DECLARATION

This thesis is my original work and has not been submitted for a degree in any other University.

Daniel Mulwa Muindi

This thesis has been submitted with our approval as University Supervisors.

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DEDICATION

This study is dedicated to my dear family notably my wife, Winnie Kavindu, and my children Koki and Kioko for their support, encouragement and conducive environment they created for me during the study period.
ACKNOWLEDGEMENT

I wish to express my gratitude to my major supervisors Prof. M.M. Patel who has guided me consistently throughout the whole study. His encouragement and commitment gave me the drive to complete the study. Also I wish to thank Dr. Mike Boit who was my second supervisor for his support and assistance in guiding me tirelessly through the various stages in my study.

My thanks also go to other people who contributed towards this study in various ways particularly Dr. H. Embeywa of Educational Communication and Technology Department and Dr. Titus Kibua of Mathematics Department. Special thanks to Florence Ochieno for her unique contribution in typing the whole study.
Physical Education played a central role in traditional African communities’ way of life through which vital information was transmitted for immediate and future purposes of the community. The arrival of Western influence and colonisation led to a disintegration of the traditional type of Physical Education. A different type of Physical Education which consisted of Games and Sports activities popular in Britain was introduced in schools. However, due to strong emphasis on good performance in National Examinations, the Physical Education which was a non-examinable subject began being increasingly viewed as an irrelevant, and time wasting subject that was devoid of any contribution to the pupils immediate school needs and future needs and was not academic enough to warrant being examined.

The subject therefore appears on the class timetable but often this time is utilized to teach the Examinable subjects. Other times available for the pupils to experience organized movements through Games and Sports activities are utilized to train, coach and prepare the few pupils in the school team for Games and Sports competitions. This reduces the majority less able pupils to mere spectators and thus are denied an opportunity for regular physical activity.
The literature reviewed indicated that the school and societal emphasis i
changing the value system of school experiences to preparing pupils to pass
examinations at the expense of learning for healthy living. With the gradual
change in life styles and emergence of life threatening diseases that can be
alleviated through regular physical activity, the need to expose pupils to a well
implemented Physical Education programme is even greater. Further, the
emerging evidence that regular physical activity has a positive relationship to
academic achievement at school should lead to a value re-assessment at school.
A school curriculum that recognises the vital role of Physical Education in the
balanced total development of the pupils should be put in place. Such a
curriculum would tone down competitive sport in school and place emphasis
on providing opportunities for every pupil to experience regular movement
activities.

Performance in physical skill and academic achievement are broad concepts
consequently only a few variables related to the two phenomena were
examined. The sample consisted of both rural and urban Primary Education
standard eight class pupils. A total of 192 pupils consisting of 127 Boys and 65
Girls spread in 16 Primary schools were involved in the study. Out of each
Primary School, 12 Pupils were selected for the study, so as to fit into three
categories of performance in Physical skill. The data was collected using a questionnaire and interview schedule.

The data was analysed using the Chi-square test, the contingency coefficient test and the correlation coefficient test besides use of simple tables and descriptive analysis. The findings revealed that the Pupils who had high performance in Physical skill also scored highly in academic work. On the other hand, the Pupils who had low performance in Physical skill also scored poorly in academic work.

The results of the data analysis were discussed, explained and concluded before recommendations were made. The main conclusions were highlighted as:

(I) all learning involves processing of information (regardless of the domain). Consequently, an individual excelling in Physical skill has the ability to also excel in cognitive skill (academic tasks) under similar conditions of practice, time reinforcement and feedback.

(ii) regular Physical exercise enables the individual to develop and maintain his body organs and system in the most suitable state for optimum productivity. since the brain is a body organ like any other, the Physically fit individual has a healthy brain that is efficient and can endure fatigue for maximal output.
Since performance in Physical skill and academic achievement are broad concepts, only a few variables related to the two phenomena were examined. The findings therefore, cannot be generalized to all primary school pupils in the country.
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CHAPTER ONE

INTRODUCTION

1.1 Background to the problem

Organized (formal) Physical Education was introduced to Kenya during the colonial era. However, African traditional sports were in existence before the introduction of Western sports (Lindblom: 1920). It is believed that sports provided a means to achieve entertainment, release of built up emotions, socialization, cooperation and development of health related benefits of physical activities. Ndeti (1972) notes that it was felt that the benefits derived from sport in traditional African societies were vital to the individual members in meeting their needs and those of the community. In addition, the society transmitted its culture, wisdom and knowledge from one generation to the next through such activities as dance, games, music, oral history, art, fishing, hunting and other physical activities, which comprised the Physical Education. This view is highlighted by Halls (1973: 133) when he says that:

Dance has been a driving welding force in African culture for a long time. The movements of dances which involve considerable, coordination, stamina and strength often served to express the quality of everyday life... There were elements of pleasure and Physical release in African dances, that related to psychological and physiological needs.
Examples of African traditional dances includes the Akamba’s “Kilumi”, the Abaluya’s “Isukuti”, the Luo’s “Tero buru” and the Kikuyu’s “Muchungwa” dances. A part from entertainment, the African dance is a source of African cultural heritage indeed. Cultural heritage is relevant in academic growth and can be best preserved and promoted through Physical Education. In effect, life in traditional African communities revolved around physical activities through which knowledge was passed to new generations in the process of cultural transmission. The physical activities were geared to the individual’s as well as the whole tribe’s immediate and future needs and to the preservation of the community’s culture. Needless to say, missionaries and western foreigners held little regard to African traditions. The missionaries in particular viewed some of the traditional dances as “primitive” or sinful.

The content of such dances and other physical activities which comprised Physical Education in the traditional communities, were modified with the advent of Western culture. The advent of Christian missionaries and later colonization of Kenya brought great disintegration of the cultural values and practices. The European administrators and missionaries believed that the African was incapable of knowing what was good for him (Monyenye, 1987:11). In particular, the Christian missionaries taught that participating in or even watching dances was sinful. Thus, most of the traditional practices were labeled as savage and evil.
1.1.1 The State of Physical Education in Schools

(a) Before the Arrival of Western Influence

During this period, there were no formal schools. The Physical Education taught was part and parcel of the community's way of life, and was meant for immediate and future needs of the community. It was central to the life of the community members and was taught in a systematically organized way. The Physical Education activities fitted naturally into the people's life patterns such as in marriage, birth and burials (Ndeti: 1972).

Work and recreational activities which comprised 'Physical Education' in traditional African societies was not optional or for the talented few. Kenyatta (1978) noted that the physical activities for boys included such activities as herding sheep, goat and cattle. They also helped men who were involved in stumping the gardens, digging, cutting trees and building. The girls helped women in housework, cutting and gathering firewood, cutting grass for thatching, plastering the house walls and fetching water. The boys and girls, women and men also participated in physical recreational activities such as dance and wrestling either formally or informally.

Some of the traditional physical activities varied with age. Lindblom (1920), Halls (1973), Kenyatta (1978), and Nteere (1982) have pointed out that the young people engaged in various activities such as running, fighting, dancing,
jumping, weightlifting, leaping, swimming, climbing trees, sparring with sticks and shields and club throwing. They also engaged in small games like the hoop, tops, hide and seek, hit the dodger, and bull fighting besides others. These activities not only assisted the youth in their physical development but also prepared them for adult life.

The older people engaged in dancing and wrestling whereas the elderly engaged themselves in dancing, playing on wooden boards besides other physical activities. Physical Education in traditional African societies was therefore learnt throughout one’s life and in every aspect of it was relevant to the individual’s life. Further, there was maximum involvement from all the community members and involved dynamic assessment.

(b) During the Colonial Era Up to 1963

During the early part of this period, the colonial Government allowed Africans to engage in traditional games as part of their school curriculum (Lindblom; 1920). However, as colonialism became more entrenched British influence in schools began to be felt particularly in Physical Education. Games and other physical activities of African origin were discouraged. The colonial administrators and Christian missionaries introduced Physical Education in schools, which consisted of games and sports popular in England. The Physical Education activities included Soccer, Netball, field Hockey, track and field events, swimming, Rugby and boxing (Halls, 1973; Nteere, 1982).
Consequently, African traditional Physical Education was gradually replaced by British games and sports. There was no emphasis on the formal distinction between Physical Education and sports. These activities were geared to competition and were devoid of the cultural values and knowledge transmitted through the African traditional Physical Education (Lindblom, 1920; Halls, 1973; Nteere, 1982).

In the primary schools, Physical Education activities were practiced as a relaxing activity to be done after classes. It was, therefore, labeled as extracurricular and done after the main task of learning was accomplished. In his study Halls (1973) and Nteere (1982) emphasize that the Physical Education programme was also scheduled to be taught during actual teaching time. However, during such lessons, the emphasis remained a formal drill referred to as “Physical training”.

The “Physical training” was seen as involving the physical and having minimal or no mental connection. It was also characterized by absence of progressive learning and lay great emphasis on competition. Further, there was no formal assessment of the learners’ cognitive achievement as a result of learning acquired.
The strong emphasis on competition made the Physical Education teaching to be primarily aimed at the individuals on the school teams rather than to all pupils. This practice resulted in the development of the spectator attitude for the less able majority. Consequently, many pupils did not see the subject as related to their individual needs. The few pupils (mainly boys) excelling in the Physical Education activities or games and sports competitions, would be promptly recruited into the army even before completing their primary education. In an oral discussion which the researcher had with a retired primary school headmaster (Mr. Stephen Nzivo) who was a teacher in the later days of the colonial era, he stressed that:

"Once recruited into the army, their (pupils) sports performance would be further boosted by training using the 'excellent' sports facilities then only available in the army barracks. This practice led to a negative association of excellence in sports with individual possessing low cognitive abilities" (Oral interview, S. Nzivo, 1995).

This negative association of excellence in sports to individuals of low cognitive ability is still common in most communities in Kenya. As recently as the mid 1990s, students pursuing Physical Education at Kenyatta University were perceived by their peers and community as lacking in intelligence, whose deficiency could not enable them pursue 'more academic subjects' (Lumati:1995).
Further, the Physical Education introduced in Kenya during the colonial era involved running, which in most African communities was (and still is) associated with children or madmen. These members of the society were/are seen as either mentally deranged or not yet fully developed mentally. For many years (even today, 1996), in many regions of Kenya, an individual jogging or practicing in some sports in the village would be a cause of alarm to the villagers. The Physical Education introduced during the colonial era therefore, was negatively perceived and did not cater for majority of the school pupils.

(c) During the 1963 to 1980 Period

The beginning of this period was marked by Kenya’s attainment of political independence from its colonial masters. However, the tone set during the colonial period was carried over into the Physical Education programmes after independence. The concept of Physical Education remained narrow and synonymous with sports. The subject did not have the image or prestige enjoyed by the other school subjects. Indeed, emphasis was being directed at the examinable subjects which were seen as more related to employment opportunities.

Individuals excelling in physical activities were not rewarded in any way besides simply being acknowledged. Hence the real benefits of physical activities to the pupil were masked by lack of encouragement to participate in
Physical Education activities. Excellence in such activities was attributed more to hereditary talent rather than to their development through consistent training. Further, there was no formal assessment of pupils' performance in Physical Education, which would have provided an incentive to improve performance in the school situation.

Towards the late part of this period, concern for the state of Physical Education in Kenya schools had began being voiced. There was a growing call for change both in the content and the teaching methodology. Further, new knowledge was filtering into the country on the role of physical activity as preventive medicine (Halls, 1973; Krotee, 1979; and Fox 1983). Health maintenance had therefore began being seen as a primary objective of Physical Education in the fast changing society. Emphasis was being placed on the contribution of physical activity to the prevention of ailments such as heart diseases, hypertension certain types of cancer and diabetes (Voltmer, 1967; Krotee, 1979; and Fox, 1983;).

Despite the new emphasis on Physical Education and the concern to make it more relevant to the needs of the school children, the intensity of concern was not adequate to make major policy changes.
During the Period 1980 to Early 1990s

This period was marked by an increase in positive awareness of the need to involve more people in physical activity. To the youth, regular physical exercise was seen as very important in their total development. This partly arose from the Gachathi report (1976) when it recommended for development of the physical potential of the country's human resources for purposes of raising the overall productivity and quality of life in the country. The 1980 presidential directive mandating the teaching of Physical Education in all schools in Kenya (Ngumo; 1995) marked the peak of awareness on the importance of regular physical activities in the total development of the individual. The desired change in the teaching and emphasis of Physical Education was best summarized in a letter to all Provincial Education officers, from then Chief Inspector of schools, Mr. Daniel Mbiti.

"Uncontrolled aimless ball playing on the field does not constitute Physical Education lesson. Like any other subject on the school Curriculum, Physical Education must be accorded it's due weight in terms of lesson preparation". (Circular No. INS/B/24/2/243/9th November 1980).

For this directive to be effective, there was need for various issues to be addressed to. The following are some of the issues which have become major obstacles to the effective teaching of Physical Education in primary schools in Kenya.
(i) Teaching Approaches

In primary education, all Physical Education lessons are conducted outdoors as practical lessons. During the lessons, certain motor skills are taught and practiced for mastery. The teaching approach does not give room for the teacher to explain even the simplest principles of physical activity or the rationale for teaching a particular motor skill or sport. For example, the teacher instructs the pupils on how a particular skill is performed and assists them perform it correctly. Yet, the teacher does not explain what effect the performance of the motor skill has on their bodies. The Ministry of Education guidelines on the teaching of Physical Education in primary schools (Ministry of Education, Science and Technology 1984 and 1986) specify that all Physical Education lessons must be practical lessons carried out outdoors. Therefore, in the absence of room for some theoretical content, the Physical Education teacher can not explain to the pupils the relevance of regular physical activity in the school curriculum. Frequently, the Physical Education activities such as press-ups, running round the school, athletics track or round the classrooms and walking while in a squatting position are used as forms of punishment in many schools. The teaching approaches therefore fail to generate pupil interest in the subject or even instill carry over values (learning for living) of Physical Education as the subject is seen as an end in itself.
(ii) Assessment Procedures

Assessment of learning is central in any learning situation as it enables the teacher to gauge the pupils' achievement. According to the Ministry of Education (Ministry of Education, Science and Technology 1984 and 1986), Physical Education teachers are expected to assess the pupils' progress by considering their (pupils') level of physical performance effort and change in attitude towards Physical Education activities in general. However, such criteria is highly subjective as no assessment tools are given. Further the assessment process is highly time consuming.

A brief survey done by the researcher (1995) revealed that no form of assessment is carried out. Further, even if the assessment was done, the teachers, parents and pupils are aware that the grades would not be put into any subsequent use. The grim situation on assessment in Physical Education was best captured in an oral interview with a primary school teacher and parent in Machakos District.

"...excellence in Physical Education activities while in primary schools, does not earn the pupil any extra point or preference during the selection to join secondary school". (Mulinge, K., Oral Interview, May 1995).

(iii) Attainment of Targets

Since Physical Education involves acquisition of motor skills, then the learner's progress can best be reflected through motor performance. The primary
school Physical Education syllabus (Ministry of Education, Science and Technology, 1984 and 1986) gives the same types of activities (motor skills) to be taught to pupils in different year groups.

However, in order to promote motivation and quality of learning, there has to be set attainment targets in terms of quality of skill performance, level of physical fitness, social, mental, spiritual and emotional development for each year group. This would guide the teacher in ensuring that effective and purposeful learning takes place. Attainment of such targets would best be measured through the use of relevant assessment procedures. Currently (1996), no attainment target exist in the teaching of Physical Education in Primary Education.

The aims of teaching Physical Education in primary schools are clearly identified in the syllabus (Ministry of Education, Science and Technology, 1987), and in other documents (Digolo, 1984; and Kenya Institute of Education, 1987). However, due to its low status in the school system, the actual teaching is characterized by lack of seriousness in lesson preparation and use of learning resource materials. Further in many schools, the pupils are given a ball to ‘kick’ in the field as the teacher stands at the edge of the field or basks in the sun. In the absence of professional guidance, Ngumo (1995) stresses that: “These Physical Education objectives are not achieved because pupils are denied the rich experience of Physical Education”.
1.2 Statement of the research problem

A brief survey of the available documents (for example, Ominde, 1964; Halls, 1973; and Nteere, 1982), reveals that the value of Physical Education was greatly underplayed by the colonial system of education in Kenya. Although the newly adopted 8.4.4 system of education recognizes Physical Education as a compulsory school subject, the discipline is still non-examinable at the primary and secondary school levels. Further, teachers charged with the responsibility of teaching the subject lack enthusiasm as emphasis is placed on the examinable subjects. This makes it difficult for pupils to study it with keenness.

Research works indicate that regular physical activity has positive effects on the general human performance (Krotee, 1979; and Gilmore, 1981). With regular physical activities, the human body would be better able to cope with physical, mental and other forms of stress that tend to inhibit human performance. Despite the well documented benefits of regular physical activity to the human body, no study that the researcher is aware of has been done in Kenya to explore the relationship between the process of motor skill learning and consequently the level of motor performance to the individuals level of cognitive development and performance. It is in this context that the researcher has envisaged the present study. The study seeks to explore the relationship between the level of the motor performance (performance in
physical skill) and the individuals level of cognitive performance (as reflected by academic achievement).

A survey of some private kindergarten and primary schools reveals that the provision of Games and Sports facilities like Swimming pool, play equipment and well leveled grounds is a priority consideration in planning for such schools. This situation together with such age old sayings as “all work and no play makes John a dull boy” suggest that some form of regular physical activity is necessary for normal human growth including mental growth. The contribution of motor-performance to cognitive development and performance has neither been explicitly emphasized nor even explored systematically to inform instructional design (Nteere, 1982).

In view of the above observations, there is need to:

(i) Assess the contribution of pupils’ motor performance to their cognitive performance.

