
18. Eva Lukoye	13	12	49	B	13
19. Agnes Njeri	18	17	50	B	15
20. Ruth Njeri	12	9	46	B	12
21. Winnie Wanjiru	12	11	44	B	13
22. Dipak Kanji	18	15	49	A	15
23. Anne Njeri	14	9	49	A	13
24. Benson Wambugu	11	9	41	C	11
25. Jennifer Shisoka	11	10	35	C	10
26. Esther Wambaa	11	3	28	C	8
27. Mwangi Maina	11	8	17	D	7
28. Peter Mwasaru	10	19	16	D	6
29. Paul Gacheru	5	4	10	D	6
30. David Theiru	13	8	7	D	6
31. Davies Mwangi	12	11	45	A	14
32. Deborah	5	7	18	C	6
33. Peter Thuo	13	12	42	B	13

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MOI AVENUE PRIMARY

NAMES OF MATCHED PUPILS

<u>Anne Njeri</u>	<u>Joan Mboyi</u>	<u>Benson Wambuga</u>
<u>Rizwana Ahmed</u>	<u>Rehema Muluki</u>	<u>Ttote Mwangi</u>
<u>Dipak Kanji</u>	<u>Wambui Ndiritu</u>	<u>Teresia Wairimu</u>
<u>David Thairu</u>	<u>Peter Mwasaru</u>	<u>Mwangi Maina</u>
<u>Winnie Wanjiru</u>	<u>Robert Ndungu</u>	<u>Paul Gacheru</u>
<u>Macdonald Ludenyo</u>	<u>Mary Kandesa</u>	<u>Kintesh Ambasala</u>
<u>Charles Njau</u>	<u>Jennifer Gachaja</u>	<u>Davies Maina</u>
<u>Roseline Ogalla</u>	<u>Ruth Njeru</u>	<u>Beatrice Wambui</u>
<u>Viney Nadha</u>	<u>Jennifer Shishoka</u>	<u>Regina</u>
<u>Phillipe Atsulu</u>	<u>Esther Wanjiru</u>	<u>Deborah</u>
<u>Eva Lukoye</u>	<u>Agnes Njeri</u>	<u>Peter Thuo</u>

<u>Pupil Ref.No.</u>	<u>Grade</u>	<u>Pupil Ref.No.</u>	<u>Grade</u>	<u>Pupil Ref.No.</u>	<u>Grade</u>
23	(13)	5	(12)	24	(11)
15	16	10	16	1	16
22	15	4	14	6	15
30	6	28	6	27	7
21	13	16	14	29	6
2	13	7	14	14	14
17	15	3	15	31	15
8	12	20	12	11	12
9	10	25	10	12	7
13	6	26	8	32	6
18	13	19	15	33	13

APPENDIX V
ITEM ANALYSIS

PRE-TEST I ITEMS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Score Total
Pupils	/	/	/	X	X	X	X	X	/	X	/	X	A	X	X	X	X	X	X	/	7*
	/	/	X	/	/	/	X	/	/	X	/	/	A	X	X	X	X	X	/	/	12*
	/	/	X	X	/	X	X	X	/	X	X	/	A	X	X	X	X	X	X	X	6*
	X	/	/	X	/	/	/	/	/	/	/	X	/	/	X	X	X	X	/	X	12
	/	/	/	/	X	/	/	/	/	X	/	/	A	/	X	X	X	/	/	/	14*
	X	X	X	X	X	X	X	X	X	X	X	/	A	/	X	X	X	X	X	X	3*
	/	/	X	X	/	/	/	X	/	/	X	X	A	/	X	X	X	X	/	X	10
	X	X	X	X	/	X	/	X	/	X	/	/	/	X	X	X	X	X	X	/	7*
	/	/	/	/	/	/	X	/	/	/	/	/	/	/	X	X	X	X	/	/	15*
	/	/	X	/	/	X	/	X	X	/	/	/	/	X	/	X	X	X	X	/	11
	/	/	/	X	/	/	/	X	/	X	X	/	/	X	X	X	X	/	/	/	12
	X	/	/	X	X	X	X	X	/	/	X	X	X	/	X	X	X	X	/	X	6*
	/	/	X	/	/	/	X	/	/	/	X	/	X	/	X	X	X	X	X	/	11
	/	X	/	/	X	/	X	X	/	X	/	/	A	X	X	X	X	X	/	X	9
	X	/	X	X	X	X	X	X	/	X	/	/	A	X	X	X	X	X	/	/	7*
	/	/	/	/	/	/	/	/	/	X	/	/	A	/	X	X	X	/	/	/	16*
	X	/	X	X	X	/	X	X	/	X	X	/	A	X	X	X	X	X	X	X	5*
	X	/	X	X	X	X	X	X	/	X	X	/	A	X	X	X	X	X	/	X	5*
	/	/	X	/	/	/	X	X	/	/	X	/	X	X	X	X	X	X	X	/	10
	/	/	/	/	/	/	/	/	/	/	X	/	/	X	/	X	X	X	X	/	14*
	/	/	/	/	/	/	X	/	/	/	/	/	/	/	X	X	X	X	/	/	15*
	/	/	/	X	/	/	/	/	/	/	/	/	A	/	X	X	X	/	/	/	16*
	/	/	/	/	/	/	X	X	/	X	/	/	A	/	X	X	X	X	/	X	12
	X	/	X	X	X	X	X	X	/	X	/	/	A	X	X	X	X	X	X	X	5*
	/	/	/	/	/	/	/	/	/	/	/	/	/	/	X	X	X	X	/	/	16*
	X	/	/	X	/	/	X	/	/	X	/	/	A	X	X	X	X	X	X	X	9
	/	/	X	/	/	X	X	X	/	/	X	/	/	X	X	X	X	X	X	X	8
	/	/	X	/	/	/	/	/	/	/	X	/	/	/	X	X	X	X	/	/	14*
	X	/	X	X	X	X	X	X	/	X	/	/	X	X	X	X	X	X	X	X	4*
	X	/	X	X	/	X	/	/	X	/	/	/	X	X	X	X	X	X	/	X	8
	/	/	/	/	X	X	/	/	/	/	/	/	A	/	X	X	X	X	/	/	14*
	/	/	/	/	/	X	X	/	/	/	/	/	A	X	X	X	/	X	/	X	13*
	/	/	/	/	/	/	X	/	/	/	/	/	A	X	X	X	X	X	/	/	13