(ii) Synthesize suitable teaching strategies to utilize identified interactions between motor performance and cognitive development to enhance the over all growth and performance of the individual. Such an effort will inform not only teachers but also the curriculum developers as well as policy makers and hence, act as a framework for further improvement. The present study therefore, focuses on the exploration of the
1.3 The Rationale of the study

Every game or sport comprises several motor skills. To attain mastery in each skill, the learner must know what the skill is and how it is performed before the practice stage. Additionally, the learner must know the relevant rules. Since this is a mental activity, it is expected that the learner with high cognitive ability would conceptualize and interpret the skill better. In order to excel in a particular game, or sport, the learner must be able to relate the different skills of the game and apply them together with the game’s strategies, techniques, tactics and knowledge of the game’s rules to the competitive situation. To arrive at correct responses for different cues during the competitive game situation, (which is the ultimate measure of one’s motor skill proficiency), the learner must rely on his ability to perceive the situation, assess it (which involves processing stored information), make appropriate decisions and act without loss of time. This must be a reasoning process within his mind.

Thomas, (1979:7) reckoned that:

“A basketball player may have the option of passing to any one of his four team mates, or shooting, or holding on to the ball and waiting for a better opportunity. He has a fraction of a second in which to make up his mind”.

Similarly, relationship between Kenyan primary school pupils’ performance in physical skill and their academic achievement.
Similarly, an ‘expert’ tennis player takes only a fraction of a second to make decisions on an on-coming ball and or in changing circumstances. Thus to attain proficiency in a game or sport can not be attributed simply to repetitive drills and luck.

According to modern theory (Smith, 1966), all learning is a motor behaviour. At the core of science is the need for observation which concerns itself with motor behaviour. Prediction which is based on the attainment of the goals of description and explanation can only be achieved through careful observation of behaviour. Cognitive learning initially deals with concrete events, concepts and relationship in symbolic representation. Indeed, all learning is almost completely dependent on manipulation of tools and instruments on one hand and devices to transmit symbols on the other.

Such devices as video-tape recorder, computers and many other types of teaching machines are important research devices for learning. Smith (1966:19) stresses that:

“Because educational learning is concerned almost entirely with instrumental and symbolic behaviour, it is dependent on tools and devices which mediate instrumental and symbolic control”.

This view is further supported by Ruger’s study findings as reported by Smith, (1966:43):
“Subjects were given mechanical puzzles and asked to try solve them without overt manipulations. They found this very difficult and even after they thought they had discovered the effective principle, they often encountered difficulties in trying to carry it out”.

Fitts (Smith: 1966) identifies three phases of learning as cognitive, fixation and the autonomous phases. He views cognitive understanding of a motor skill or “intellectualization” as the first phase of training as necessary to provide the trainee with appropriate sets or expectancies and an over-all knowledge of what the task involves. In motor skill learning, the cognitive phase involves a great deal of mental or intellectual searches for answers related to the proper technique and strategies.

Demonstrations, movies and lectures develop such an understanding. Later in training, such cognitive aspects as strategy, judgment, decision making and planning are important. Thus, the initial stage of learning a motor skill is purely cognitive and is learned like any other cognitive information.

In conclusion, the process of cognitive and motor skill learning is similar. The fact that mentally retarded individuals can never attain the same level of motor proficiency as the normal individual is further evidence. Differences that may be observed in an individual’s performance in say mathematics and history, should be seen as similar to those observed in tennis and soccer. Such
differences should then be explained as arising mainly due to specialization and consistency in practice in one particular area at the expense of others.

The pupils in Standard Eight are under great pressure from their teachers, parents and peers to perform well at their Kenya Certificate of Primary Education (KCPE) examination. The teacher derives pride, recognition and even promotion on the basis of his pupils’ performance. To the parents, the child’s success in examination brings great pride and is a cause for celebration. Whilst the pupil with excellent examination results is a hero and ‘a genius’ among his peers, incidents of pupils committing suicide on failing examination and teachers being transferred due to poor examination results in their schools are numerous in the local press in Kenya.

The child has a natural desire to experience movement through physical activities (Shiundu, 1984). At an early age, most of the motor behaviour takes place resulting in muscular development coordination and ‘training’ for fine adjustment and synchronization later (Smith; 1966). At the primary school period, the child has to excel in physical activities and remain in the forefront despite the parents’ discouragement on wasting time instead of reading to pass examinations.
The pupil must therefore master the fundamental motor skills or suffer the consequences of loss of standing and recognition among his peers. Cutteridge, Rareck and McKee (Voltmer, 1967: 39) stress that:

"Skill in bodily activity is to be ranked first among the factors that lead to the child’s acceptance among his peers... proficiency in gross motor activity assumes greater importance (as children grow older) as is evidenced by the prestige placed upon skilled performance by the child’s peers”.

The primary school Standard Eight pupil is therefore under-great pressure to excel both in his examination as well as in gross motor activities. It is expected that the conclusions of this study will provide useful information.

Since 1980 when the Government mandated the teaching of Physical Education in Kenya, the subject has been a compulsory subject in primary school education (Ministry of Education, Science and Technology, 1984). This is a reflection of the importance of the subject in the total development of the pupil as an individual. For a subject to be made compulsory in a school curriculum it must have an important and unique contribution to make to the learner in the education process. (Voltmer, 1967).

The aim of Physical Education in the 8.4.4 system of education has been identified as to: “enhance the development of the students’ physical fitness,
fundamental skills and character development” (Ministry of Education, 1987:V).

Besides its contribution to the spiritual social, moral and emotional development, Physical Education is the only subject in the school curriculum charged with the responsibility of developing physical fitness in the individual. It therefore has a definite and unique role in the education process.

At the national level, a well implemented Physical Education curriculum would play a vital role in the health and well-being of the people. This view is supported by Halls (1973: 163), who points out that: “the destiny of a state depends on the health and strength of its citizens”.

A healthy citizen, is less absent from duty, spends less money in maintaining his health and is more productive at his work place. A well implemented Physical Education curriculum can therefore play the role of ‘preventive medicine’ in boosting the citizens’ health as the cost of maintaining and improving health is ever on the increase. Currently, (1997), Kenya has limited resources and is incapable of providing adequate health services for every citizen.

Ngumo (1995) in her study stresses that Physical Education can play a major role by assisting people to effectively practice self-care by maintaining a physically fit body and proper balance between recreation, work and rest” since
good health cannot be bought. The Kenyan citizenry should therefore be discouraged from thinking of health in terms of doctors, pills, bills and clinics.

Regular physical exercises can play the role of preventive medicine. Its suitability for mass application is supported by the fact that it is the cheapest and most enjoyable form of preventive medicine. The best target population for preventive education is the youth while at school. An effectively implemented Physical Education curriculum provides a variety of suitable activities to the youth. Values developed in the youth at this stage can be carried over to future life of the individual thus making Physical Education contribute its share on ‘learning for living’.

The concern for healthy citizens is not confined to modern societies. Regular exercise was of prime importance in the early civilization. The ancient Greeks of the Athens State had one of the objectives of Physical Education as to serve as a recreational pursuit and an aid to aesthetic development. Physical Education was also utilized as therapy for the injured and the sick. This view arose as a result of increased medical knowledge that Physical Education could be used as an aid to medicine. Bucher (1964:272) states that:

"many individuals because of wealth and idleness, obtained inadequate exercise and indulged in luxurious living at the expense of their health. Adapted Physical exercises proved to have therapeutic value in many such cases".
The Athenian Greeks were therefore aware that the evil consequences to health could be avoided by paying attention to diet and exercise. Other outstanding Greeks at later dates supported the same view. Hippocrates proclaimed the law of use when he stated that: "...through use, all parts of the body are kept in health, whereas disuse results in imperfect development and ill health". (Bucher; 1964:272).

Similarly, outstanding philosophers and leaders in ancient Greece held similar views. Socrates (Bucher, 1964) emphasized on the relevance of Physical Education and its vital role in promoting an individual's health and life purposes. He urged that even in thinking where it seems the body is used very little, bad health can contribute to grave mistakes. Another philosopher Aristotle (Bucher, 1964) viewed the body and soul as closely interrelated and that bodily movement and conditions of body health affected mental faculties. Also Xenophon, a contemporary of Plato felt that soundness of body and of mind was essential to success. The modern world turns for a great deal of thinking to these outstanding Greek philosophers and leaders.

In the traditional African societies, work and recreational activities provided regular physical activity. However, the modern day technology coupled with foods that are rich in fats, chemical preservatives and additives and polluted environments led to the situation of a sedentary lifestyle which added more problems for such societies.
environments have resulted in diseases such as coronary heart diseases, hypertension, diabetes, certain types of cancer, and respiratory disorders.

These diseases are costly to manage both at the individual as well as national level. However, studies as reported by Halls (1973) and Krotee (1979); indicate that regular physical exercise eliminates or delays the onset of such diseases in an individual.

Much has been written about the development of the mind as the basic objective of Education. However, studies have revealed that lack of physical activities impedes mental development (Willgoose, 1961). Due to heavy stress on passing examinations, schools have concentrated on developing only the mind rather than the total development of the individual. In most schools in Kenya, the Physical Education lessons are used to teach examinable subject. Ngumo (1995) reveals that where some teaching of Physical Education does take place, it is often the school athletes or students in the school team who are trained as the rest of the pupils spectate. Consequently, majority of the pupils are denied an opportunity to engage in guided vigorous activity. Further, the pupils are not exposed to even the basic fundamental principles of physical exercise. Ultimately not only are the pupils demotivated but are also denied a chance to acquire the ‘carry over values’ of Physical Education after school life. The researcher agrees with Ngumo (1995:15) when she urges that: “many Kenyans give up the idea of sports participation
after school days for a variety of reasons such as ...ignorance of the value of physical activity”.

Getchell (1976) and Bucher and Prentice (1985) agree that physical fitness would enable the youth to be more productive, vigorous and live a more rewarding life. The physically unfit individual would not participate safely and with skill proficiency or enjoyment in sports activities. Further, the physically unfit individual cannot be described as in good health. Consequently, the researcher holds the view that an unhealthy individual cannot concentrate on effective academic work. Besides, the physiological benefits, good health and physiological vitality will enhance the individual’s intellectual vitality and therefore ensure academic accomplishments.

Motor performance is the most readily observable aspect of in fact behaviour. After only a short period of time, the baby has acquired behaviour and skills that were clearly not present at birth. These changes take place at such a regular rate that the acquisition of certain motor skills forms a major element in the test for the over-all development in infancy. The failure to reach certain motor milestones has been used as a diagnostic tool in the examination of other aspects of development.

Gradually, the child gains control of posture, becomes able to walk and has attained manual dexterity in reaching, grasping and fine manipulations. The
young child forms his picture of the ‘world’ by using motor skills to explore the people and objects within it. The child develops the ability to recognize that things exist, which are not at present within his visual field. Thus the tactile and visual information obtained from his movements assist in construction of his mental picture of the environment as size, shape, texture and distance are gradually comprehended. This illustrates that the child’s growing motor behaviour may be related to his developing cognitive awareness.

The researcher holds the view that if there is a significant relationship between motor performance and cognitive performance, then conditions that promote motor skill acquisition would to a large extent also promote the individual cognitive development and vice versa.

Further, the individual’s motor performance which is more readily observed, may be used to give clues to his academic under achievement.

Drawing from the above, the role of regular physical movement is important in the total development of the child. In the primary school system Physical Education is the only subject charged with providing for learning and experiencing organized physical movement through which physical skill is developed. The researcher therefore designed this study, with the hope of
(i) challenging the physical education teachers to involve the pupils in regular and well guided purposeful physical activities;

(ii) changing the existing negative attitudes amongst teachers, parents, pupils and some members of the community, which associate excellence in sports or physical skill to individuals possessing low mental abilities;

(iii) challenging school teachers' view that Physical Education has no business in boosting up an individual's performance in academic or examinable subjects;

(iv) challenging the Physical Education teacher to facilitate Physical Education for all pupils rather than to those in the school teams only;

(v) revitalizing the perceived dormant state of the teaching of Physical Education in primary school education;

(vi) challenging the Physical Education teacher to create awareness that Physical Education has a life long mission in the
individual’s health which surpasses the concept of pursuing subjects that lead to direct employment; challenging the policy makers to create awareness that Physical Education is not alien to the modern Kenyan society, but has a rich basis in traditional African society where it permeated every aspect of life. As such it should be stressed as learning for living due to its carry-over-values;

(viii) motivating the curriculum planners to produce a Physical Education curriculum which is relevant to the learners’ age, past experiences, learning needs learners’ interest, and provide a variety of learning activities suitable for present as well as later life.

Finally, it is hoped that from the recommendation of this study, the learner will be effectively guided and encouraged to attain his full potential in motor skill performance, and to derive and channel appropriately the benefits of regular Physical activity.
1.4 Study Objectives and Hypotheses

The researcher formulated some general objectives and hypotheses. The objectives and hypothesis are based on the literature reviewed and some basic assumptions of the study.

1.4.1 Study Objectives

The following general objectives were generated.

To gather data on the:

1. personal information of primary school Standard Eight pupils;
2. pupils’ involvement in Physical Education lesson activities;
3. pupils’ involvement in out of class Games and Sports activities within the school.
4. pupil’s involvement in competitive Games and Sports activities within and outside the school;
5. effect of pupil’s engagement in Games and Sports practices and competitions on their concentration in academic studies;
Then on the basis of the gathered information, to:

(7) establish if any relationship exists between the pupils level of performance in physical and their academic achievement;

(8) make recommendation on how school Games and Sports activities can be made more relevant to the needs of primary school pupils.

(9) establish a foundation for future studies on the role of regular physical exercise and competitive sport on the academic excellence for pupils in primary school education.

1.4.2 Hypotheses

In pursuit of objective number seven (7) as stated under section 1.4, the following hypotheses were generated to be tested. The study assumed the null hypothesis.

(1) There is no significant relationship between performance in physical skills and academic achievement among pupils in Primary Education.

(2) There is no significant relationship between performance in physical skill and academic achievement among rural pupils in Primary Education.
(3) There would be no significant relationship between performance in physical skill and academic achievement among urban pupils in Primary Education.

(4) There would be no significant relationship between performance in physical skill and academic achievement among boys in Primary Education.

(5) There would be no significant relationship between performance in physical skill and academic achievement among girls in Primary Education.

1.5 Basic Assumptions of the Study

The following assumptions were made in this study.

1. The pupils selected from rural and urban environments did not have significant differences due to their varying living conditions and daily routines.

3. The pupils selected to participate in the study represented a normal population.

These will be used as basis for further activities done outside the scheduled teaching time through...
3. Performance in physical skill and academic achievement are evident in our school system and there is need for thorough research on the two phenomena.

1.6 Operational definitions of terms used in this study

1. Academic achievement:
This term was used to mean the pupils’ ability to think, reason and solve problems, which is indicated by the score attained in the Mathematics Examination at the 1996 Kenya Certificate of Primary Education District Mock Examination.

2. Athletics
Physical activities that involve running for speed, jumping for height and/or distance and throwing for distance.

3. Games
Physical activities that involve members of one team playing against another and are bound by rules and decided by number of goals scored.

4. Games and Sports
These will be used to mean all motor activities, done outside the scheduled teaching time which may:
(i) be in form of games, athletics, gymnastics, swimming or any other physical activity.

(ii) enhance proficiency in motor skill learning during Physical Education lessons.

(iii) be competitive or recreational.

(iv) be done after the day’s lessons, over the weekends or holidays. (Not necessarily done in the school compound).

5. Physical Education

All educational experiences learned or performed during the Physical Education lessons in the school, under the guidance of a Physical Education teacher.

6. Primary Education

The learning acquired while the individual is in the primary school and which precedes secondary education.

7. Primary School

The first eight years of formal education in Kenya, usually undertaken by an individual as from age six.

This study was carried out during Primary Education because of the performance and academic achievements are very crucial.
8. **Performance in Physical Skill**

Actual accomplishment by the pupil in a Physical skill as reflected by either zonal, divisional, district, provincial or National level of performance in Games and Sports activities organized by the KPSSA either individually or as a member of a school team.

1.7 **Limitations of the Study**

This study was carried out bearing in mind certain limitations. Since performance in physical skill and academic achievements are very broad concepts, only a few variables or aspects of the two were examined in this study. The study focused on the intensity frequency and duration of Game or Sport practices as well as the level of competitive Game or Sport performance under competitions organized by the KPSSA. Further, the study focused on the pupils achievement in the 1996 Kenya Certificate of Primary Education Mock Examination in Mathematics.

The respondents were pupils in Primary Education, Standard Eight class. Therefore the findings can not be generalized to all pupils in Kenya’s Primary schools. The study involved only three of the eight provinces in Kenya, so the findings can not apply to the rest of the country.
1.8 Summary

In Chapter One, the researcher reviewed the background literature related to the research problem. The researcher also gave a statement of the research problem, the rationale for the study and stated the study objectives and hypothesis. The basic assumptions and operational definitions of the terms used in this study were also given.

In the next chapter, the local as well as foreign related literature will be reviewed.

In this chapter, the related and literature as well as that of other countries was reviewed. The literature review helped set appropriate guidelines for the present study.

2.2 Review of Local and Related Literature

The role of physical education, sport and recreation in the development of an individual is well recognized and documented. In the early 20th century (Hall, 1973; Krotec, 1979; Hinton, 1982). This recognition is reflected in the inclusion of physical education as a subject in the school curriculum in many nations of the world. The successful improvement of the teaching facilities, equipment and use of effective teaching methods is capable of ensuring experience regular physical activity. However, the limited role of physical education has not been easy to achieve worldwide in developing countries.
CHAPTER TWO

RELATED LITERATURE REVIEW

2.1 Introduction

In Chapter One, the researcher reviewed the background literature related to
the research problem. The researcher also gave the rationale for the study and
stated the study objectives and hypotheses.

In this chapter, the related local literature as well as that of other countries was
reviewed. The literature review helped set appropriate guidelines for the
present study.