PRE-TEST I

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
UPPER	1	/	/	/	/	X	/	/	/	/	X	/	/	A	/	X	X	X	/	/	/	14
27%	2	/	/	/	/	/	/	X	/	/	/	/	/	/	/	X	X	X	X	/	/	15
	3	/	/	/	/	/	/	/	/	/	X	/	/	A	/	X	X	X	/	/	/	16
	4	/	/	/	/	/	/	/	/	/	/	X	/	/	X	/	X	X	X	X	/	14
	5	/	/	/	/	/	/	X	/	/	/	/	/	/	/	X	X	X	X	/	/	15
	6	/	/	/	X	/	/	/	/	/	/	/	/	A	/	X	X	X	/	/	/	16
	7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	X	X	X	X	/	/	16
	8	/	/	X	/	/	/	/	/	/	X	/	/	/	/	X	X	X	X	/	/	14
	9	/	/	/	/	X	X	/	/	/	/	/	/	A	/	X	X	X	X	/	/	14
	10	/	/	/	/	/	X	X	/	/	/	/	/	A	X	X	X	/	X	/	X	13
TOTAL		10	10	9	9	8	8	7	10	10	8	8	10	10	8	1	0	1	2	9	9	147
LOWER	1	/	/	/	X	X	X	X	X	/	X	/	X	A	X	X	X	X	X	X	/	7
27%	2	/	/	X	X	/	X	X	X	X	/	X	/	A	X	X	X	X	X	X	X	6
	3	X	X	X	X	X	X	X	X	X	X	/	A	/	X	X	X	X	X	X	X	3
	4	X	X	X	X	/	X	/	X	/	/	/	/	/	X	X	X	X	X	X	/	7
	5	X	/	/	X	X	X	X	X	/	/	X	X	X	/	X	X	X	X	/	X	6
	6	X	/	X	/	X	X	X	X	X	/	X	/	A	X	X	X	X	X	/	/	7
	7	X	/	X	X	X	/	X	X	/	X	X	/	A	X	X	X	X	X	X	X	5
	8	X	/	X	X	X	X	X	X	/	X	X	/	A	X	X	X	X	X	/	X	5
	9	X	/	X	X	X	X	X	X	/	X	/	/	A	X	X	X	X	X	X	X	5
	10	X	/	X	X	X	X	X	X	/	X	/	/	/	X	X	X	X	X	X	X	4
TOTAL		2	8	2	1	2	1	1	0	8	2	4	8	8	2	0	0	0	0	3	3	65