2.2 Review of Local and related literature in other countries

The role of physical education, sports and recreation in the total development
of an individual is well recognize and documented world wide (Voltmer, 1967;
Halls, 1973; Krotee, 1979; and Gilmore, 1982). This importance is reflected
in the inclusion of physical education as a subject in the school curriculum in
many nations of the world and the consequent improvement of the teaching
facilities, equipment and use of effective teaching methods to enable every pupil
experience regular physical activity. However the desired role of physical
education has not been easy to realize world wide in developing countries.
2.2.1 Effect of regular Physical activity on the human body.

Willgoose (1961), Voltmer (1967) and Towett and Mullan (1977) identify four major objectives of physical education as physical fitness, mental health and efficiency, social efficiency and recreational competency. The concept of physical fitness is taken to include cardiorespiratory endurance, muscular strength and endurance, and weight management. Physical fitness is closely related to physical exercise, diet and rest and is demonstrated through physical performance. Although physical fitness is related to health in general, it is more specific. Willgoose (1961) argues that the greater the physical fitness the longer the individual will be able to perform more efficiently and recuperate faster from fatigue.

The ability of an individual to maintain sustained effort in performing an activity is a desirable quality. This would mean that in a learning situation the individual can concentrate better and longer in academic tasks and the activities are performed more efficiently. Since physical fitness brings about efficiency in all the organs and limbs of the body, the brain which is also a body organ would end up being more efficient in its functions and to withstand sustained effort.
Regular physical activity is a key in the development of an individual's physical fitness. Gillmore (1981) concurs with Krotee (1979) when he argues that through regular physical activity, muscles are strengthened including the vital heart muscles, excess body fat is gotten rid of in order to control body weight. Also, regular physical activity gives the individual physical stamina and flexibility so that the everyday chores of living can be performed without tiring effort or injurious strain. Such desirable changes also take place in the brain as a body organ.

Further, through regular physical activity, fitness of the vital body organs such as the heart, brain and lungs is improved together with the functions of the circulatory, respiratory, digestive, heat regulations and the elimination systems of the body. The same organs and functions of the body systems are made adaptable to changing situations. These changes lead to a healthy body that can more effectively cope with varied demands made upon them.

Drawing from the above, it appears that the brain as one of the of the body organs would become more healthy and therefore more efficient with regular physical exercise. Accordingly, the individual would be able to withstand prolonged mental activity and to perform his/her functions more effectively. A pupil exposed to regular physical exercise therefore should excel in academic performance as a result of the desirable changes explained above.
Research as reported by Halls (1973) Gilmore (1981) indicates a strong link between a high level of physical fitness and the individual’s well-being such as improved immunity to diseases and reduced chances of heart diseases. A study published in the journal of the American Medical Association and quoted by the East African Newspaper (August 19-25. 1996) revealed that low levels of physical fitness in man is a more powerful risk factor than high blood pressure, high cholesterol, obesity and family history. The study also indicated the low fitness was a strong predictor of all causes of death.

In the school situation a sick learner would be unable to concentrate effectively in a learning situation. Similarly a sickly learner would be likely to miss school classes while attending to medical attention. A learner experiencing the above condition therefore is least likely to excel in academic tasks. Accordingly an improved immunity to disease as a result of regular physical exercise would lead to effective concentration during learning sessions, in school and ultimately to high performance in academic tasks.

Additionally, even though no concrete evidence is available, Willgoose (1961) indicates that failure to develop physical fitness reduced one’s ability to perform as a genius. It therefore appears that physical fitness contributes to the academic (intellectual) performance of an individual and that a combination of intellectual and athletic ability in an individual should be highly treasured.
As a result of the explained changes, a high performer in academic tasks, should further improve on his performance with regular physical exercise.

However, for physical activity to be effective in bringing about health related benefits discussed above, it must be based on sound scientific principles related to frequency, duration and intensity of exercise as documented by Bucher (1964) and Miller (1982).

Normal growth and development and promotion of the individual’s body posture for favourable health is also helped by regular physical activity. To the young growing person as well as other individuals of different ages, regular physical activity provides a relaxation by acting as an outlet for built up emotions and tensions which might create irritation and nervousness in the individual. This has the effect of promoting mental well-being.

Gillmore (1981:89) notes that desirable effects of physical activity accrue to every one.

"Practically anyone who exercises regularly has good things to say about the way it has improved his feelings... a more positive outlook on life, concentrate better and cope with problems more effectively... feel more assertive, think more creatively and are more self-confident.”
However, the benefits derived from regular physical activity should not be an end in themselves. They should be applied to the individual’s daily chores. In striving to cope with academic work and other school expectations, pupils experience tension and build up emotional stress. Studies (Time magazine January 20th, 1986) indicate that plump children are ridiculed and sometimes even ostracized by their slimmer peers. This interferes with the child’s self image, confidence and affects his learning. Regular exercise can reduce body weight especially when combined with reduced caloric intake. An improved physical appearance can then lead to a positive self image which can further contribute to mental health. Additionally, regular physical activity has the potential to reduce tension through mind relaxing activities that give a chance to forget about problems and thereby contribute to mental well-being. Bucher (1964: 105) argues that:

“When an individual is attempting to serve a tennis ‘ace’ he forgets all about... the final examination in English”.

Reduction in mental tension through regular physical activity as reflected by relief of depression and proper sleep habits can lead to a feeling of well-being which is a necessary body condition for effective work or study improvement. Also physical activity provides opportunities to experience success which leads to improved self-concept, and recognition and acceptance of one’s limitation.
Drawing from the above, it appears therefore that a self-confident individual who feels good about himself and has minimal or no emotional tensions and nervousness would have an appropriate mental state for effective concentration in academic tasks.

Studies as reported by Bucher (1964), Voltmer (1967) and Krotee (1979) identify changes brought about by regular physical activity, which are related to mental health and efficiency. Some of these changes on the human body are:

(i) the power to analyze a situation and see its essential elements;
(ii) sound and rapid judgment and decision making and ability to organize ideas and execute them;
(iii) mental alertness and power of sustained attention and concentration of thought;
(iv) a gain on one's knowledge on his powers and limitations and on a variety of healthy activities.

These changes on the human body translate to mean a more productive, vigorous, interesting and rewarding life. The changes also lead to mental health as a component of a healthy body. A healthy mind should therefore be expected to execute its functions of problem solving and reasoning most effectively. The researcher concurs with the above argument and holds the view that a mentally healthy pupil would perform best in academic tasks.
Physical Education perhaps more than any other subject in the school curriculum is purposely organized to deal specifically with the elements of sound behaviour. An individual’s social health (or well-being) as reflected by one’s ability to get along with others and exhibit desirable level of conduct is a highly valued quality.

Wilgoose (1961) and Voltmer (1967) argue that physical activities such as Games, Sports and Dance provide a suitable learning situation in which the pupil can express himself. Such human qualities as self-restraint, initiative, perseverance, courage, cooperation, leadership and loyalty to the group are highly treasured. These desirable qualities not only help the individual to exist in harmony with others but can also be indirectly linked to academic success as a result of self discipline. A self disciplined pupil would withstand sustained effort in tackling an academic task while ignoring distractions from the environment as well as mental fatigue. Such an individual would therefore improve on his performance in academic tasks as a result of repeatedly trying until success is realised.

The foundation for recreational competency is laid in the individual early in life. If the individual lacks play skills, interest and motivating factors, then he is less likely to engage in recreational activities. Bucher (1964) comments that an individual must develop skills to the activity in order to makes its performance
exciting and enjoyable. Acquisition of a broad skill base creates a skill ‘bank’ from which the individual can choose as weather and circumstances vary. Also once skills are mastered, an individual will be motivated to engage in performing the activity whether the teacher is around or not. The researcher concurs with Bucher (1964) when he points out that an individual equipped with a variety of physical skills will engage in physical activity and promote physical fitness not only while in school but also during weekends, holidays as well as throughout life. Since regular physical exercise has a positive effect on mental health as explained earlier, then acquisition of a variety of physical skills is desirable. An individual possessing such variety of physical skills is more likely to be motivated to engage himself in physical performance of the activity. Such an individual is likely to lead a more productive life both in a social setting as well as in academic circles.

2.2.2 Information Processing in Learning

To learn a motor skill, certain information must be acquired by the learner. The output of such information would then result in muscular movement. The chances for successful performance of the skill diminishes when any part of the movement is forgotten or the order is improperly arranged. Fitts and Posner (Magill: 1985) have established a three stage model in the learning of a motor skill namely, cognitive, associative and the autonomous stages respectively.
The cognitive stage is marked by errors and high variability in performance. The association stage is characterized by errors that are less gross in nature as basic mechanics of the skill have been learned to some extent. The learner has also developed an ability to detect his/her own errors. At the associative stage, variability of performance from one attempt to another begins to decrease. The autonomous stage is the final phase of learning a motor-skill and is attained after much practice and experience of the skill. At this point, the execution of the skill has become almost automatic. The individual can perform the skill without thinking about it. Voltmer (1967: 37) emphasized that:

"skilled performance would be impossible if the performer found it necessary to give conscious attention to all the detailed movements he was executing".

The three stages are seen as parts in a continuum of practice time. The cognitive stage represents the first part of this continuum followed by the associative and then the autonomous stages. Gradually, a learner moves from one stage to the next.

In order to improve the quality of performance in motor skill learning, practice is necessary. Besides other benefits, skill practice leads to acquisition of the desired movement as Sage (1984:287) noted:
"No one ever learned to shoot a jump shot or served a tennis ball by merely watching someone else or just thinking about these skills. It is only through repetition of the desired movement pattern that skillful response sequences are developed."

A variety of experiences is an essential ingredient for effective practice just as the amount of practice is beneficial. Through regular practice an individual can progress from being unskilled to skilled level in motor-skill learning. In this progression the learner develops a set of motor responses into an integrated movement pattern. This involves selection of appropriate muscles where such muscles must contract or relax at the appropriate time in order to bring about the desired movement.

The unskilled individual executes the movement of a task slowly and makes many errors in achieving the desired goal. Further, the individual tends to be erratic in performance. Through practice the unskilled performer develops into a skilled individual, who is characterized by fast, smooth and accurate movement in achieving the goal. The skilled performer can also anticipate and cope with variations and other disturbances in the stimulus situation before they arrive without disruptions. This has the effect of increasing speed and accuracy of performance.
To attain this, the brain masters the skill such that minimal effort and time is spent as it (brain) makes the right decision and the muscles respond appropriately. Involvement of the brain as explained above is an indication that the mind is necessary in learning a Physical Skill just as it is in learning abstract (academic) concepts. Practice therefore leads to very little guidance being needed for effecting muscular action in response to a stimulus situation. In other words, the skill becomes programmed or automatic and the person can be described as highly skillful. At this level it may appear like the decision to act does not originate from the brain (or is a reflex action). However, this is only because the brain takes very short time in decoding the relevant response. Further, practice has an additional effect of strengthening the concerned muscles. This aids the individual in executing (performing) the skill efficiently.

Sage (1984) attributes these changes to an improved selective attention and perpetual skills acquired through practice. The changes can be viewed as an improved ability to interpret stimuli and decide and effect appropriate response or muscular action without time delay. However, the amount of practice has to be related to other variables that influence motor-learning. Ellis [as reported by Magill (1985)], supports distributed practice as being more effective in motor skill learning than massed practice.

Two types of motor-skill practice have been identified as physical and mental. The individual practicing a skill mentally simply imagines the skill that is to be
performed. The imagining may occur without any visual observation or while the learner is observing another person or a film. Thinking about a skill movement or performance without observable body movement to execute it (or mental practice) has been found to yield positive results in attaining skill proficiency.

Studies carried out by Jacobson (Sage; (1984), indicated that electrical activity of subjects while they imagined themselves performing a task was located to the muscles that would have been used in performing the imagined activity. However, later studies by McBride and Rothstein showed that mental practice combined with physical practice produced the most improvement in motor skill learning and performance. The studies as reported by Sage, (1984:300) emphasized that:

"Mental practice... appears to have good potential for correcting errors in execution increasing concentration and strategy rehearsal".

Magill (1985) argues that mental practice is beneficial to both the beginner in aiding skill acquisition as well as to the proficient performer in retrieving from memory the necessary process for performance. Even though physical is better than mental practice the later is better than no practice. However, a combination of both produces better retention performance than mental or physical practice alone.
Whereas learning deals with the acquisition of new information or skills, memory deals with retention and subsequent retrieval of information. The ability to learn cannot proceed with memory. Recognition or recall tests are commonly used to measure memory. Sage (1984) and Magill (1985) argues that if an individual practices a tennis stroke today and can perform it tomorrow, it follows that he has retained something that enables him to recall the movement pattern.

Acquisition and retention of information are phases of learning. The acquisition phase is the time or trials needed to attain a certain level of proficiency whereas retention is the saving of proficiency on a skill following periods without practice. What is retained is said to be learned. Conversely what is not retained or at least not retrievable is said to be forgotten (Magill, 1985).

Most motor skills are learned with the intention of performing them later. Athletic contests are examples that demand the retention of skills learned during prior practice. Therefore, instructors of motor skills as well as learners must be concerned with retention and forgetting as well as acquisition during motor learning.

Two theories of forgetting explain why skills can not be retained at a certain level regardless of how much time intervenes between performances. The trace
decay theory maintains that passage of time weakens memory traces. The interference theory suggests that forgetting occurs as a result of interference from learning other things. Several conditions are known to affect the upper limits of what one achieves on motor skill. Frequency and intense practice and motivation are two most important factors limiting the ultimate skill level besides ones' age.

Feedback appears very important for skill practice to be effective in leading to improved skill proficiency studies reported by Sage (1984:324) indicated that:

"Improved skill proficiency is as a result of pairing of feedback resulting from the execution of a movement pattern".

A successful execution of a movement pattern leads to an emotionally satisfying feeling. Consequently, when executing the movement again the individual will attempt to perform correctly so as to receive the satisfying feeling again. Thus, it can be concluded that for practice to lead to improved skill proficiency the individual has to view the task as desirable to learn. Further, for the learner to realize improvement in skill proficiency, repetitive practice is necessary.

Most psychologists (Smith, 1966) argue that learning results from motivation. The relationship between motivation and learning is best understood as being reciprocal. Munn, (1968), emphasizes that motives are cited for every
behaviour conceivable. The individual's desire to learn motor skills while at school and during out-of-school hours must be influenced by both internal (intrinsic) and external (extrinsic) factors or (motives).

Psychologists (Munn, 1969), have developed classification of human motives into physiological needs, safety needs, love and belonging, self-esteem and self-actualization respectively. The individual learner's ability to play well with age mates leads to recognition, acceptance and attainment of status among his/her peers.

In the school system, many goals are set on motor skill proficiency as evidenced by selection into the school teams. Setting of goals is a potent form of motivating individual behaviour in both performance and learning situation.

Research evidence (Magill, 1985:430) shows that:

"When objective goals are presented to individuals, their performance in motor skills can be expected to be superior to performance when no specific goal has been provided".

The process of learning a motor skill therefore is not any different from that of learning abstract or academic concepts. Whether the information is received through movement, feelings, touch, smell, sight or mind through hearing, it is processed by the mind in the same way. Additionally, learning a motor skill
benefits from motivation to learn, practice, and feedback just as learning an academic concept does. Similarly, the role of the memory is the same.

The basic movement in an individual such as walking, running, throwing and standing are acquired early in life and biological forces are presumed to be primarily responsible. However, after the early years of a child’s growth, motor learning becomes fine adjustment or synchronizing of the muscles involved in performing a particular physical skill.

Practicing a motor skill is often physically draining in body energy. Most evidence indicates that physical fatigue is detrimental to performances. Studies by Pack and colleagues as reported by Sage (1984) indicate that practicing a motor skill under conditions of severe fatigue impairs the learning process.

Drawing from the above on the process of learning a motor (physical) skill it is concluded that the process of learning a physical skill is not any different from that of learning an academic concept.

It is therefore, concluded that a pupil who is a proficient performer in a physical skill would also be expected to perform highly in mental (academic) tasks since the learning process is the same.
2.3 Review of related local literature

As explained earlier, physical fitness is a desirable condition in the human body whose presence can lead to effective execution of the various task expected of the individual including mental tasks. The primary school pupil spends most of his time in school. Therefore the pupil’s development of physical fitness will be determined by the quality of Physical Education programme presented at school. No studies have been done in this area in Kenya except what is recorded in textbooks.

2.3.1 The physical education programme

In Kenya physical education is taught as a mandatory subject in primary and secondary schools, and in teacher training institutions. Yet, studies carried out at various levels of the Education system by Muniu (1985), Kiganjo (1987), Simiyu (1990) and Ngumo (1995), reveals that the teaching of Physical education in Kenya is restricted by lack of qualified staff and availability of relevant facilities and equipment. Such limitations translate to denying the pupil opportunities to experience guided regular physical activity which is vital for the maintenance and improvement of the individuals health.

The primary school Physical Education syllabus (1986) identifies several topics to be taught in upper primary schools. They include the major ball Games such as Basketball, Volleyball, Handball and Hockey, Gymnastics, Swimming, Dance and minor Games such as Lawn Tennis, Table Tennis, Squash and Badminton.
Each topic taught consists of several motor skills which are taught singly then through practice they are put together in order to play the particular game. For example, to teach the Volleyball game, skills such as the volley pass, dig pass, set, block, smash and the serves as identified by Kenya Institute of Education (1987), have to be taught. To attain masterly in each skill, the pupil must know the skills (which is a mental activity) as well as how to execute them followed by practice before the relevant Game or Sport’s rules are brought in for effective play. However, most of the time is spent in practicing the skills for improved motor proficiency in the Game. It is during the practice sessions that the pupil is exposed to Physical exercise which leads to development of physical fitness. Later with further training such cognitive aspects as strategy, judgment and decision-making when in various games or sport situations are acquired. This is a mental process which is a vital component in Physical skill learning and subsequent physical performance. It is therefore, anticipated that the pupil possessing high mental abilities would learn the Physical skill more effectively and execute it more efficiently.