PRE-TEST II
QUESTION ITEMS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Score Total
/	/	/	X	X	/	/	/	/	X	/	/	/	X	X	X	X	/	/	/	13*
/	/	X	/	/	/	/	/	/	/	X	/	X	X	/	X	X	X	X	/	11
/	X	/	X	X	X	X	/	/	X	/	/	X	X	X	X	X	X	X	/	7*
/	X	X	/	/	/	/	/	X	X	X	/	/	/	/	X	X	X	/	X	10
/	/	X	X	/	/	/	/	/	/	X	X	/	/	X	/	X	X	/	X	13*
/	X	/	X	/	X	/	/	X	X	/	X	X	X	/	X	X	X	X	/	8
X	X	X	X	X	X	/	/	/	X	X	X	X	X	X	X	X	X	X	X	3*
/	/	X	X	/	X	/	/	/	/	/	/	/	X	/	X	X	X	X	/	3*
/	/	X	X	/	X	/	/	/	/	/	/	/	X	/	X	X	X	X	/	14*
/	/	/	X	/	/	X	/	/	X	X	/	X	X	X	X	X	X	X	/	9
/	X	X	/	X	X	/	/	X	/	X	/	/	X	/	X	X	X	X	X	8
/	X	/	/	X	X	/	/	/	X	/	/	X	/	X	X	X	X	X	/	10
/	/	X	X	/	X	/	/	/	/	/	/	/	X	/	X	X	X	X	/	12*
/	/	/	X	/	/	/	/	/	/	X	/	/	/	/	X	X	/	/	/	16*
/	X	/	/	/	X	/	/	/	/	X	X	/	X	X	X	X	X	X	/	11
/	/	X	X	X	X	X	/	/	X	X	X	/	/	X	X	X	X	X	X	6*
/	/	/	X	/	/	/	/	/	/	/	/	/	/	X	X	X	/	X	/	15*
/	/	X	/	X	/	/	/	/	X	/	/	X	/	X	X	X	X	X	/	11
/	X	/	X	/	/	/	/	/	/	X	X	/	/	X	X	X	/	/	/	13*
/	/	/	X	/	/	/	/	/	/	/	/	/	/	/	X	X	X	X	/	15*
/	/	/	/	/	/	/	/	/	/	/	/	/	/	X	X	X	X	X	X	10
X	X	X	X	X	X	/	/	/	X	X	/	X	X	/	X	X	X	X	X	5*
/	/	X	X	X	X	/	/	/	X	X	X	X	X	X	X	X	X	X	/	6*
/	/	/	X	/	/	X	/	/	/	X	X	/	/	X	X	X	X	X	/	12*
/	/	X	X	X	X	/	/	/	X	X	/	/	/	X	X	X	X	X	/	9
/	/	X	X	X	X	/	/	X	X	X	/	X	X	X	X	X	X	X	X	5*
/	/	/	/	X	/	/	/	/	X	/	/	X	/	/	X	X	X	/	X	14*
/	/	X	X	/	X	/	/	/	X	X	X	/	/	X	X	X	X	X	X	8
/	X	X	X	X	X	/	/	X	X	/	X	X	X	X	X	X	X	X	X	4*
/	X	X	X	X	X	/	X	/	X	X	X	/	X	X	X	X	X	X	X	4*
/	X	/	/	X	/	/	/	/	X	X	/	X	X	X	X	X	X	/	X	9
/	X	X	X	/	X	/	/	X	X	X	X	X	X	X	X	X	X	X	/	5*
/	X	X	/	X	X	/	/	/	X	X	/	/	/	X	X	X	X	/	/	10

PRE-TEST II

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1	/	/	/	X	X	/	/	/	/	X	/	/	/	X	X	X	X	/	/	/	13
2	/	/	X	X	/	/	/	/	/	/	/	X	X	/	/	X	/	X	X	/	13
3	/	X	/	/	X	/	/	/	/	/	/	/	/	/	/	X	X	X	X	/	14
4	/	/	X	X	/	X	/	/	/	/	/	/	/	X	/	X	X	X	X	/	12
5	/	/	/	X	/	/	/	/	/	/	X	/	/	/	/	X	X	/	/	/	16
6	/	/	/	X	/	/	/	/	/	/	/	/	/	/	X	X	X	/	X	/	15
7	/	X	/	X	/	/	/	/	/	/	/	X	X	/	/	X	X	X	/	/	12
8	/	/	/	X	/	/	/	/	/	/	/	/	/	/	/	X	X	X	X	/	15
9	/	/	/	X	/	/	X	/	/	/	/	X	X	/	/	X	X	X	X	/	12
10	/	/	/	/	X	/	/	/	/	/	X	/	/	X	/	/	X	X	X	/	14
<hr/>																					
	10	8	8	2	7	9	9	10	10	9	8	7	7	7	8	1	1	3	3	10	
<hr/>																					
1	/	X	/	X	X	X	X	/	/	X	/	/	X	X	X	X	X	X	X	/	7
2	X	X	X	X	X	X	/	/	/	X	X	X	X	X	X	X	X	X	X	X	3
3	X	X	X	X	X	/	X	X	X	/	/	X	X	X	X	X	X	X	X	X	3
4	/	/	X	X	X	X	X	/	/	X	X	X	/	/	X	X	X	X	X	X	6
5	X	X	X	X	X	X	/	/	/	X	X	/	X	X	/	X	X	X	X	X	5
6	/	/	X	X	X	X	/	/	/	X	X	X	X	X	X	X	X	X	X	/	6
7	/	X	X	X	X	X	/	/	/	X	X	/	X	X	X	X	X	X	X	X	5
8	/	X	X	X	X	X	/	/	X	X	/	X	X	X	X	X	X	X	X	X	4
9	/	X	X	X	X	X	/	X	/	X	X	X	/	X	X	X	X	X	X	X	4
10	/	X	X	X	/	X	/	/	X	X	X	X	X	X	X	X	X	X	X	/	5
<hr/>																					
	7	2	1	0	1	2	7	8	6	1	3	3	2	1	1	0	0	0	0	3	
<hr/>																					