The three lessons allocated for teaching Physical Education each week per class are inadequate for effective learning of the skills, practice for masterly and application of the motor skills. Thus the time allocated for Games and Sports activities (as co-curricular or extra curricular activities) is frequently seen and used as extra time for further practice and application of the skills learnt during the Physical Education lessons. However, whereas during the Physical
Education lessons, all the pupils are expected to get an opportunity to participate in the lesson activities, during the Games and Sports time only pupils who possess superior athletic ability are involved. As argued above such pupils should also be the ones possessing high mental abilities.

Currently (1996), the teaching of Physical Education has a strong emphasis on competitive sports which is primarily geared to the few pupils in the school team rather than to all the pupils in the school. This practice began during the colonial era as highlighted by Halls (1973:138) when he stated that:

"Gradually Physical Education become a regular part of the school curriculum. Competition between schools especially within a particular District was fostered".

The Games and Sports competitions are organized from the school level up to the National level under the Kenya Primary Schools Sports Association (KPSSA). Due to the limited Games and Sports facilities, only a limited number of pupils in each Primary School can participate in the practices and competitions. This leaves out many pupils from actual participation in Games and Sports activities.

On the other hand, the actual teaching of Physical Education does not appear to involve all the pupils in Primary Education. A recent (1995) survey by the researcher revealed that in many Primary Schools the systematic teaching of
Physical Education is not carried out. Quite frequently, the pupils are left unattended to do whatever they wished. Also in majority of the schools the Physical Education lessons time is taken up by other teachers in the examinable subject areas so as to catch up in their teaching or revision in preparation for the examinations. This denies the pupils an opportunity to be involved in well guided movement, and consequently, to develop their health by improving on their Physical fitness, which has a bearing on the pupils’ mental health and subsequently on their academic performance as discussed earlier.

In the few situations where Physical Education is effectively taught, all the lessons are carried out-doors as practical lessons. In the process, no provision is made for the learner to be exposed to some information on such important areas as the meaning of Physical fitness and the effect of regular Physical exercises on the human body. Failure to impart such information fails to create a justification in the pupils for any continued involvement in regular physical activity. In view of the highlighted situation, the researcher holds the position that the Physical Education programme in Primary Education in Kenya is not effectively implemented. As such, the researcher concurs with Halls (1973) when he argues that many Kenyans give up the idea of Games and Sports participation after school days.
2.3.2 Games and Sport programme

The goals sought through Games and Sports activities in Kenyan primary schools (KIE, 1987), are similar to those for Physical Education as identified by Bucher (1964) and Barley (1976). Normally, the pupils learn the skills of a Game or Sport during the Physical Education lesson. However, the time during allocated to the Physical Education lesson is inadequate to enable the pupil adequate practice of the skills and their application in an actual Game or Sport situation. During the Games and Sports time, the skills learned during the Physical Education lessons get ample time for further practice, mastery and application in a Game situation. Thus, in a well implemented Physical Education and Games and Sports programmes, the Games and Sports activities enrich what is learned during the Physical Education lessons. However, this is not the situation in Kenyan primary schools.

Lack of adequate facilities and equipment in primary schools as reported by Halls (1973), in his study and in recent studies by Muniu (1987), Simiyu (1990) and Ngumo (1995) cannot facilitate all the pupils to participate in the Games and Sports programme. Also as explained earlier, the programme is more oriented to competitive sport. The time allocated to Games and Sports activities is therefore used to identify pupils with superior ability in the various activities. The pupils are then recruited into the school’s first team in the relevant Games and Sports then given intense training through practices and
built up matches in preparation for the inter-school Games and Sports
competitions.

The next level of competition is the zonal where several neighbouring schools
meet to compete in Games or Sports activities. The zonal competitions are
followed by the Divisional then District and Provincial’s at one week intervals
before they climax at the National level. The competitions are organized by the
Kenya Primary Schools Sports Association (KPSSA) to which every primary
school is affiliated.

The first school term in each year (January to April) is devoted to ball Games
such as Soccer, Basketball, Volleyball, Netball and other Sports like
Swimming, Gymnastics and Cross-country. Team preparations for these
Games begin in the school’s third term (September to November) during which
no competitions are held due to the National Examinations in the same school
term. The second school term (May to August) is devoted to Athletics
(Running races as well as Throwing and Jumping events).

According to an oral interview the researcher had in December 1995 with the
then Makueni District Education Officer (D.E.O) Mr. D. Ngui, the pupils
involved in the Games competitions are also the ones involved in the Athletics
(running races) competitions.
“It appears that their athletic prowess is superior to that of other pupils both in the Games as well as in Sports activities (Ngui; Oral interview, December, 1995)”. 

This can be explained that once the pupils train for the Games competitions, they improve on their Physical ability to a level that they also excel in the running races. In any case, the Games involved a lot of running.

Once the competitions are beyond the zonal level, each zone, Division and District depending on level of competition recruit the best players or athletes from schools within the zone, Division or District to form the desired teams. Players or athletes in a Soccer team or 4 x 400 metres relay team come from the best player or athletes from various schools within that zone, division or District. Consequently, the players or athletes are assembled in one venue for specialized training and also to enable them become used to each other and operate as a team. The training lasts about one week just before the competitions are held. The actual competitions at the zonal, Divisional and District level lasts about two days but at Provincial and National level they are held for up to two weeks’ duration. A pupil excelling in the competition up to National level in a given school term may be away from school classes for up to forty-five days in one school term while attending to training sessions and the actual competitions. Such time wastage could be saved if the pupils were coached or trained at their usual schools.
In the oral interview, Mr. D. Ngui (December, 1995), described the Games or Sports practices as:

"...total sacrifice on academic work for the pupils involved in the competitions especially for those excelling up to Provincial or National levels. The over-loaded school curriculum cannot allow them catch up effectively", (Ngui, Oral Interview, December, 1995).

Only two weeks elapse between when the National inter-school Games competitions are held in April and when pupils in the schools begin training for the Athletic or Sports (running races) competitions in early May. Therefore, the pupils involved in the Games and Athletic competitions hardly have time to settle on academic work between January and August each year.

The few athletically superior pupils in Primary schools therefore, spend a lot of time and energy in training for inter-school Games and Sports competitions in pursuit of fame, glory and prestige that success in such competitions bring to the school. This trend is also reflected in the National emphasis on Games and Sports of putting the country on the world map as stated by Halls (1973). Accordingly, such pupils specialize in Games and Sports activities at the expense of their class work. Despite their healthy bodies as a result of development of physical fitness, the pupils are likely to be greatly disadvantaged in academic performance.
In the school the less talented majority of pupils are denied facilities, equipment and the opportunity to experience regular physical activity. This situation denies the less able pupils an opportunity to develop healthy bodies and consequently mental health. They therefore are denied the desirable benefits acquired through regular Physical exercise which could enable them tackle mental tasks more effectively.

In conclusion, the changes brought about in the body as a result of regular Physical exercise lead to improved physical and mental fitness and therefore to a healthy body. The individual becomes more confident, develops an improved self-image and acquires a well-being feeling. Also, mental stress and tensions are eliminated making the individual emotionally stable and with a healthy mind.

Since the human body functions as a whole and not as segmented parts, the benefits of regular Physical exercise are expected to permeate to all the body parts including the brain so as to develop a healthy individual. Drawing from the above therefore, it is concluded that regular physical exercise can contribute to mental health and consequently to better performance in academic tasks.
2.4 Summary

In this chapter, a review of the related local literature as well as literature from other countries was presented. The literature review helped to set appropriate guidelines for the present study. In the next chapter, the researcher will present the procedures followed to collect the data as well as the data analysis methods used.

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(b) the present ain

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CHAPTER THREE
RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

In chapter two, the researcher has reviewed literature on related studies in other countries as well as in Kenya. The literature review helped to set appropriate guidelines for the present study. In this chapter, the researcher presents the procedures followed to collect the data. The procedures were strongly influenced by the general objectives of the study which were to gather data on:

(a) personal information of standard Eight pupils;
(b) the pupils’ involvement in Physical Education lessons’ activities;
(c) the pupils’ involvement in out of class games and sports activities within the school;
(d) the pupils involvement in competitive games and sports activities within and outside the school;
(e) the effect of pupils’ engagement in games and sports practices and competitions on their academic studies;
(f) the pupils study patterns;
(g) the pupils’ academic achievement in the 1996, Kenya Certificate of Primary Education (KCPE) Mock Examination in Mathematics. Then on the basis of the gathered information;
(h) establish if any relationship existed between the pupils level of performance in Physical skill and their academic achievement;

(i) make recommendations on how school games and sports activities can be made more relevant to the needs of primary school pupils;

(j) establish a foundation for future studies on the role of regular Physical exercise and competitive sport to the academic excellence for pupils in Primary school education.

To be able to carry out the study, several steps were followed. First, the respondents and venue were determined. The instruments were then identified, developed, pre-tested and refined before being used for the actual data collection.

The sample size for the study in this study was determined by the desire to destroy the correlation among error and make sure that final results of significance. The districts included in this study include:

3.2 Study Venue

Primary schools are spread in the various districts in Kenya. Currently (1996), Kenya has sixty-four (64) administrative districts. The sample for this study was purposely selected from sixteen (16) primary schools. The schools and the districts in which the schools were located were chosen using stratified random sampling to represent a rural and urban population. Randomization was used to avoid using a biased population sample. Through random sampling the researcher ensured that the population sample was not
consistently favoured or handicapped by some extraneous sources of variation known or unknown.

Cochran and Cox as quoted by Steel (1980:135) urged that:

"Randomization is somewhat analogous to insurance, in that it is a precaution against disturbance that may or may not occur, and that may or may not be serious if they do occur".

Randomization therefore tends to destroy the correlation among errors and make valid the usual tests of significance. The districts included in this study were Machakos, Kajiado, Kericho, Kiambu and Nairobi. Out of these, Machakos, Kajiado, Kericho and Kiambu represented rural areas whereas Nairobi represented an urban area.

The choice of districts for inclusion in this study was influenced by the desire to involve pupils from various ethnic backgrounds. Machakos, Kajiado, Kericho and Kiambu are inhabited by the Akamba, Maasai, Kalenjin (Kipsings) and Gikuyu respectively whereas Nairobi is inhabited by people from every conceivable ethnicity and nationality. Further, Kericho, Machakos and Kajiado were considered to be very important for inclusion in this study as they have produced athletes of national and international prominence currently (1996) and in the past. The same districts have also been performing well in academic studies as reflected in their ranking in the KCPE examination results in the past.
The distribution of primary schools and pupils in the districts are presented in the following table.

Table III.1: Showing Distribution of Primary Schools and Pupils in the Five Districts included in the Study

<table>
<thead>
<tr>
<th>District</th>
<th>Number of Primary Schools</th>
<th>Number of Boys</th>
<th>Number of Girls</th>
<th>Total Number of Pupils</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machakos</td>
<td>944</td>
<td>151,068</td>
<td>146,834</td>
<td>297,784</td>
</tr>
<tr>
<td>Kajiado</td>
<td>83</td>
<td>13,217</td>
<td>9,972</td>
<td>23,189</td>
</tr>
<tr>
<td>Kericho</td>
<td>366</td>
<td>89,614</td>
<td>78,922</td>
<td>177,169</td>
</tr>
<tr>
<td>Kiambu</td>
<td>300</td>
<td>88,955</td>
<td>88,214</td>
<td>177,169</td>
</tr>
<tr>
<td>Nairobi</td>
<td>127</td>
<td>48,391</td>
<td>45,811</td>
<td>94,203</td>
</tr>
</tbody>
</table>

(Source: Education in Kenya since independence by G.S. Eshiwani, 1993)

From each district, schools were selected for inclusion in the study on the basis of their participation in the Primary school’s Games and Sports competitions up to either zonal, Divisional, District or Provincial level and or above. The number of schools which had participated in the competition up to the provincial level was large. The schools to be included in this study were therefore chosen through stratified random sampling so as to retain four Primary schools in each district. After pre-testing, Kiambu district was deleted from the study because it was felt that three rural districts were adequate.
3.3 The Sample

The respondents of the study were boys and girls in primary schools standard Eight class in the age range 14-16 years. Pupils in the primary school standard eight class are the most physically developed in the school. They are often recruited into the school’s games and sports teams. The school’s hope of realizing success in inter school games and sports competitions is hinged on these pupils. The pressure is therefore very high on these pupils to practice hard, and excel in sports competitions so as to bring fame and glory to their schools.

Further, the same pupils are under immense pressure from their teachers, parents, guardians, peers and the immediate community around the school to work hard in their studies and perform well in the Kenya Certificate of Primary Education Examination (KCPE). The examination is sat for at the end of the eighth year in Primary Education and is perceived to determine the future life of the child. The pressure to excel in games and sports activities as well as in academic work therefore makes pupils in standard eight class in primary school most ideal for the present study.

In the urban areas, children begin school earlier than in rural areas. The three year age range therefore accommodated the two extremes. However, ages in excess of sixteen years were excluded from the study so as to avoid including...
pupils who were repeating Standard Eight class. Pupils repeating any class would have a repeated exposure to the subject content and could give inaccurate score on academic performance.

Also excluded from the sample were the physically disabled learners together with those that were either sick or medically unfit. Pupils in boarding primary schools were also excluded from the study. Pupils in such schools have different experiences from those in day schools. Further, boarding primary schools in Kenya are few and very scattered. It was therefore felt that such pupils would not give a fair comparison with those in day schools.

The schools were therefore well distributed according to the districts under study and well spread within each district (See Appendix H). The following table shows the distribution of the schools and pupils under study by district.

**Table III.2: Showing the Distribution of Schools and Pupils under Study by District**

<table>
<thead>
<tr>
<th>District</th>
<th>Machakos</th>
<th>Kajiado</th>
<th>Kericho</th>
<th>Nairobi</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Schools</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Number of Pupils</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>192</td>
</tr>
</tbody>
</table>

From each school twelve (12) pupils were selected to participate in the study. The pupils were carefully selected with the assistance of the school’s Standard
Eight class Physical Education teacher and the school’s Games and Sports master, so as to fit them into three categories as given below.

(a) **Low Performance in Physical Skill (LP)**

This category had four pupils who had:—

(i) demonstrated consistent lack of interest in Physical activities and performed very poorly in motor activities during their Physical Education lessons;

(ii) never been involved in regular Games and Sports practices or in regular Physical exercise while at school except during Physical Education lessons (which are compulsory);

(iii) never represented the school in any Games or sports competitions;

(iv) not been sickly or physically handicapped.

(b) **Moderate Performance in Physical Skill (MP)**

The four (4) pupils selected for this category had:—

(i) been involved in regular sports practices or regular participation in physical activities;

(ii) demonstrated high motor performance in which the pupil practiced regularly and belonged to the school’s second or third team;

(iii) never represented the school in any games or sports competition in the activity described in (b(ii)) or any other within the February-July 1996 school term;
(iv) demonstrated moderate to high level motor-performance in physical activities during Physical Education lessons’ activities.

(c) High Performance in Physical Skill (HP)

This category had four (4) pupils, who had:

(i) demonstrated high motor-performance in a game or sports activity in which the pupil practiced regularly;

(ii) represented the school in a sports or games competitions up to the either zonal, Divisional, District or the Provincial level or above in the activity described in (c(i)) within the period February-July 1996;

In each category, the pupils were ranked according to their level of performance within the particular category. For example, rank 1-4 were for pupils in the high performance in physical skill category. Rank 1 represented pupils with the best (highest) performance in physical skill within the category whereas rank 4 represented pupils with the poorest performance within this particular category. The same trend was maintained in the other two categories. (See Appendix D).

The final sample consisted of one hundred and ninety-two (192) pupils from the four districts which were included in the study. They were 127 boys and 65 girls. It was expected that the sample of 192 pupils formed an unbiased representative sample of the population.
The following table shows the distributions of the pupils by sex and level of performance in physical skill.

Table III.3: Showing the Distributions of the Pupils by Sex and Level of Performance in Physical Skills.

<table>
<thead>
<tr>
<th>Sex</th>
<th>Number of Pupils by Performance in Physical Skill</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H.P</td>
<td>M.P</td>
<td>L.P</td>
</tr>
<tr>
<td>Boys</td>
<td>43</td>
<td>45</td>
<td>39</td>
</tr>
<tr>
<td>Girls</td>
<td>21</td>
<td>19</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
<td>64</td>
<td>64</td>
</tr>
</tbody>
</table>

From the above table, it can be observed that in each category of performance in Physical Skill, the number of girls were fewer than the boys.

3.4 Development Of Research Instruments

3.4.1 The Questionnaire Structure

The preparation of the questionnaire was guided by the purpose and objectives of this study and the literature review. Discussion with some heads of primary schools and officials of the Kenya Primary Schools Sports Association (KPSSA) also contributed to the preparation of the questionnaire.
Initially, the questionnaire was divided into two parts, A and B. Each part consisted of several items representing all the variables considered important in the study. Part A dealt with demographic data which included the pupil’s Name, Class, Sex, Age, Name of the School and district. Also part A had items on the pupils’ involvement in Physical Education lessons and games and sports activities while at school as well as outside school.

Further, part A had items on the pupils’ involvement in competitive games or sports activities organized by the school or by sports organizations to which the school was affiliated. Part B consisted of items on the pupils’ study patterns. The pupils were supposed to indicate the effect of Physical exercise on their study patterns.

The questionnaire consisted of closed, open ended, structured and unstructured, and the yes or no type of questions. The original questionnaire was designed to be long enough to collect all the information thought to be essential for the study. In total, forty-nine items were included to touch on important variables of the study. Some of the items were part of a main item. For example, a main item could have parts a, b and c. Although the items were many, they were designed in such a way that they could be answered quickly and easily. They were also varied so that the pupil was not bored by doing one thing repeatedly. Variations included filling in the blanks, ticking (✔) the most
appropriate answer, writing in open ended items and choosing between yes or no.

The questionnaire was judged just long enough for a pupil to complete without any strain and in less than one hour’s duration. Below are some sample questions used in various parts of the questionnaire.