POST-TEST I

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
PUPILS	X	/	X	/	X	X	/	/	X	/	/	/	X	X	X	X	X	/	X	/	9	
	X	X	X	X	X	X	X	/	X	X	/	/	X	X	/	X	/	X	X	X	5*	
	/	/	/	/	X	X	/	/	/	X	/	/	/	X	/	/	/	/	X	/	15*	
	/	/	/	X	/	/	/	/	X	X	/	/	X	X	/	X	/	X	X	X	11	
	/	/	/	/	X	X	/	/	X	X	/	/	/	X	X	X	X	/	/	/	12	
	X	/	X	/	/	X	/	/	X	/	/	/	/	X	/	X	/	/	X	/	13*	
	X	/	X	X	X	X	X	/	X	X	/	X	/	X	X	X	X	/	X	/	6*	
	/	/	X	X	X	/	/	X	/	X	X	/	/	X	/	X	X	/	X	/	10	
	X	/	X	X	X	X	X	/	X	/	X	/	X	X	X	X	X	/	X	X	5*	
	/	/	/	/	/	/	/	/	/	/	/	/	X	X	/	X	X	/	/	/	16*	
	/	/	X	/	X	X	/	/	X	/	/	/	X	X	X	X	X	/	X	/	10	
	/	/	/	X	X	X	X	/	X	X	/	X	X	X	X	X	X	/	X	X	7*	
	/	/	/	X	X	X	/	/	/	/	/	/	/	X	/	X	X	/	X	X	12*	
	X	/	/	/	X	X	/	/	/	/	/	/	/	/	/	X	/	/	X	/	15*	
	X	/	X	/	/	X	/	/	X	X	/	X	/	X	X	X	X	/	X	/	9	
	/	/	X	/	X	X	/	/	/	/	/	/	/	X	/	X	/	/	/	/	15*	
	X	/	X	/	X	X	X	/	X	/	X	/	X	X	X	X	X	/	/	X	X	7*
	X	/	/	/	/	/	/	/	/	/	/	/	/	X	X	X	X	/	X	X	13*	
	/	/	/	X	X	X	/	/	X	/	/	/	/	X	/	X	/	/	/	/	14*	
	/	/	/	/	X	X	/	/	X	X	/	/	/	X	/	X	/	X	X	X	11	
	X	/	X	X	/	X	X	/	X	/	X	/	X	X	X	X	X	/	/	X	/	8*
	/	/	/	/	X	X	/	X	/	/	/	X	X	X	/	X	/	/	X	/	12	
	/	/	X	/	X	/	/	/	/	/	/	/	/	X	/	X	/	/	X	X	14*	
	/	/	/	/	/	X	/	/	/	X	/	/	X	X	X	/	/	X	/		14*	
	/	X	/	/	X	X	X	/	X	/	/	/	/	/	X	/	X	/	X	X	11	
	/	/	X	X	X	X	X	X	X	X	X	/	X	X	X	X	X	X	/	X	4*	
	X	/	X	X	X	X	/	/	/	/	/	/	/	X	/	X	/	/	X	/	12	
	X	/	X	X	X	X	/	/	X	/	X	/	X	X	X	X	X	/	X	X	6*	
	X	/	X	X	X	X	X	/	X	X	/	X	X	/	X	X	/	X	X		6*	
	/	X	/	/	X	X	/	/	X	/	X	/	/	X	X	X	X	/	X	X	9	
	/	/	/	/	X	X	/	/	X	X	X	/	X	X	X	/	/	X	X		10	
	X	/	X	X	X	X	/	/	X	/	X	/	X	X	X	X	X	/	X	X	6*	
	/	X	/	/	X	X	X	/	X	/	/	/	/	X	X	X	/	/	X	/	11	

POST-TEST I

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1	/	/	/	/	X	X	/	/	/	X	/	/	/	X	/	/	/	/	X	/	15
2	X	/	X	/	/	X	/	/	X	/	/	/	/	X	/	X	/	/	X	/	13
3	/	/	/	/	/	/	/	/	/	/	/	/	X	X	/	X	X	/	/	/	16
4	/	/	/	X	X	X	/	/	/	/	/	/	/	X	/	X	X	/	X	X	12
5	X	/	/	/	/	X	X	/	/	/	/	/	/	/	/	X	/	/	X	/	15
6	/	/	X	/	X	X	/	/	/	/	/	/	/	X	/	X	/	/	/	/	15
7	X	/	/	/	/	/	/	/	/	/	/	/	/	X	X	X	X	/	X	X	13
8	/	/	/	X	X	X	/	/	/	X	/	/	/	X	/	X	/	/	/	/	14
9	/	/	X	/	X	/	/	/	/	/	/	/	/	X	/	X	/	/	X	X	14
10	/	/	/	/	/	X	/	/	/	X	/	/	/	X	X	X	/	/	X	/	14