(a) Examples of Yes or No and open ended items

There were several YES or NO and open ended questions scattered throughout the original questionnaire. Below is an example of a YES or NO item with an open ended part.

Tick (/) the correct response and fill in the blank spaces.

1. (a) Are your Physical Education lessons sometimes used by your teachers to teach other subjects?

   Yes ( )

   No ( )

   (b) If YES, identify (name) one of the subjects taught.

   __________________________________________

   __________________________________________

   (c) State one reason usually given to you for being taught another subject during your time for Physical Education lessons.

   __________________________________________
(b)  Example of ticking the most appropriate answer.

**Tick (✓) the most appropriate answer.**

1. How far is your home from the school? [Tick (✓) the most appropriate answer].
   - Less than 1 Km
   - 1-2 Kms
   - 2-3 Km
   - More than 3 Kms

2. How do you travel to school each day? [Tick (✓) the appropriate one].
   - Walking
   - Running
   - Bicycle
   - Matatu
   - Driven to school in family car
   - Any other state.

3. How often does the Physical Education teacher teach and supervise your Physical Education lesson? [Tick (✓) the most appropriate answer].
   - Always
   - Sometimes
   - Rarely
   - Never

4. Do your games and sports practices interfere with your study times?
   - Yes
   - No

5. Do you study on the same days that you participate in games or sports practices?
   - Yes
   - No
3.4.2 The Pilot Study

The pilot study was carried out in June and July 1995. It was necessary to carry out the pilot study in order to assess the suitability of the questionnaire for the study. Further, the pilot study facilitated the researcher to find out whether:

(i) the primary school pupils would respond to the questionnaire;
(ii) the planned layout of the questionnaire was easy to follow;
(iii) there was need to add or delete some items;
(iv) the wording of the items was clear and understood by the respondents (pupils);
(v) the items were relevant to the experiences of the pupils;
(vi) the items were logically arranged to facilitate responding.

The researcher administered forty-eight (48) questionnaires to pupils in three schools located in Machakos, Nairobi and Kiambu districts. The schools had all participated in Games and Sports Competitions up to district level within the February-July 1995 school term. Out of the forty-eight (48) questionnaires administered for the pilot study, twelve (12) were spoilt. The spoilt questionnaires had been filled by pupils repeating Standard Eight class who were therefore much older than the intended age range of the pupils.
Further, the repeating pupils were expected to give a biased academic achievement score due to their repeated exposure to the content. Thirty-six (36) questionnaire were therefore considered good and usable returns for scoring the pilot study.

Twelve (12) of the thirty-six (36) pupils who had completed the questionnaire had participated in competitive games and sports activities up to district level or above. Thirteen (13) had been involved in regular games or sports practices at school. The thirteen (13) pupils also belonged to either the second or third school team in the same game or sport in which they practiced regularly. However, they had not participated in any sports competition. The remaining eleven (11) pupils were not involved in any regular games or sports practices in any game or sport. They also performed poorly in Physical Education activities done during the Physical Education lessons which are compulsory for every pupil in the class. However, the eleven (11) pupils were neither physically disabled nor were they medically unwell.

The following table shows the distributions of the pupils by sex and age during the pilot testing.
**Table III.4: Showing the Distribution of the Pupils by Sex and Age during the Pilot Testing**

<table>
<thead>
<tr>
<th>District</th>
<th>Pupils' Sex</th>
<th>Frequency by Age in years</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>Machakos</td>
<td>Boys</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Kiambu</td>
<td>Boys</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nairobi</td>
<td>Boys</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2</td>
<td>5</td>
<td>29</td>
</tr>
</tbody>
</table>

The table shows that there were sixteen (16) girls and twenty (20) boys in the pre-test sample. The age range of the pupils was 14 to 16 years.

Below is a summary of the results of the pilot study on a few selected variables.

On the distance to the respondent’s (pupil’s) home from school, twelve (12) or 33% had their homes within less than one kilometer from school, whereas the rest lived two or more kilometres from school. On the mode of traveling used to reach school, fifteen (15) indicated that they ran to school whereas nineteen (19) walked to school. Two (2) traveled by ‘matatu’ (public transport) to school and none rode a bicycle to school.

On what happened during a Physical Education lesson, eight (8) or 22.2% of the pupils indicated that the teacher explained the activities, demonstrated them...
and then instructed the pupils to perform them. None of the pupils indicated that the teacher stood at the side of the field and looked at the pupils as they did whatever they wanted.

Twenty (20) or 58% of the pupils indicated that the teacher gave them balls to play in the field then remained in the staffroom.

On whether or not the pupils had participated in Games or Sports competition as members of the school team, twelve (12) or 33.3% indicated that they had participated up to district level. Table III.5 shows the Games and Sports activities in which the pupils had competed in as members of the school team and the level of competition.
Table III.5: Showing the Games and sports Activities in which the Pupils had competed

<table>
<thead>
<tr>
<th>Game or Sport Competed in</th>
<th>Number of Pupils and the Highest Level of Competition</th>
<th>Provincial</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soccer and Sprints</td>
<td>1</td>
<td>8.33%</td>
<td></td>
</tr>
<tr>
<td>Soccer and Endurance</td>
<td>0</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Volleyball and Jumps</td>
<td>3</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>Volleyball and Throws</td>
<td>3</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>Volleyball and Sprints</td>
<td>1</td>
<td>8.33%</td>
<td></td>
</tr>
<tr>
<td>Volleyball and Endurance</td>
<td>0</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Netball and Sprints</td>
<td>0</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Netball and Throws</td>
<td>2</td>
<td>16.67%</td>
<td></td>
</tr>
<tr>
<td>Netball and Jumps</td>
<td>1</td>
<td>8.33%</td>
<td></td>
</tr>
<tr>
<td>Netball and Endurance</td>
<td>1</td>
<td>8.33%</td>
<td></td>
</tr>
<tr>
<td>Handball and Endurance</td>
<td>0</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>100%</strong></td>
<td></td>
</tr>
</tbody>
</table>

The data collected during the pilot study was thoroughly analyzed because the results were very vital in determining the feasibility of this study. The responses in the whole questionnaire were scored after which it was obvious that the study was feasible. However, it was necessary to re-organize the questionnaire in various areas in order to elicit the desired responses.
3:4:3 Modifications on the Questionnaire

As a consequence of data analysis on the pilot study, the following modifications were made on the questionnaire.

(a) Instructions

Instruction to the pupils (respondents) were broadened and simplified to make them as clear and as precise as possible. The purpose of the study was also included together with the instructions. Further instructions were added at the beginning of each of the four parts in the questionnaire in order to give clear guidance to the pupils.

(b) Removal of Items

The analysis of the data collected during the pilot study facilitated removal of some items. Item number three was deleted as it was found to be a duplication of item number four. Similarly, item number fourteen was deleted as it was found confusing and irrelevant. Other deleted items were number twenty-one, twenty-three (b), twenty-four and twenty-five (a) and (b) which were found to be irrelevant to the objectives of the study. In item number sixteen, some of the listed games and sports activities were found unknown (unplayed) in schools and were consequently deleted. However, pupils were given room to indicate any other that may not have been listed. The total number of items were therefore reduced from forty-nine (49) to thirty-two (32).
(c) **Modification and Added Items**

The wording of the items was revised by replacing confusing or unclear concepts with simple words. Item number nine was found confusing to the pupils. The item was simplified and retained. Similarly, item number twenty-two was simplified and shortened. There were no new items added to the questionnaire. The main parts of the questionnaire were increased from three to four. This was attained by putting items that appeared related or focusing on a particular concept under the same part. In part two, item number fifteen was shifted to be under part three. Also, item number nineteen was moved from part two to part three.

3.4.4 **The Revised Questionnaire for the Pupils**

The revised questionnaire for the pupils consisted of thirty-two (32) items (See Appendix E) composed of structured, choosing type, as well as open-ended questions. The format for the revised questionnaire was as follows.

(a) **Part One: Personal Data**

This part consisted of eight (8) items focusing on the pupils' personal data. There were items on the pupils' name, sex, age, name of school and district as well as distance between home and school and the type of transport used to reach school.
(b) Part Two: Pupils’ Involvement in Physical Education Lesson Activities

Part two consisted of seven items. Each item was meant to elicit information on certain variables that were considered important for this study. The items were asking for the number of Physical Education lessons taught to the pupils each week, the way the teacher carried out his lesson as well as the teacher’s commitment in teaching Physical Education as observed by the pupils.

(c) Part Three: Pupils Involvement in Out of Class Games and Sports Activities

Items in this part focussed on the pupils involvement in games and sports activities outside class time. The pupils indicated the type of games and sports activities that they engaged in as well as the frequency, duration and level (intensity) of involvement in the activities. Further the motives for the pupils’ involvement in the games and sports activities were sought. In total part three consisted of four main items.

(d) Part Four: Pupils Involvement in Competitive Games and Sports Activities

Part four consisted of items which focused on the pupils’ involvement in competitive games and sports activities within and outside school. The pupils identified the games or sports in which they competed in as well as the latest level of competitions involved in. The pupils were also asked to indicate if they
missed some classes while attending to games or sports practices in preparation to participate in competitions as well as during the actual competitions. Further the pupils indicated the effects of games and sports practices and competition sessions on their ability to effectively concentrate on their academic work in preparation for the 1996 Kenya Certificate of Primary Education (KCPE) District mock Examination.

Length of the Questionnaire

The original questionnaire was designed to be long enough to collect all the information deemed essential for the study. However, in the revised questionnaire, the items were reduced from 49 to 32. Although the items were many, they were designed such that they could be answered quickly and easily within one hour's duration. They were also varied so as not to bore the pupils. The open-ended items were particularly shortened and simplified. This was essential because most of the pupils either did not answer the questions or when they did, the responses were too brief or did not answer the question as intended. (See Appendix A) were distributed by the District Education Officer (D.E.O) in each of the four counties in which the study took place. The main parts of the questionnaire were increased from three to four for clarity and separation of the main variables. Part One was brief and consisted of eight (8) items only. The rest of the questions were in parts two, three and four which formed the bulk of the study.
3.5 The Covering Letter

A one page covering letter (See Appendix B) was drafted, revised and corrected. The letter's purpose was to inform the head of the school of the purpose and significance of the study. The letter was creatively written and explained the type and number of pupils to fill the questionnaire either by mail or through hand delivery depending on how the questionnaire was delivered to the head of the school. The letter was attached to each bundle of questionnaire meant for a particular primary school.

3.6 Data Collection

Two types of data were collected. The first type of data collected was on the pupils' performance in physical skill. The second type for data collected was on the pupils' academic achievement.

3.6.1 Data Collection on Pupils' Performance in Physical Skill

The investigator carrying forty eight (48) questionnaires and four covering letters (See Appendix A) went to the office of the District Education Officer (D.E.O) in each of the four districts. With the help of this office, the investigator was able to identify and select the schools to participate in this study. The schools which had been involved in Games and Sports competitions up to the provincial level during the period February-August 1996 were eligible for selection for the study. However, the investigator found that many...
schools in each district had taken part in the Games and Sports competitions up to the district level. It was therefore necessary to select the schools randomly.

Twelve (12) questionnaires and a covering letter were taken by the investigator or his research assistant to each school (See Appendix B). Once in the school, the Standard Eight (VIII) class Physical Education teacher and the school’s Games and Sports master assisted the investigator in identifying the twelve (12) pupils to participate in the study on the same day.

In order to facilitate accurate identification of the pupils, the researcher or his assistant held an interview with the Standard Eight class Physical Education teacher and the school Games and Sports master. The interview was guided by the researcher’s letter to the Physical Education Teacher and the Games and Sports Master (See Appendix C). The interview involved explanations by the researcher or his assistant followed by discussions aimed at identifying, categorising and ranking the pupils.

The Physical Education teacher’s observations and recorded comments on the pupils’ performance during the Physical Education lessons were very useful in ranking the pupils. Further, the Games and Sports masters’ observations of the pupils’ performance during the Games and Sports activities were helpful in ranking them. In total, 16 Physical Education teachers and 14 Games and Sports masters were interviewed and helped to identify, categorise and rank the
pupils. In two schools, the Standard Eight Physical Education teachers were also the Games and Sports masters. The ranked pupils were then recorded (See Appendix D).

The pupils were then given the questionnaire to complete. The researcher administered the questionnaire on the same day that the pupils were writing their 1996 KCPE District Mock examination in Mathematics. This was deliberately done so as to ensure that the pupils participating in the Games and Sports competitions were back to school to sit for the examination. It therefore avoided a situation where some pupils would respond to the questionnaire but fail to sit for the Mathematics examination.

In all, the one hundred and ninety two (192) questionnaires were returned. None of the Questionnaires was spoilt. All the one hundred and ninety-two questionnaires were considered good for data analysis. The following are some of the reasons that would have necessitated rejecting some of the questionnaires.

(i) Incompleteness.

(ii) Being completed or filled by pupils who were repeating standard eight.

During the questionnaire administration visit to the school to collect data an academic performance form was added to the questionnaire. The performance form was introduced shortly after the investigation was already known to the school. After contacting the school head, the investigator was
(iii) being completed by pupils, whose age was outside the desired age range.

3.6.2 Data Collection on Academic Achievement

After collecting data using the questionnaire the investigator went back to the school at the start of the third school term (September 1996) to collect data on the pupils' achievement in the district's Kenya Certificate of Primary Education (KCPE) Mock Examination in Mathematics for each district. The district KCPE Mock Examinations are prepared centrally and sat for by all standard eight pupils within each administrative district. The examination is administered at the end of the primary schools' second school term. (See sample Examination Paper Appendix I).

The KCPE Mock examination demands as thorough a preparation as the real KCPE examination and is thoroughly supervised and marked. According to an oral interview held by the researcher with the then Machakos District Officer (D.E.O) on 13th February, 1996, the pupils' performance in the KCPE Mock Examination is similar to their performance in the actual KCPE Examination with very minor variation. The mock examination is therefore used to predict the likely performance of a school and its pupils.

During the investigator's second visit to the school to collect data on academic performance there was minimal introduction since the investigator was already known to the school. After contacting the school head, the investigator was
introduced to the Standard Eight (VIII) class Mathematics teacher. The investigator then recorded the pupils’ score in the KCPE District Mock Examination in Mathematics against the pupils’ name (See Appendix G).

The investigator used the pupils’ score in the district KCPE mock examination results in Mathematics to represent the pupils’ academic achievement. Examination questions in the subject show that the pupils require use of their cognitive ability rather than their ability to memorize facts, in order to arrive at the correct response to the question.

Employers in advertisements commonly specify ‘a good pass’ or ‘a credit’ in Mathematics and English of prospective employees (Mwangi: 1985). Such advertisements are commonly used even in fields that do not need any Mathematics knowledge. This testifies to the strong link between one’s ability in the two subjects and the sharpened power of reasoning and logical thinking.

3.7 Summary

In this chapter, the methodology followed to gather data has been explained. The chapter began by describing the study venue before the sample was defined. The development of the research instruments has also been explained. The procedures followed in collecting data on the pupils’ performance in Physical Skill as well as on academic achievement was dealt with. In the next chapter, the data will be analyzed and observations will be recorded. The data
will be analysed by use of the chi-square (X²) as well as the Pearson Product Moment Correlation Coefficient (r) formulae. Descriptive analysis will also be used to analyse the data gathered by use of the questionnaire.

4.1 Introduction

In Chapter 4, the investigation will be described as projected through use of a questionnaire and interviews. The sample consisted of one hundred ninety-two (192) pupils, two school class eight pupils were selected from one hundred twenty-seven (127) and sixty-five (65) were girls.

In this chapter, the data will be analysed and observations will be recorded. First of all the personal information will be interpreted, followed by the activities of the pupils in departments (i) physical activity during leisure time at home and while at school (ii) physical activity during leisure time at school (iii) family and sports activities (i.e. sports clubs, activities) while at school (iv) recreation, leisure and sports activities (i.e. activities outside school) within and outside school.
CHAPTER FOUR

DATA ANALYSIS AND OBSERVATION

4.1 Introduction

In Chapter Three, the investigator explained how data was collected through use of a questionnaire and interviews. The sample consisted of one hundred ninety-two (192) primary school class eight pupils out of whom one hundred twenty-seven (127) were boys and sixty-five (65) were girls.

In this chapter, the data will be analyzed and observations will be recorded. First of all data on general information will be analyzed/presented. This will be followed by analysis of data on the pupils' involvement in:

(i) physical activities during Physical Education lessons while at school;
(ii) games and sports activities (as out-of-class activities) while at school;
(iii) competitive games and sports activities within and outside school.
The researcher will then analyze data on the effect of the games and sports practices on the pupils’ study patterns. Finally, data will be analyzed on the pupils’ performance in physical skill and then on their academic achievement. From this analysis, the extend of relationship between the two variables will be identified.

4.2 Personal Data

Part one of the questionnaire was meant to identify the respondent (pupil). Two main variables in part one are analyzed and presented. The variables are sex and age. The analyzed data is presented in table VI.1 which is presented in the next page.

4.2.1 Respondents’ Age, Sex and level of performance in Physical Skill

The sex of the pupils was not a factor in deciding who would be included in the study. Excluded from the sample were the physically disabled pupils as well as those who were medically unfit. The sample consisted of both boys and girls. The age of the pupils was considered important in this study. The older pupils were expected to be much stronger than the young ones due to more development of their muscles. Further the older pupils were also likely to be those repeating either the standard eight class or any other class. Such class
repetition would have made the pupil score higher in academic work due to repeated content exposure rather than due to their real ability. To eliminate or minimize these problems, the pupils were required to fall within the age range 14 to 16 years. The following table shows the distribution of the pupils by age, sex, and performance in physical skill.