7 10 7 8 5 3 9 10 9 8 9 10 9 1 8 1 7 10 3 7

1	X	X	X	X	X	X	X	/	X	X	/	/	X	X	/	X	/	X	X	X	5
2	X	/	X	X	X	X	X	/	X	X	/	X	/	X	X	X	X	/	X	/	6
3	X	/	X	X	X	X	/	/	/	X	/	X	X	X	X	X	X	/	X	X	5
4	/	/	/	X	X	X	X	/	/	X	X	/	X	X	X	X	X	/	X	X	7
5	X	/	X	/	X	X	X	/	/	X	/	X	X	X	X	X	/	/	X	X	7
6	X	/	X	X	/	X	X	/	/	X	/	X	X	X	X	X	/	/	X	/	8
7	/	/	X	X	X	X	X	X	X	X	X	/	X	X	X	X	X	X	/	X	4
8	X	/	X	X	X	X	/	/	/	X	/	X	X	X	X	X	X	/	X	X	6
9	X	/	X	X	X	X	X	/	/	X	X	/	X	X	/	X	X	/	X	X	6
10	X	/	X	X	X	X	/	/	/	X	/	X	X	X	X	X	X	/	X	X	6

2 9 1 1 1 0 2 9 7 0 7 3 2 0 2 0 3 8 1 2

POST TEST-11

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
/	X	X	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	X	17*	
/	/	X	/	/	/	X	/	X	/	/	X	/	/	X	X	/	/	/	X	13	
/	/	X	X	/	/	X	/	X	X	/	/	/	X	X	X	/	/	X	X	10*	
/	/	X	X	/	X	X	/	/	/	/	X	/	/	X	/	/	X	/	X	12	
/	/	/	/	/	/	/	/	/	/	/	X	/	/	X	/	/	/	/	X	17*	
/	/	X	/	/	X	/	X	X	X	/	X	/	/	X	/	/	/	X	X	11	
X	/	/	X	/	/	/	/	/	/	/	X	/	/	/	/	/	/	/	/	18*	
/	/	/	/	/	/	/	/	X	/	/	X	/	/	X	/	X	X	/	X	14	
X	/	X	/	/	X	X	/	/	X	/	X	/	/	/	X	/	/	/	X	12	
/	/	X		X	/	X	/	X	/	X	/	/	/	X	/	/	/	/	X	12	
/	/	/	/	/	/	/	/	X	/	/	/	/	/	X	/	X	/	/	X	16*	
/	/	X	X	/	X	X	/	X	/	X	X	/	/	X	/	/	X	X	X	9	
/	/	/	X	X	X	X	/	X	X	/	X	X	X	/	/	/	/	X	X	9*	
/	/	/	/	/	/	X	/	/	/	/	X	/	/	/	/	/	/	X	X	16*	
/	/	X	/	X	/	X	X	X	/	X	/	/	/	/	/	/	/	/	X	13	
/	/	X	/	/	X	X	/	/	/	/	X	/	X	/	X	/	/	X	X	12	
/	/	/	/	X	/	/	/	/	X	/	/	/	/	X	/	/	/	/	/	17*	
/	/	X	/	/	/	X	/	/	/	/	X	/	/	X	/	/	X	X	X	13	
/	X	X	/	/	X	X	/	X	/	/	X	/	X	/	/	X	/	X	X	10*	
/	/	X	/	/	/	/	/	/	/	/	/	/	/	/	X	/	/	X	X	16*	
/	/	/	/	/	X	/	X	X	/	/	/	/	X	/	/	/	/	/	X	X	13
/	/	/	X	/	/	/	/	/	X	/	X	/	/	/	/	/	/	/	X	X	15*
/	/	/	/	/	X	X	/	X	/	/	/	/	X	/	/	/	/	X	X	X	15
/	X	X	X	/	X	X	/	X	X	/	X	X	X	X	X	/	/	X	X	6*	
X	/	X	/	X	/	X	/	X	X	/	/	X	X	X	/	/	/	/	X	X	9*
/	/	X	X	/	X	/	/	/	X	/	X	X	X	/	X	X	/	X	X	9*	
/	/	X	/	/	/	/	/	/	/	/	/	/	X	X	/	/	/	/	X	16*	
/	X	X	X	/	/	X	/	X	X	X	X	/	X	/	X	/	X	/	X	8*	
X	/	X	X	/	X	X	X	/	X	/	X	X	/	X	/	/	/	/	X	X	8*
/	/	X	X	/	/	X	X	X	X	/	X	/	/	X	/	/	/	/	X	11	
/	/	/	/	/	/	/	/	/	/	/	X	/	/	/	/	/	/	/	X	18*	
/	X	X	X	X	X	/	/	X	X	/	X	X	X	/	/	/	/	/	X	X	8*
/	/	X	X	/	X	X	X	X	X	/	X	X	X	X	/	/	/	/	X	X	7*

POST-TEST II

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
1	/	X	X	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	X	17	
2	/	/	/	/	/	/	/	/	/	/	/	/	X	/	/	X	/	/	/	/	X	17	
3	X	/	/	X	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	18	
4	/	/	/	/	/	/	/	/	X	/	/	/	/	/	X	/	X	/	/	/	X	16	
5	/	/	/	/	/	/	X	/	/	/	/	X	/	/	/	/	/	/	/	X	X	16	
6	/	/	/	/	X	/	/	/	/	X	/	/	/	/	X	/	/	/	/	/	/	17	
7	/	/	X	/	/	/	/	/	/	/	/	/	/	/	/	X	/	/	/	X	X	16	
8	/	/	/	X	/	/	/	/	/	X	/	/	/	/	/	/	/	/	/	/	X	X	15
9	/	/	X	/	/	/	/	/	/	/	/	/	/	X	X	/	/	/	/	/	/	X	16
10	/	/	/	/	/	/	/	/	/	/	/	X	/	/	/	/	/	/	/	/	/	X	18