Table IV.1: Showing the distribution of the pupils by sex, age and performance in Physical Skill

<table>
<thead>
<tr>
<th>Sex and Age</th>
<th>Number of Pupils according to their Performance in Physical Skill</th>
<th>HP</th>
<th>MP</th>
<th>LP</th>
<th>Total</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys 14</td>
<td></td>
<td>6</td>
<td>7</td>
<td>6</td>
<td>19</td>
<td>9.9%</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>10</td>
<td>9</td>
<td>9</td>
<td>28</td>
<td>14.6%</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>27</td>
<td>29</td>
<td>24</td>
<td>80</td>
<td>41.7%</td>
</tr>
<tr>
<td>Girls 14</td>
<td></td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>14</td>
<td>7.3%</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>3</td>
<td>9</td>
<td>11</td>
<td>23</td>
<td>12.0%</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>11</td>
<td>5</td>
<td>12</td>
<td>28</td>
<td>14.6%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>192</td>
<td>100%</td>
</tr>
</tbody>
</table>

HP - High performance in Physical Skill

MP - Moderate performance in Physical Skill

LP - Low performance in Physical Skill
(a) Age

The table shows that the ages of pupils in primary school standard eight class vary depending on the pupil’s age at the time of entering standard one. Most of the pupils included in this study (108 or 56.3%) were sixteen years of age. Of the 108 pupils, 80 (41.7%) and 28 (14.6%) were boys and girls respectively. The fifteen (15) year old pupils were 51 (26.5%) and included 28 (14.6%) boys and 23 (12.0%) girls. The pupils aged fourteen years were 33 (17.2%) and included 19 (9.9%) boys and 14 (7.3%) girls.

(b) Sex

There were 127 (66.1%) boys and 65 (33.9%) girls included in the study. The one hundred ninety-two (192) pupils included in the study were evenly distributed in the three categories of performance in Physical Skill.

4.3 Pupils' involvement in Physical Education lessons activities while at school

This section dealt with the pupils' involvement in physical activities while in school during the Physical Education lessons. The section also sought information on the teachers' attendance to class during Physical Education lessons to teach and give guidance to the pupil. Further, the section was
pupils as they learnt or performed the Physical activities. Information on situation where the time meant for Physical Education lessons was utilized to teach other school subjects was also sought and such subjects identified. Further, the reasons given to the pupils by the teachers for being taught other subjects during time for Physical Education were identified. Data analysis on this part is presented in the tables that follow in the succeeding pages.

### 4.3.1 Inclusion of Physical Education on the Standard Eight class timetable

As explained in Chapter Two, Physical Education as a primary school subject has a vital role to play in the total development of the child. For the subject to attain its objectives, it has to be learnt by the pupils through movement with guidance by a competent teacher in the subject area. The following table shows the extent of inclusion of Physical Education as a school subject and the number of lessons allocated to the subject each week.
Table IV.2: Showing inclusion of Physical Education in the standard eight class timetable

<table>
<thead>
<tr>
<th>Inclusion of Physical Education as a School Subject</th>
<th>Machako</th>
<th>Kajiado</th>
<th>Kericho</th>
<th>Nairobi</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>48</td>
<td>47</td>
<td>47</td>
<td>48</td>
<td>190</td>
<td>99.0%</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>No Response</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1.0%</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>192</td>
<td>100%</td>
</tr>
</tbody>
</table>

Data analysis on the teaching of Physical Education as a school subject shows that 190 (99.0%) of the pupils indicated that Physical Education is timetabled.

Only two (1.0%) pupils did not respond to the question.

The following table shows the number of lessons allocated to Physical Education per class each week.
Table IV.3: Showing the number of lessons allocated to Physical Education each week

<table>
<thead>
<tr>
<th>Number of Lessons</th>
<th>Machakos</th>
<th>Kajiado</th>
<th>Kericho</th>
<th>Nairobi</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0</td>
<td>11</td>
<td>0</td>
<td>15</td>
<td>26</td>
<td>13.5%</td>
</tr>
<tr>
<td>3</td>
<td>48</td>
<td>37</td>
<td>47</td>
<td>31</td>
<td>163</td>
<td>84.9%</td>
</tr>
<tr>
<td>No Response</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1.6%</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>192</td>
<td>100%</td>
</tr>
</tbody>
</table>

Out of all the pupils, one hundred and sixty-three (84.9%) indicated that Physical Education was allocated three lessons per class each week whereas twenty-six (13.5%) indicated two lessons each week. Three pupils did not respond to the question and no other responses were given.

4.3.2 Teachers’ attendance to guide pupils during Physical Education lessons

The pupils were asked to indicate how often the Physical Education teacher attended, taught and supervised the Physical Education lessons. This item was included to check on if the pupils were given guidance during their Physical Education lessons. The literature reviewed in Chapter Two had indicated that the actual presence of the teacher during the Physical Education lessons would not only generate learner interest in the lesson’s activities but would also help
shape his or her attitude towards physical exercise. In addition, the teacher’s preparedness, enthusiasm to teaching and sense of commitment while teaching Physical Education would have a positive effect on the pupils’ perception of the importance of the subject to their lives during and after school. The following table indicates the frequency of class attendance, teaching and supervision by the Physical Education teacher during the lessons.

<table>
<thead>
<tr>
<th>Attendance</th>
<th>Teaching</th>
<th>Supervision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

The table indicates that 27 peers (52.2%) had their Physical Education teachers attend to them and supervise them during their Physical Education lessons. Furthermore, 27 (52.2%) indicated that their teachers attended their Physical Education lessons within a duration between forty and fifty-three, while 22 (42.2%) indicated that the teachers taught and supervised them in the lessons respectively.

4.3.3 Teacher's role in participation while teaching and supervising Physical Education lessons.

The research indicated that the teachers attended their Physical Education lessons but failed to instruct the pupils and avoid them as they performed the activities. The pupils should not have much in physical skill mastery. The teacher’s guidance to the pupils was therefore viewed as very critical as physical skill practice mastery and application in the relevant game or sport for
Table IV.4: Showing the Frequency of the Teacher’s Class Attendance

<table>
<thead>
<tr>
<th>Responses</th>
<th>H.P</th>
<th>M.P</th>
<th>L.P</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>10</td>
<td>5.21%</td>
</tr>
<tr>
<td>Sometime</td>
<td>26</td>
<td>24</td>
<td>29</td>
<td>79</td>
<td>41.15%</td>
</tr>
<tr>
<td>Rarely</td>
<td>16</td>
<td>16</td>
<td>18</td>
<td>50</td>
<td>26.04%</td>
</tr>
<tr>
<td>Never</td>
<td>19</td>
<td>20</td>
<td>14</td>
<td>53</td>
<td>27.60%</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>192</td>
<td>100%</td>
</tr>
</tbody>
</table>

The table indicates that ten pupils (5.2%) had their Physical Education teachers attending to teach and supervise them during their Physical Education lessons. Seventy-nine pupils (41.6%) indicated that their teachers attended their Physical Education lessons sometimes whereas fifty (26.0%) and fifty-three (27.60%) indicated that the teachers rarely and never attended to teach their lessons respectively.

4.3.3 Teacher’s level of contribution while teaching and supervising Physical Education lessons

The researcher felt that if the teachers attended their Physical Education lessons but failed to instruct the pupils and assist them as they performed the activities, the pupils would not gain much in physical skill mastery. The teacher’s guidance to the pupils was therefore viewed as very crucial in physical skill practice, mastery and application in the relevant game or sport for
effective participation in a competitive game situation. Table IV.5 shows the teacher’s level of contribution during the Physical Education lessons.

Table IV.5: Showing the teacher’s level of contribution in guiding the pupil in a Physical Education lesson

<table>
<thead>
<tr>
<th>Teachers Level of Contribution</th>
<th>Number of Pupils by their level of performance in Physical Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HP</td>
</tr>
<tr>
<td>(a) The teacher explained the activities demonstrated them and instructed us to perform as he or she corrected us.</td>
<td>16</td>
</tr>
<tr>
<td>(b) The teacher stood at the edge of the field and looked at us as we performed what-ever we wanted.</td>
<td>20</td>
</tr>
<tr>
<td>(c) The teacher gives us balls to play in the field and then remained in the staffroom.</td>
<td>17</td>
</tr>
<tr>
<td>(d) No response</td>
<td>5</td>
</tr>
<tr>
<td>(e) Any other (explain)</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
</tr>
</tbody>
</table>

Forty-five (23.4%) of the pupils indicated that the teacher explained the activities, demonstrated them then instructed the pupils to perform them as he/she corrected them where they went wrong.
A large number of pupils (32.3%) indicated that the teacher stood at the side of the field and looked at them as they did whatever they wished. A further fifty-one (26.6%) of the pupils indicated that the teacher gave them the balls to play in the field as he or she remained in the staffroom, whereas twelve pupils (6.3%) did not respond to the item, however, Twenty-two pupils (11.5%) responded to any other by giving the following reasons:

(i) Fifteen (15) pupils indicated, that the teacher inspected the pupils’ nails, hair and teeth in class and explained the importance of cleanliness.

(ii) Three (3) pupils indicated that the teacher instructed them to mark the soccer pitch or the athletics track and other play grounds for various games.

(iii) Two (2) pupils indicated that the teacher instructed them to cut grass in the play grounds whereas a similar number of pupils indicated that the teacher instructed them to collect water and wash their classroom.

4.3.4 Use of Physical Education Lessons Time to Teach Other Subjects

There is a strong emphasis on good performance in examinations in the primary school system in Kenya. School teachers strive to have pupils excel in examination in their subject areas. To attain this, any spare time such as after class time and over the weekends as well as time allocated to teaching non-examinable subjects is utilized to teach or revise with the pupils. Utilizing time
allocated for Physical Education lessons to teach other subjects denies the pupils the benefits derived from engaging in regular physical exercise.

Item number twelve (12) in part two of the questionnaire inquired on if the Physical Education lessons’ time was used to teach other school subjects. The pupils’ responses to this items are given in the following table.

**Table IV.6: Showing the use of Physical Education lesson time to teach other school subjects**

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number of Respondents by Performance in Physical Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HP</td>
</tr>
<tr>
<td>Yes</td>
<td>60</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>No Response</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>64</td>
</tr>
</tbody>
</table>

Data analysis shows that one hundred and seventy-four (90.6%) of the pupils indicated that time meant or allocated to learning Physical Education was utilized to teach other school subjects. Fourteen (7.3%) of the pupils indicated that no other subject was taught during Physical Education lessons whereas four (2.1%) of the pupils did not respond to the item.
Item twelve (b) was meant to identify the subjects commonly taught during time scheduled for Physical Education lessons. The following table shows the pupils’ responses to this item.

**Table IV.7: Showing the subjects commonly taught during the time for Physical Education lessons**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Number of Pupils by District</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Machakos</td>
</tr>
<tr>
<td>Mathematics</td>
<td>39</td>
</tr>
<tr>
<td>English</td>
<td>9</td>
</tr>
<tr>
<td>Business Education</td>
<td>0</td>
</tr>
<tr>
<td>Home Science</td>
<td>0</td>
</tr>
<tr>
<td>Arts and Crafts</td>
<td>0</td>
</tr>
<tr>
<td>Swahili</td>
<td>0</td>
</tr>
<tr>
<td>GHC</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>48</strong></td>
</tr>
</tbody>
</table>

The data analysis indicates that most of the pupils 121 (69.5%) were taught Mathematics during the time allocated for Physical Education lessons. English was indicated by 38 (21.8%) of the pupils whereas Business Education, Home Science, Arts and Crafts, Kiswahili and GHC (Geography History and Civics), were indicated by 5 (2.9%), 4 (2.3%), 4 (2.3%), 1 (0.6%) and 1 (0.6%) respectively.
Item twelve (c) [(12(c)] sought to identify the reasons given to the pupils by their teachers, for being taught other subjects during the Physical Education lessons’ time. The following table shows the reasons given by the pupils.

Table IV.8: Showing the reasons given to the pupils for being taught other Subjects during Physical Education lessons’ time

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Number of Pupils</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>1. To complete syllabus for Mathematics</td>
<td>31</td>
</tr>
<tr>
<td>2. To complete syllabus for English</td>
<td>21</td>
</tr>
<tr>
<td>3. Pupils are poor in Mathematics and therefore need more practice</td>
<td>22</td>
</tr>
<tr>
<td>4. Mathematics is more difficult than Physical Education</td>
<td>5</td>
</tr>
<tr>
<td>5. English can help pupils more than Physical English</td>
<td>1</td>
</tr>
<tr>
<td>6. Physical Education is useless as it is non examinable and does not appear in the KCPE.</td>
<td>28</td>
</tr>
<tr>
<td>7. Physical Education compensated during games and sports time</td>
<td>11</td>
</tr>
<tr>
<td>8. To carry out revision on examinable subjects.</td>
<td>5</td>
</tr>
<tr>
<td>9. Because Physical Education is associated with Home Science</td>
<td>3</td>
</tr>
<tr>
<td>10. Home Science has more practical and therefore needs more time</td>
<td>1</td>
</tr>
<tr>
<td>11. Physical Education is waste of time and there is no time to waste at school</td>
<td>4</td>
</tr>
<tr>
<td>12. It is good to learn than to play and Physical Education is all play.</td>
<td>2</td>
</tr>
<tr>
<td>13. Physical Education will not help pupils in the future.</td>
<td>14</td>
</tr>
<tr>
<td>14. No reasons was given by the teacher.</td>
<td>24</td>
</tr>
<tr>
<td>15. No response</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>192</td>
</tr>
</tbody>
</table>

Of the reasons given for another subject being taught during the time timetabled for Physical Education lesson 33.3% of the pupils’ reasons were
directly related to Mathematics. The reasons included completion of the Mathematics syllabus which was given by 17.8%; pupils being poor in Mathematics and therefore needing more practice (12.6%) and that Mathematics was more difficult than Physical Education. Of the other reasons, 28 (16.1%) of the pupils indicated that Physical Education was useless as it was not examinable and did not appear in Kenya Certificate of Primary Education (KCPE) Examination.

4.4 Pupils’ involvement in out of class games and sports activities at school

Part three consisted of items focusing on the pupils’ involvement in the out-of-class games and sports activities while at school. In primary schools in Kenya, a substantial time is allocated to games and sports activities each day after the formal teaching ends. Such games and sports activities are organized in a less formal set up where pupils choose the type of game or sport they wish to participate in. To a large extent the games and sports activities are the same ones that are taught during Physical Education lessons.

The games and sports activities’ time enables pupils to apply the skills learned during Physical Education lessons into a competitive or real game situation. However, quite often, the games and sports time is spent in coaching and
training the school teams in various games and sports in preparation for competitions. Consequently, it is only pupils in the school’s first teams in the various games or sport activities who end up being physically involved in the practices. Further, the range of games and sports activities in any given primary school is limited by availability of relevant facilities, equipment and expertise.

4.4.1 Pupils’ participation in games and sports activities at school

The researcher felt that it was necessary to identify the games and sports activities that the pupils engaged in while at school. The following table shows the distribution of the games and sports activities in which the pupils were engaged in at school.
Table IV.9: Showing the Games and Sports activities played by the pupils while at school.

<table>
<thead>
<tr>
<th>Games or Sport</th>
<th>Number of Pupils' by Their Performance in Physical Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HP</td>
</tr>
<tr>
<td>Soccer and Sprints</td>
<td>15</td>
</tr>
<tr>
<td>Soccer and Endurance races</td>
<td>16</td>
</tr>
<tr>
<td>Volleyball and Jumps</td>
<td>14</td>
</tr>
<tr>
<td>Volleyball and Throws</td>
<td>5</td>
</tr>
<tr>
<td>Netball and Sprints</td>
<td>7</td>
</tr>
<tr>
<td>Netball and Throws</td>
<td>3</td>
</tr>
<tr>
<td>Netball and Jumps</td>
<td>2</td>
</tr>
<tr>
<td>Handball and Endurance</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
</tr>
</tbody>
</table>

Pupils in the low performance in Physical Skill category did not respond to this item. Soccer and sprints was indicated by 30 (23.4%) of the pupils followed by soccer and endurance races with 22 (17.2%), volleyball and jumps 24 (18.8%), volleyball and throws 14 (10.9%), Netball and sprints 21 (16.4%), Netball and throws 10 (7.8%), Netball and jumps 4 (3.1%) and handball and endurance 3 (2.3%) of the pupils. As pointed out in the literature review, expensive games or sports activities were less common in primary schools.
4.4.2 Frequency, duration and time of day when pupils’ participated in Games and Sports activities

In Chapter Two, it was explained that the frequency, duration and intensity of performing a physical activity are very important factors in making a positive change in the health related components of physical fitness.

(a) Frequency of participating in games and sports activities each week

In four out the five school days each week, the period between four O’clock (4.00 p.m.) when formal teaching ends and five O’clock (5.00 p.m.) when the school day ends, is devoted to games and sports activities. The games and sports activities in each school are determined by the facilities and equipment available in the school. In most cases, it is the school’s first and second teams in a particular game or sport which get priority in deciding who will use the available Games and Sports facilities.

When preparing for games and sports competitions, the pupils involved may be required to avail themselves at other times of the day to facilitate further coaching. Such times were either early in the morning (before classes began), during the lunch break time or even over the weekends. This item required pupils to indicate the number of days each week in which they practiced in
games or sports activities. The following table shows the number of days each week on which the pupils practiced games or sports activities.

Table IV.10: Showing the number of days on which the pupils practiced Games or Sports activities each week

<table>
<thead>
<tr>
<th>No. of Days</th>
<th>HP</th>
<th>MP</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>15</td>
<td>2</td>
<td>17</td>
<td>8.85%</td>
</tr>
<tr>
<td>5</td>
<td>15</td>
<td>4</td>
<td>19</td>
<td>9.90%</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>23</td>
<td>39</td>
<td>20.31%</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
<td>26</td>
<td>40</td>
<td>20.83%</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>3.13%</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>7</td>
<td>7</td>
<td>3.65%</td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td>0</td>
<td>64</td>
<td>33.33%</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
<td>64</td>
<td>192</td>
<td>100%</td>
</tr>
</tbody>
</table>

The data analysis shows that most of the pupils 79 (41.14%) indicated that they participated in games or sports activities for three and four days. Pupils who indicated five (5) days were 19 (9.90%) and number was the same as for those who indicated six days. The pupils who indicated one (1) and two (2) days were 7 (3.65%) and 6 (3.13%) respectively whereas sixty-four (33.33%) of the pupils indicated that they never participated in out-of-class games or
sports practices at school. This number represented the pupils in the low performance in Physical skill category.