9 9 7 8 9 10 9 10 9 8 10 7 9 9 7 8 9 10 7 2

1	/	/	X	X	/	/	X	/	X	X	/	/	/	X	X	X	/	/	X	X	X	10
2	/	/	/	X	X	X	X	/	X	X	/	X	X	X	/	/	/	/	X	X	X	9
3	/	X	X	/	/	X	X	/	X	/	/	X	/	X	/	/	X	/	X	X	X	10
4	/	X	X	X	/	X	X	/	X	X	/	X	X	X	X	X	/	/	X	X	X	6
5	X	/	X	/	X	/	X	/	X	X	/	/	X	X	X	/	/	/	X	X	X	9
6	/	/	X	X	/	X	/	/	X	/	X	X	X	/	X	X	/	X	X	X	X	9
7	/	X	X	X	/	/	X	/	X	X	X	X	/	X	/	X	/	X	/	X	/	8
8	X	/	X	X	/	X	X	X	/	X	/	X	X	/	/	/	/	/	X	X	X	8
9	/	X	X	X	X	/	/	X	X	/	/	X	X	X	/	/	/	/	X	X	X	9
10	/	/	X	X	/	X	X	X	X	X	/	X	X	X	X	/	/	/	X	X	X	7

8 6 1 2 7 3 2 8 2 1 9 2 3 1 5 6 8 9 1 0

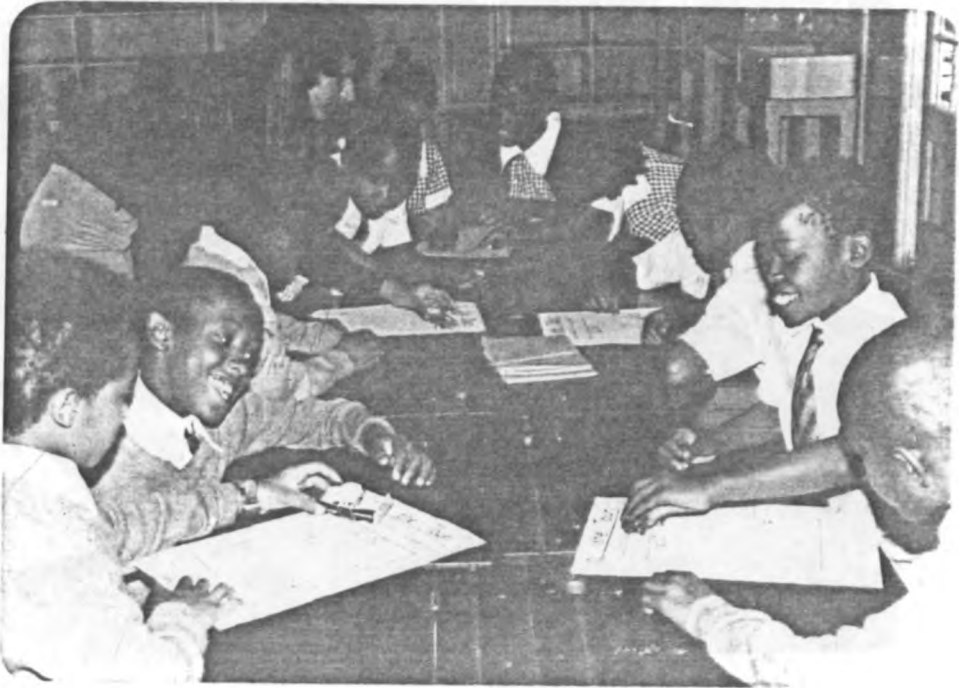
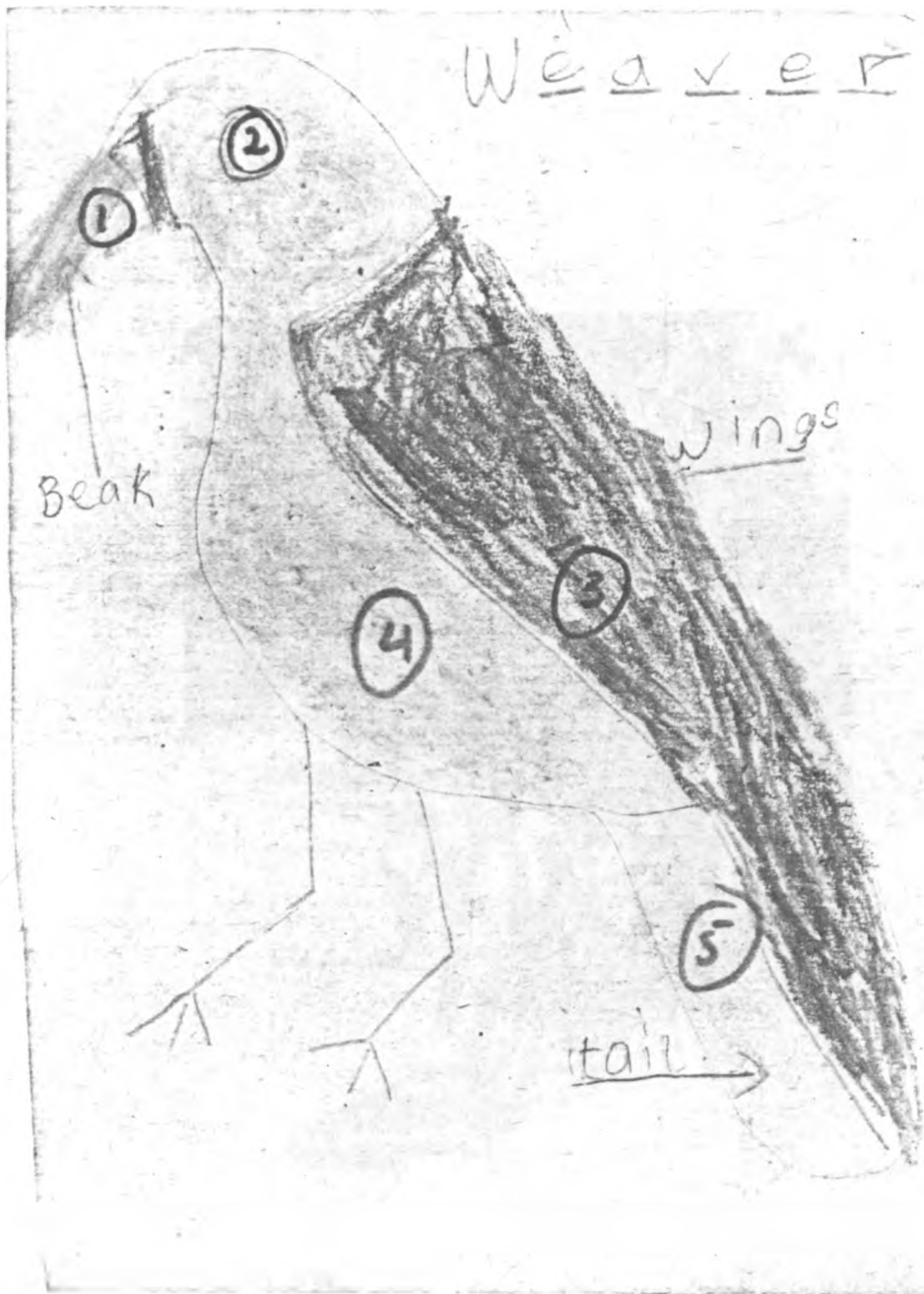


PLATE 1 - VISIT TO THE TOWN



PLATE 2 - LEARNING ABOUT SHAPES, SIZES AND WEIGHT



- PLATE 3 - APPLICATION WORK ON THE LESSON ON
' BIRDS '

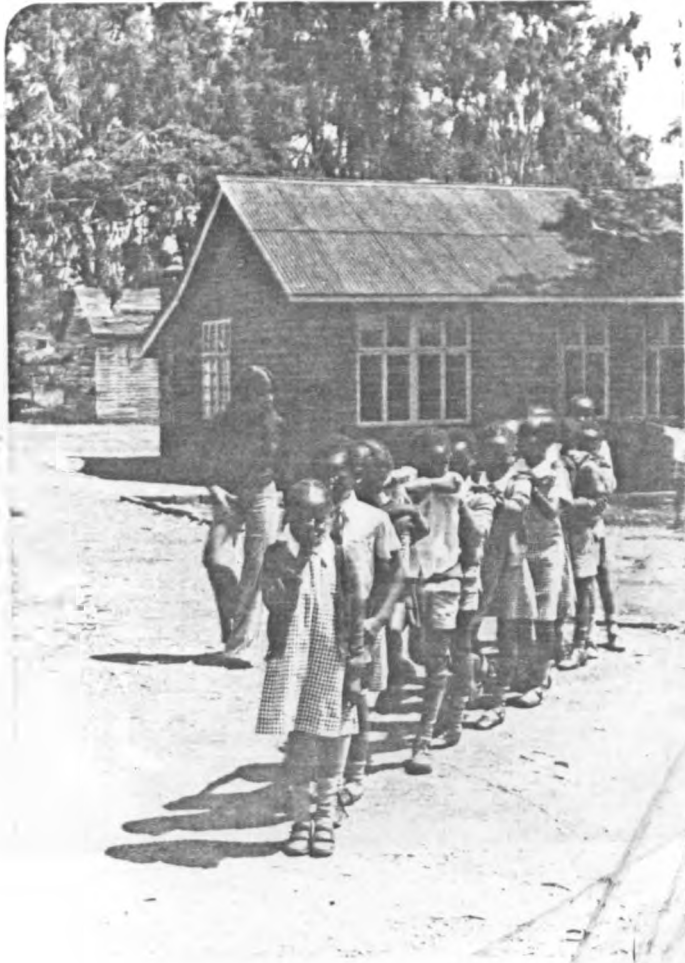
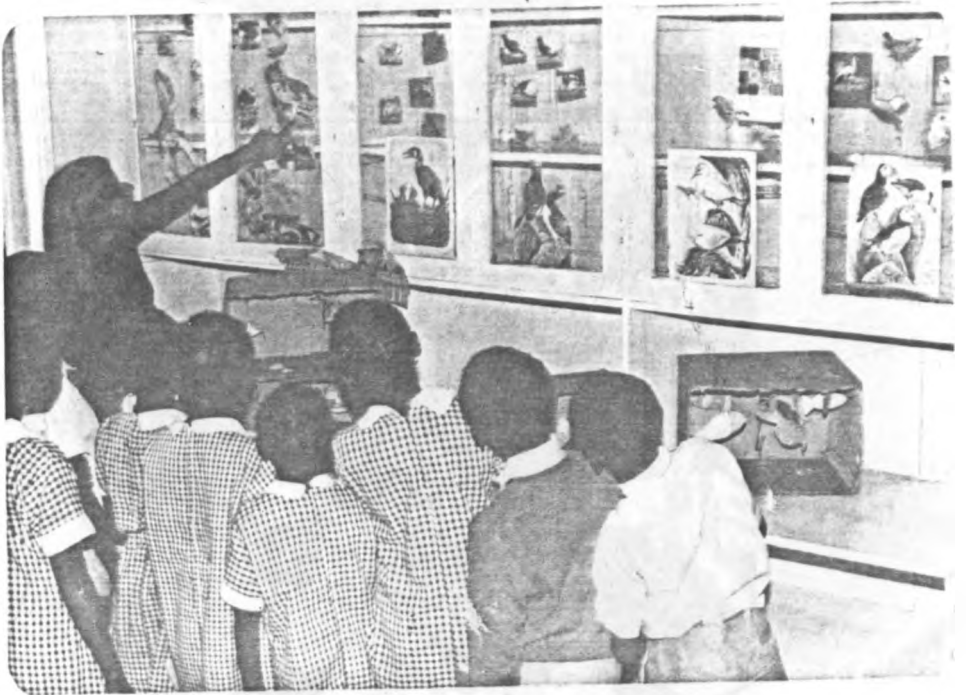


PLATE 4 - THE TRAIN JOURNEY



UNIVERSITY OF MICHIGAN
LIBRARY

PLATE 5 - AT THE GAME PARK



UNIVERSITY OF NAIROBI
LIBRARY

PLATE 6 - MIMING ANIMALS AT THE GAME PARK

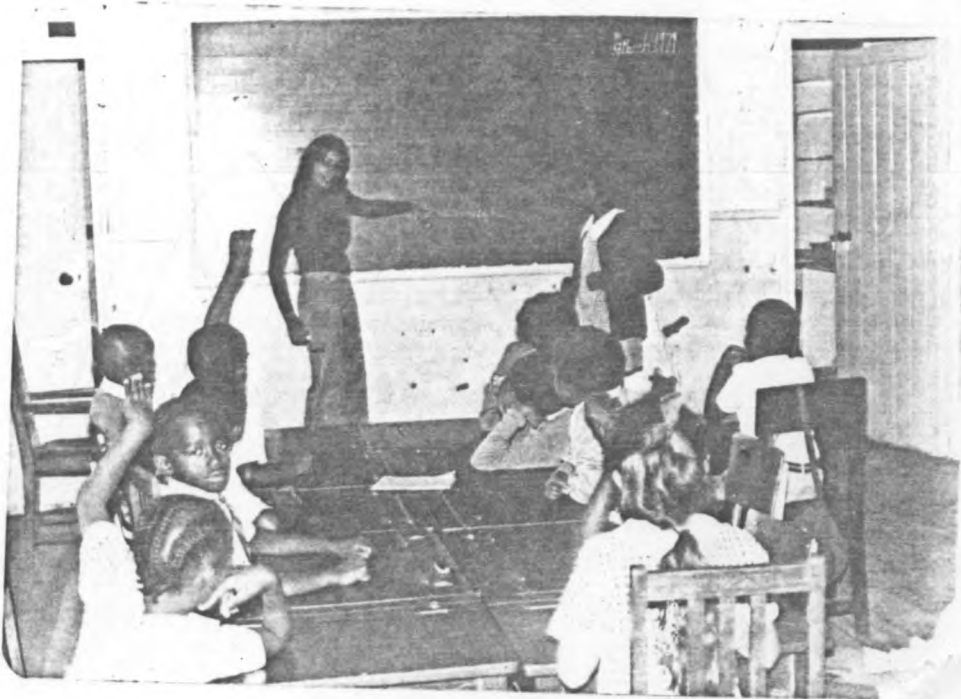


PLATE 7 - LESSON IN PROGRESS (CONTROL GROUP)