(b) Duration of Exercise

Watson (1983) notes that for exercise to be effective in causing a positive change in the health related components of physical fitness, an individual must exercise for at least thirty (30) minutes at an appropriate intensity and frequency. Skill development in any game or sport can only be built in an individual once the health related component of physical fitness have been developed (Krotee: 1979). Item number 14(b) required the pupils to indicate the number of hours that their Games or Sports practices lasted. Table IV.11 shows the hours that the pupils’ games and sports practices lasted.

Table IV.11: Showing the duration of the pupils’ Games and Sports practices

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number of Pupils by Their Level of Performance in Physical Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HP</td>
</tr>
<tr>
<td>2hrs.</td>
<td>55</td>
</tr>
<tr>
<td>1-2hrs</td>
<td>7</td>
</tr>
<tr>
<td>¾-1hrs</td>
<td>2</td>
</tr>
<tr>
<td>¼ or less</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
</tr>
</tbody>
</table>
From the table, 50 pupils (39.1\%) practised games and sports activities for between half an hour to one hour duration and were mainly from the moderate performance category. Those who practiced for between one to two hours durations were 11 pupils (8.6\%) whereas those who practiced for two hours or more were 55 (43\%) and were mainly in the high performance category. The pupils who indicated thirty minutes or less were 13 (10.2\%). Pupils in the low performance (LP) category did not respond to this item as they did not participate in the games or sports practices.

(c) Time of the day at which pupils practiced Games and Sports activities

The researcher felt that any time of the day available for games and sports practices outside the normal school requirements, was also needed for completion of academic work assignments, studying and revision. Item number 14(c) sought information on the times of the day at which the pupils practised games and sports activities. The following table shows the distribution of the times when the pupils practised games and sports activities.
Table IV.12: Showing the times of the day at which the pupils practiced Games and Sports activities.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number of Pupils by Their Level of Performance in Physical Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HP</td>
</tr>
<tr>
<td>Mornings only</td>
<td>0</td>
</tr>
<tr>
<td>Evenings only</td>
<td>9</td>
</tr>
<tr>
<td>Mornings &amp; Evenings</td>
<td>32</td>
</tr>
<tr>
<td>Mornings, Mid-day and Evenings</td>
<td>23</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
</tr>
</tbody>
</table>

Of the one hundred twenty-eight (128) pupils who practised games and sports activities, 66 (51.6%) of them practised in the evenings only. The pupils who practised in the mornings and evenings were 39 (30.5%) whereas twenty-three (18%) of the pupils practised in the morning, mid-morning and in the evenings. From the data analysis, no pupil practised in the mornings only and no other times were indicated.

On any other, 60 (46.9%) pupils indicated that they also practised games and sports activities over the weekend. They explain that this was particularly so when games or competitions were just about to be held. All the 60 pupils were in the category of high performance in physical skill.
4.5 Pupils' involvement in competitive Games and Sports activities within and outside school

Part four of the questionnaire was meant to gather information on the pupils' involvement in competitive games and sports activities within and outside the school. The part consisted of eight (8) items each focusing on a different but related aspect of competitive Games and Sports activities. The information gathered in part four was very crucial in determining the level of performance in physical skill.

4.5.1 Pupils' participation in Games and Sports competitions

Item 15 sought information on whether the pupil had participated in any games or sports competition between February and July 1996. Further the item was meant to identify the game or sport in which the pupil had participated in competitions. Table IV.13 shows the distribution of pupils’ participation in Games or Sports competitions.

4.5.2 Game or sport in which pupils participated in competitions

The pupil was asked to indicate the game or sport in which they had participated in competitions. Table IV.13 shows the pupils' participation.
Table IV.13: Showing the distribution of pupils’ participation in Games and Sports competitions

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number of Pupils in the schools First Term by Sex and Level of Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HP</td>
</tr>
<tr>
<td></td>
<td>Boys</td>
</tr>
<tr>
<td>Yes</td>
<td>43</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>No Response</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
</tr>
</tbody>
</table>

The table shows that sixty-four pupils (33.33%) had participated in games and sports competitions between January and July 1996. Of the sixty-four pupils, forty-three (67.2%) were boys whereas twenty-one (32.8%) were girls. All the 64 pupils who had participated in Games and Sports competitions belonged to the high performance category. A total of 124 pupils (64.6%) indicated that they did not participate in any Games or Sports competitions. Four pupils (2.1%) did not respond to the item.

4.5.2 Game or Sport in which pupils participated in competitions

The pupils were asked to indicate the Game or Sport in which they had participated in competitions. Table IV.14 shows the pupils’ responses.
Table IV.14: Showing the Games or Sports to which pupils had participated in competitions

<table>
<thead>
<tr>
<th>Game or Sport</th>
<th>Number of Pupils by Their Sex</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
<td>Total</td>
<td>Percentage</td>
</tr>
<tr>
<td>Soccer and Sprints</td>
<td>15</td>
<td>0</td>
<td>15</td>
<td>23.4%</td>
</tr>
<tr>
<td>Soccer and Endurance</td>
<td>16</td>
<td>0</td>
<td>16</td>
<td>25%</td>
</tr>
<tr>
<td>Volleyball and Jumps</td>
<td>8</td>
<td>6</td>
<td>14</td>
<td>21.9%</td>
</tr>
<tr>
<td>Volleyball and Throws</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>7.8%</td>
</tr>
<tr>
<td>Handball and Endurance</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>3.1%</td>
</tr>
<tr>
<td>Netball and Sprints</td>
<td>0</td>
<td>7</td>
<td>7</td>
<td>10.9%</td>
</tr>
<tr>
<td>Netball and Throws</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>4.7%</td>
</tr>
<tr>
<td>Netball and Jumps</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>3.1%</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>21</td>
<td>64</td>
<td>100%</td>
</tr>
</tbody>
</table>

From the table, it can be observed that sixty-four (64) pupils had participated in competitions in various games and sports. Out of the sixty-four (64) pupils, 15 (23.4%) had competed in soccer and sprinting races, whereas 16 (25%) had competed in soccer and endurance races, 14 (21.9%) in volleyball and jumps, 5 (7.8%) in volleyball and throws, 7 (10.9%) in Netball and sprints, 3 (4.7%) in Netball and throws, 2 (3.1%) in Netball and jumps and 2 (3.1%) in handball and endurance races.

The total number of pupils who had participated in competitions in various games and sports activities were tallying to the number of pupils in the category of high performance (HP) in physical skill.
4.5.3 Period when pupils participated in competitive Games and Sports activities as members of the school team and highest level of competition

In Chapter Three, it was explained that while choosing the sample, some of the pupils included in this study from each school were to have participated in competitive Games and Sports up to either the Zonal, Divisional, District, Provincial or National level and or above. Item number 15 (b) (ii) and (iii) was therefore meant to establish the month when the pupils had been involved in games or sports competitions. Further, the item was meant to determine the highest level of competition in which the pupils had participated.

During the zonal competitions in either Games or Sports the pupils to proceed to the divisional competitions were identified from various schools. Soon after the competitions, the selected (identified) pupils were assembled at a determined venue (away from their schools) for vigorous training in preparations for the next level of competitions. This procedure was repeated after the divisional, district and provincial competitions. The training took about one week before the competitions being trained for were held. The pupils therefore, missed classes that were still going on in their individual schools. Also more school classes were missed during the actual competitions which took about two, six, twelve and twelve days at the divisional, district, provincial and national competitions respectively.
The competitions were to have taken place within the same school period leading to the pupils writing their Kenya Certificate of Primary Education District Mock Examination. In this study, the school period of concern was between January and July 1996. However, since most national games and sports competitions were held after the schools closed, it was necessary to include the month of August 1996. The games competitions had reached the zonal level by the month of February 1996 and proceeded through divisional, district, provincial to culminate in national competitions during the first two weeks of April 1996.

The athletics races followed the same pattern from early June at zonal level and reaching the national level during the first two weeks of August 1996. One and half weeks before end of July 1996, the provincial competitions were held. The pupils who had qualified for the national competitions were then able to write their KCPE District mock examination before proceeding to various venues for practice sessions in preparation for the National competitions.

Table IV.15 shows the months when the pupils participated in the games and sports competitions between January and August 1996.

<table>
<thead>
<tr>
<th>Month</th>
<th>Zonal Competitions</th>
<th>Divisional Competitions</th>
<th>District Competitions</th>
<th>Provincial Competitions</th>
<th>National Competitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 1996</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>February 1996</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>March 1996</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 1996</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 1996</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 1996</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 1996</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August 1996</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table IV.15: Shows the period when pupils participated in different competitions.
Table IV.15: Showing the period when pupils participated in Games and Sports competition and the highest level of competitions involved in

<table>
<thead>
<tr>
<th>Month</th>
<th>Level of Competition</th>
<th>Number of Pupils According to Their Sex and Level of Competition</th>
<th>High Performance Category</th>
<th>Boys</th>
<th>Girls</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>February and June</td>
<td>Zonal</td>
<td>11</td>
<td>5</td>
<td>16</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>February and June</td>
<td>Divisional</td>
<td>9</td>
<td>7</td>
<td>16</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>March and July</td>
<td>District</td>
<td>10</td>
<td>6</td>
<td>16</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>March and July</td>
<td>Provincial</td>
<td>5</td>
<td>4</td>
<td>9</td>
<td>14%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April and August</td>
<td>National</td>
<td>4</td>
<td>3</td>
<td>7</td>
<td>10.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>39</td>
<td>25</td>
<td>64</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the table, it can be observed that 16 pupils (25%) had the zonal competitions as the highest level participated in. A similar number of pupils had the Divisional and District as the highest level of competition whereas 9 (14%) pupils had the Provincial and 7 (10.9%) pupils the National level.

The zonal games competitions were held in February 1996 whereas the divisional, district, provisional and national games competitions were held in late February, early March, mid-March and early April 1996 respectively. The zonal athletics competitions were held in June 1996. The divisional, district,
provincial and national athletics competitions were held in late June, early July, mid-July and early August 1996 respectively.

All the pupils who participated in the games and the athletics competitions were in the category of high performers in physical skill. Also, the pupils who participated in the games competitions were the same ones who took part in the athletics competitions.

<table>
<thead>
<tr>
<th>Table IV.16</th>
<th>Distribution of pupils missing school classes while attending to Games and Sports practices and competitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Game</td>
<td>Class</td>
</tr>
</tbody>
</table>

4.5.4 School classes missed during Games and Sports competitions

The researcher felt that it was necessary to gather information on whether classes were missed as pupils participated in games and sports practices and competitions. The researcher viewed missing of school classes as capable of leading to poor academic achievement. Table IV.16 shows the pupils who missed school classes while attending to games and sports practices and competitions.
Table IV.16: Showing distribution of pupils missing school classes while attending to Games and Sports practices and competitions

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Pupils According to Sex</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td>Yes</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>No Response</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>21</td>
</tr>
</tbody>
</table>

From the data analysis, sixty pupils (93.8%) indicated that they missed classes while attending to games and sports competitions. Out of the sixty (60) pupils, forty (40) were boys and twenty (20) were girls. Four pupils (6.2%) indicated that they never missed classes during games and sports competitions.

4.5.5 The number of days on which the pupils missed classes while attending to Games or Sports training (practices) and competitions

The pupils who had participated in the Games or Sports competitions during the January to July 1996 period, were asked to indicate the number of days on which they missed school classes. The pupils missed classes while attending to Games or sports training (practices) or competitions. The competitions were at...
the zonal, Divisional, District, Provincial and National level and took one, two, three, six and seven days to complete respectively.

The training or practice sessions were held at a central venue prior to each level of competitions. At the zonal, divisional, district, provincial and national level, the training or practice sessions lasted for three, five, seven, seven and seven days respectively. Table IV.17 shows the number of days on which the pupils missed school classes while attending to Games or Sports training (practices) and competitions.

**Table IV.17: Showing the number of days on which the pupils missed school classes while attending to Games or Sports training (practices) and competitions, during the January to July 1996 period**

<table>
<thead>
<tr>
<th>Level of Competitions</th>
<th>Number of Days Spend</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Running Races</td>
</tr>
<tr>
<td></td>
<td>Training (Practice)</td>
</tr>
<tr>
<td>Zonal</td>
<td>3</td>
</tr>
<tr>
<td>Divisional</td>
<td>5</td>
</tr>
<tr>
<td>District</td>
<td>7</td>
</tr>
<tr>
<td>Provincial</td>
<td>7</td>
</tr>
<tr>
<td>National</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>29</strong></td>
</tr>
</tbody>
</table>

From the table, it can be observed that a pupil participating in Games activities and later running races up to the zonal level missed eight (8) school days within
the period January to July 1996. The pupils who competed up to divisional level missed twenty-two (22) days whereas those who competed at district, provincial and national levels missed 42, 68 and 96 school days respectively.

4.5.6 Arrangement made to cover the missed/classes

Item number 16(c) was meant to gather information on the type of arrangements made for the pupils to make up for missed classes while attending to games and sports practices and competitions. Table IV.18 shows the distribution of the reasons given by the pupils about arrangement made to cover the missed school class work.

Data analysis showed that almost 23% of the pupils were able to make up for missed classes. The vast majority of the pupils (77%) were expected to borrow other pupils’ note books to catch up with the classes. Fourteen (21.9%) of the pupils had arranged extra arrangements such as extra classes. The missed classes. Forty-six (7.9%) of the pupils were expected to visit the teachers’ houses at night to be taught the normal class. The remaining two percent of the pupils were taught the missed classes by others.
Table IV.18: Showing the type of arrangements made to cover missed class work

<table>
<thead>
<tr>
<th>Arrangements Made</th>
<th>Number of Pupils</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>i) Extra classes made early in the mornings and late evenings</td>
<td>16</td>
</tr>
<tr>
<td>ii) Extra classes fixed on Saturdays</td>
<td>3</td>
</tr>
<tr>
<td>iii) Pupils taught during Prep. time.</td>
<td>3</td>
</tr>
<tr>
<td>iv) Pupils visit teacher’s home during the weekends</td>
<td>4</td>
</tr>
<tr>
<td>v) Pupils borrow other pupils note books and copy the notes</td>
<td>20</td>
</tr>
<tr>
<td>vi) Pupils go to teachers houses at night to be taught the missed topics</td>
<td>4</td>
</tr>
<tr>
<td>vii) No arrangements are made</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>64</td>
</tr>
</tbody>
</table>

Data analysis shows that sixteen (25%) of the pupils got extra classes fixed early in the mornings and late evenings. Majority of the pupils (31.3%) were expected to borrow other pupils’ notebooks to copy their notes. Fourteen (21.9%) of the pupils did not have any arrangements made to cover the missed classes. Four (6.3%) of the pupils were expected to go to the teachers’ houses at night to be taught the missed class topics whereas a similar number was to visit the teachers’ houses over the weekends to be taught the missed classes.
4.5.7 Reasons for pupils’ participation in school Games and Sports competitions

The reasons as to why the pupils engaged in games and sports practices and competitions were thought to be necessary in this study. Table IV.19 shows the reasons for the pupils’ involvement in games and sports practices and competitions.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>To learn and become skilled and able to communicate better</td>
<td>32%</td>
</tr>
<tr>
<td>To improve physical health and well-being</td>
<td>35%</td>
</tr>
<tr>
<td>To develop teamwork and leadership skills</td>
<td>25%</td>
</tr>
<tr>
<td>To enhance self-confidence and self-esteem</td>
<td>18%</td>
</tr>
<tr>
<td>To enjoy the physical activity and competition</td>
<td>21%</td>
</tr>
<tr>
<td>To learn and become skilled and able to communicate better</td>
<td>32%</td>
</tr>
<tr>
<td>To improve physical health and well-being</td>
<td>35%</td>
</tr>
<tr>
<td>To develop teamwork and leadership skills</td>
<td>25%</td>
</tr>
<tr>
<td>To enhance self-confidence and self-esteem</td>
<td>18%</td>
</tr>
<tr>
<td>To enjoy the physical activity and competition</td>
<td>21%</td>
</tr>
</tbody>
</table>

The table shows that 57 pupils (14.14%) felt more relaxed and able to concentrate better in their studies. Out of the 37 pupils, 47 were in the moderate category of performance in physical skill. Twenty-one pupils (11.11%) indicated that they enjoyed the experience of playing whereas fourteen (40.54%) felt better after practicing. Five pupils (3.95%) indicated that they were liked by their teachers whereas 71 (5.71%) felt very well. 7
### Table IV.19: Showing the pupils’ reasons for engaging in Games and Sports practices and competitions

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Number of Pupils by Their Level of Performance in Physical Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HP</td>
</tr>
<tr>
<td>i) Forced by the teachers.</td>
<td>5</td>
</tr>
<tr>
<td>ii) Encouraged by classmates</td>
<td>5</td>
</tr>
<tr>
<td>iii) Felt better after practicing</td>
<td>9</td>
</tr>
<tr>
<td>iv) Enjoy the experience of playing</td>
<td>15</td>
</tr>
<tr>
<td>v) Felt more relaxed and able to concentrate better in my studies</td>
<td>10</td>
</tr>
<tr>
<td>vi) Encouraged by my Parents</td>
<td>4</td>
</tr>
<tr>
<td>vii) Encouraged by my Teachers</td>
<td>5</td>
</tr>
<tr>
<td>viii) Gave me an opportunity to travel far away from school and to see other areas</td>
<td>9</td>
</tr>
<tr>
<td>ix) Given money by the school to spend as I wished</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>64</td>
</tr>
</tbody>
</table>

The table shows that 57 pupils (44.53%) felt more relaxed and able to concentrate better in their studies. Out of the 57 pupils, 47 were in the moderate category of performance in physical skill. Twenty-one pupils (16.14%) indicated that they enjoyed the experience of playing whereas fourteen (10.94%) felt better after practicing. Five pupils (3.91%) indicated that they were forced by their teachers whereas 7 (5.47%), 6 (4.69%), 7
(5.47%) indicated that they were encouraged by classmates, parents and teachers respectively.

Nine (7.03%) of the pupils indicated that they had an opportunity to travel far away from school and saw other areas. Two (1.56%) pupils indicated that they were given money by the school to spend as they wished.

Other reasons were given by thirteen pupils (10.02%) who indicated that they were encouraged by teachers and parents, 11 (8.6%) indicated that they were encouraged by other pupils. Two pupils (1.6%) indicated that they were forced by their teachers and a further two pupils (1.6%) did not respond to the item.

4.6 **Effects of Games and Sports practices and competitions on pupils' study patterns**

The practices and competitions in games and sports activities and academic work demand a lot of the pupils’ time, effort and energy. It is possible for a pupil to excel in one at the expense of the other if a proper balance of the two is not maintained. Items were therefore included in the questionnaire to check on the effect of games and sports practices and competitions on the pupils study patterns.
4.6.1 Effect of Games and Sports practices and competition on pupils' body energy

In Chapter Two, the relationship between energy expenditure and physical activity was explained. Item 18(a) sought information on the pupils' feelings after a Games or Sports practice session. Table IV.20 shows if pupils felt exhausted and lacking in energy after a games or sports practice session.

Table IV.20: Showing whether pupils felt exhausted and lacking in energy after a Games or Sports practice session

<table>
<thead>
<tr>
<th>Response</th>
<th>HP</th>
<th>MP</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>41</td>
<td>11</td>
<td>52</td>
<td>40.6%</td>
</tr>
<tr>
<td>No</td>
<td>23</td>
<td>53</td>
<td>76</td>
<td>59.4%</td>
</tr>
<tr>
<td>No response</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
<td>64</td>
<td>128</td>
<td>100%</td>
</tr>
</tbody>
</table>

Data analysis shows that 52 pupils (40.6%) felt exhausted and lacking in energy (strength) after a games or sports practice session. Of the 52 pupils 41 were in the high performance category and eleven (11) in the moderate categories. However, 76 pupils (59.4%) (out of whom 53 were moderate performers) did not feel exhausted and lacking in energy after a games or sports practice session.
session. All the pupils in the high and moderate performance categories responded to this item.

4.6.2 Effect of Games and Sports practices on pupils’ ability to concentrate on effective academic studies

The pupils were asked to indicate whether immediately after a practice session they felt exhausted and unable to concentrate on effective academic studies. Table IV.21 shows the distribution of the pupils’ responses.

Table IV.21: Showing whether pupils' felt exhausted and unable to concentrate on effective academic studies immediately after a Games or Sports practice session

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of pupils according to level of performance in Physical Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HP</td>
</tr>
<tr>
<td>Yes</td>
<td>53</td>
</tr>
<tr>
<td>No</td>
<td>11</td>
</tr>
<tr>
<td>No response</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
</tr>
</tbody>
</table>

From the data analysis, 61 pupils (47.7%) indicated that they felt exhausted and unable to concentrate on effective academic studies, immediately after a game or sport practice session. Out of the 61 pupils, 53 were in the high performance category.
Sixty-seven pupils (52.3%) indicated that they did not feel exhausted and unable to concentrate on effective academic studies. Out of the 67 pupils 56 were in the moderate performance category whereas 11 were in the high performance category.

4.6.3 Most strenuous practice sessions

An item was included to gather information on if the pupils felt that some practise sessions were more Strenuous than others. Their responses are given in table IV.22.

Table IV.22: Showing the pupils most strenuous practice sessions

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Pupils</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HP</td>
</tr>
<tr>
<td>1. During the practice sessions at a camp (away from school) just before the competitions</td>
<td>57</td>
</tr>
<tr>
<td>2. No response</td>
<td>3</td>
</tr>
<tr>
<td>3. All the practices</td>
<td>3</td>
</tr>
<tr>
<td>4. No difference felt.</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
</tr>
</tbody>
</table>

From the responses, it can be observed that fifty-seven pupils (44.53%) indicated that the most strenuous practise sessions were during the one week
training sessions at a camp (away from school) before the competitions. All
the pupils who indicated so were in the high performance category.

Fifty-three of the pupils (41.41% out of whom 50 were in the moderate
performance category) did not respond to the item whereas seven (5.47%)
indicated that all the practices were most strenuous and eleven (8.59%)
indicated that no difference was felt.

4.6.4 Pupils’ study times

It was necessary to find out if the pupils were involved in private academic
studies outside the formal learning times. It was expected that any reading or
studying outside the formal times would conflict with Games and Sports
practices. Table IV.23 shows the distribution of pupils who studied outside
class time.

Table IV.23: Showing distribution of pupils who studied outside class
time

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Pupils According to Their Performance in Physical Skill</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HP</td>
<td>MP</td>
<td>Total</td>
<td>Percentag</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>55</td>
<td>64</td>
<td>119</td>
<td>93.0%</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>9</td>
<td>0</td>
<td>9</td>
<td>7.0%</td>
<td></td>
</tr>
<tr>
<td>No response</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
<td>64</td>
<td>128</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>
Data analysis shows that 119 pupils (93.0%) studied outside class time whereas 9 pupils (7.0%) did not study outside class time. It was therefore necessary to identify the times of the day when the pupils studied privately. Table IV.24 shows the times when the pupils studied on their own outside class time.

Table IV.24: Showing times when pupils carried out private reading or studies

<table>
<thead>
<tr>
<th>Arrangements Made</th>
<th>Number of Pupils</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>(i) Early morning before classes began only.</td>
<td>8</td>
</tr>
<tr>
<td>(ii) In the evenings after school classes and before sleep time only.</td>
<td>31</td>
</tr>
<tr>
<td>(iii) Early mornings before classes began as well as in the evenings after classes and before sleep time.</td>
<td>18</td>
</tr>
<tr>
<td>(iv) Weekends only.</td>
<td>8</td>
</tr>
<tr>
<td>(v) (iii) and over the weekends.</td>
<td>52</td>
</tr>
<tr>
<td>(vi) (iii) and any free time.</td>
<td>75</td>
</tr>
<tr>
<td>Total</td>
<td>192</td>
</tr>
</tbody>
</table>

All the pupils responded to this item. From the table it is clear that all the pupils engaged themselves in private academic studies outside class time. Seventy-five pupils (39.1%) studied early in the mornings before classes began as well as in the evenings after classes and before sleep time as well as at any free time. Fifty-two pupils (27.1%) studied early in the mornings before classes began as well as after classes and before sleep time and over the weekends.
Of the other pupils, 31 (16.1%) studied only in the evenings after school classes and before sleep time. Eighteen (9.4%) studied early in the mornings before classes began as well as in the evenings after classes and before sleep time. Eight (4.2%) pupils studied only early in the mornings before classes began whereas a similar number studied only over the weekends.

4.6.5 Interference of the Games and Sports practises on the pupils’ study times

The pupils were asked to indicate whether their Games and Sports practises interfered with their study times. Table IV.25 shows the extent of Games and Sports interference on the pupils study times.

Table IV.25: Showing pupils’ responses to interference of Games and Sports practices on their study times

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Pupils According to Their Level of Performance in Physical Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HP</td>
</tr>
<tr>
<td>Yes</td>
<td>39</td>
</tr>
<tr>
<td>No</td>
<td>25</td>
</tr>
<tr>
<td>No response</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
</tr>
</tbody>
</table>
From the table, 48 (37.21%) pupils indicated that their games and sports practices interfered with their study times. Of the forty-eight (48) pupils, thirty-nine (39) were from the category of high performers in physical skill whereas nine were from the category of moderate performers. The pupils who indicated that games and sports practices did not interfere with their study times were eighty (62.79%) out of whom twenty-five (25) belonged to the category of high performers in physical skill and fifty-five (55) from the category of moderate performers.

4.6.6 Pupils studying on the same days that they engaged in Games or Sports practices

The pupils were asked to indicate if they studied on the same days that they participated in games or sports practices or competitions. Table IV.26 shows the pupils' responses.
Table IV.26: Showing if pupils studied on the same days that they participated in Games or Sports practices

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of pupils by their performance in Physical Skill</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HP</td>
<td>MP</td>
</tr>
<tr>
<td>Yes</td>
<td>20</td>
<td>46</td>
</tr>
<tr>
<td>No</td>
<td>39</td>
<td>17</td>
</tr>
<tr>
<td>No response</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
<td>64</td>
</tr>
</tbody>
</table>

Data analysis on this item showed that sixty-six pupils (51.2%) studied on the same days that they were involved in games or sports practices. Of the sixty-six (66) pupils, twenty (20) were high performers in physical skills whereas forty-six (46) were moderate performers. Fifty-six other pupils (44.2%) did not study on the same days that they practiced or competed in games or sports activities. The fifty-six (56) pupils represented thirty-nine (39) high performers and seventeen (17) moderate performers in physical skills. Six (6) pupils did not respond to the item.
4.6.7 Pupils studying the same days that they participated in Games or Sports competitions

Item number 24 sought information on if the pupils studied on the same days that they participated in Games or Sports competitions. Table IV.27 shows the pupils responses.

Table IV.27: Showing if the pupils studied on the same days that they participated in Games or Sports competitions

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number of Pupils</th>
<th>HP</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>4</td>
<td></td>
<td>6.20%</td>
</tr>
<tr>
<td>No</td>
<td>60</td>
<td></td>
<td>93.8%</td>
</tr>
<tr>
<td>No Response</td>
<td>0</td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

Data analysis shows that most or 60 (93.8%) of the pupils did not study privately on the same days that they participated in Games or Sports competitions. Only 4 (6.20%) of the pupils studied on such days. All the pupils responded to the item.

4.7 Testing the existence and magnitude of relationship between the pupils’ performance in physical skill and academic achievement

In Chapter One it was explained that the main objective of the present study was to determine the relationship between the pupils’ performance in physical
skill and their academic achievement. For this purpose the pupils’ performance in physical skill was put into three categories namely:

(a) Low performance (LP)
(b) Moderate performance (MP)
(c) High performance (HP)

In academic achievement, the pupils’ scores in mathematics in the 1996 Kenya Certificate of Primary Education (KCPE) District Mock Examination were used. The following table shows the individual pupil’s score in mathematics in each of the sixteen primary schools involved in this study.
Table IV.28: Showing the pupils’ individual score in mathematics in the 1996 KCPE District Mock Examinations

<table>
<thead>
<tr>
<th>Primary</th>
<th>Mathematics score against the category of performance in Physical Skill and the Pupil’s ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High performance (HP)</td>
</tr>
<tr>
<td>School</td>
<td>1  2  3  4</td>
</tr>
<tr>
<td>A</td>
<td>50  52  57  54</td>
</tr>
<tr>
<td>B</td>
<td>74  50  62  56</td>
</tr>
<tr>
<td>C</td>
<td>52  66  76  74</td>
</tr>
<tr>
<td>D</td>
<td>30  36  50  48</td>
</tr>
<tr>
<td>E</td>
<td>51  53  44  60</td>
</tr>
<tr>
<td>F</td>
<td>44  48  48  52</td>
</tr>
<tr>
<td>G</td>
<td>82  70  66  82</td>
</tr>
<tr>
<td>H</td>
<td>52  48  46  48</td>
</tr>
<tr>
<td>I</td>
<td>62  66  56  66</td>
</tr>
<tr>
<td>J</td>
<td>36  32  38  42</td>
</tr>
<tr>
<td>K</td>
<td>28  33  34  34</td>
</tr>
<tr>
<td>L</td>
<td>40  42  42  38</td>
</tr>
<tr>
<td>M</td>
<td>67  63  48  70</td>
</tr>
<tr>
<td>N</td>
<td>28  42  34  34</td>
</tr>
<tr>
<td>O</td>
<td>62  73  74  50</td>
</tr>
<tr>
<td>P</td>
<td>38  26  32  40</td>
</tr>
</tbody>
</table>

From the table, it can be observed that sixteen (16) primary schools yielded marks on the pupils’ score in mathematics in the 1996 KCPE district mock examination. From each primary school, twelve (12) pupils’ marks were gathered. The mathematics scores were put into three (3) categories such as:

(a) Below normal (BN)  
(b) Normal (N)
Even though the schools in each district had the same examination, the pupils' performance was assessed by different markers. Therefore, in order to minimize the variations due to different markers involved, it was necessary to standardize the marks.

The formula used to standardize the scores is as follows:

\[
Y = \frac{\sigma y_i (X_i - M_{xi}) + My}{\sigma x_i}
\]

Where,
- \(y\) = the standardized score
- \(\sigma y_i\) = a common standard deviation
- \(\sigma x_i\) = the standard deviation computed from the individual school’s scores
- \(X_i\) = the score to be standardized
- \(M_{xi}\) = the mean score for each individual primary school
- \(My\) = A common mean.

In order to standardize scores in each school, \(My\) and \(\sigma y_i\) in the above formulae were given common values of 50 and 8 respectively. The standardized scores are given in the following table.
Table IV.29: Showing the pupils’ standardized scores in Mathematics

<table>
<thead>
<tr>
<th>Primary</th>
<th>Standardized Mathematics scores against the category of performance in Physical Skill and the Pupils’ Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High performance (HP)</td>
</tr>
<tr>
<td>School</td>
<td>1</td>
</tr>
<tr>
<td>A</td>
<td>45</td>
</tr>
<tr>
<td>B</td>
<td>56</td>
</tr>
<tr>
<td>C</td>
<td>44</td>
</tr>
<tr>
<td>D</td>
<td>41</td>
</tr>
<tr>
<td>E</td>
<td>50</td>
</tr>
<tr>
<td>F</td>
<td>46</td>
</tr>
<tr>
<td>G</td>
<td>55</td>
</tr>
<tr>
<td>H</td>
<td>51</td>
</tr>
<tr>
<td>I</td>
<td>45</td>
</tr>
<tr>
<td>J</td>
<td>57</td>
</tr>
<tr>
<td>K</td>
<td>47</td>
</tr>
<tr>
<td>L</td>
<td>52</td>
</tr>
<tr>
<td>M</td>
<td>53</td>
</tr>
<tr>
<td>N</td>
<td>44</td>
</tr>
<tr>
<td>O</td>
<td>51</td>
</tr>
<tr>
<td>P</td>
<td>51</td>
</tr>
<tr>
<td>Total Score</td>
<td>788</td>
</tr>
<tr>
<td>Mean Score</td>
<td>49.2</td>
</tr>
<tr>
<td>Block Mean</td>
<td>50.17</td>
</tr>
</tbody>
</table>

From the table it can be observed that pupils in the moderate performance in Physical Skill category had the highest mean score whereas those in the low performance had the lowest mean score. The mean score for pupils in the high...
The standardized scores in the above table were used to compute the mean scores as well as the standard deviation. Accordingly, it was possible to classify the pupils into three categories as follows:

(a) **Below normal (BN)**

In this category were pupils whose scores were less than 42.46 or less than one standard deviation below the mean score i.e. $50.66 - 8.2 = 42.46$.

(b) **Normal (N)**

Pupils in this category had scores between one standard deviation below and above the mean score.

(c) **Above normal (AN)**

In this category were pupils whose scores were more than 58.86 or more than one standard deviation above the mean score i.e. $50.66 + 8.2 = 58.86$.

For the purpose of simulating the hypothesis tests, the observed frequencies of these categories were used to calculate the standardized scores. The computed standardized scores were then used for calculations of the chi-square and contingency correlations.
4.7.1 The Chi-square ($X^2$) Test

For the purposes of testing the Hypothesis, the chi-square ($X^2$) test was necessary. Garrette (1966) and Morehouse and Stull (1975) agree that the chi-square test represents a useful method of comparing experimentally obtained results with those expected theoretically on some hypothesis. The formula for Chi-square ($X^2$) is stated as follows:

$$ X^2 = \sum \frac{(F_o - F_e)^2}{F_e} $$

where, \( F_o \) = Frequency of occurrence of observed or experimentally determined facts

\( F_e \) = expected frequency of occurrence on some hypothesis.

The difference between observed and expected frequencies are squared, and divided by the expected number in each case and the sum of these quotients is $X^2$.

Garrette (1966) emphasizes that the more closely the observed results approximate to the expected, the smaller the chi-square and the closer the agreement between the observed data and the hypothesis being tested.
On the other hand, the larger the chi-square, the greater the probability of a real divergence of experimentally observed from the expected results.

To calculate the chi-square, the researcher entered table E with the computed value of chi-square and the appropriate number of degrees of freedom. The degrees of freedom (df) was arrived at using the formula $df = (r - 1)(c - 1)$ where $r$ is the number of rows and $c$ the number of columns in which the data was tabulated. With the observed values already known, it was possible to compute the expected values. Table VI.30 shows the computation of the expected frequencies as well as the chi-square value.

Table IV.30: Showing the computation of the expected values and the chi-square value

<table>
<thead>
<tr>
<th></th>
<th>Low Performance (LP)</th>
<th>Moderate Performance (MP)</th>
<th>High Performance (HP)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below Normal</td>
<td>31</td>
<td>0</td>
<td>6</td>
<td>37</td>
</tr>
<tr>
<td>(BN)</td>
<td>[12.33]</td>
<td>[12.33]</td>
<td>[12.33]</td>
<td></td>
</tr>
<tr>
<td>Normal (N)</td>
<td>33</td>
<td>32</td>
<td>57</td>
<td>122</td>
</tr>
<tr>
<td></td>
<td>[40.67]</td>
<td>[40.67]</td>
<td>[40.67]</td>
<td></td>
</tr>
<tr>
<td>Above Normal</td>
<td>0</td>
<td>32</td>
<td>1</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>192</td>
</tr>
</tbody>
</table>
(a) Calculations of the expected values

\[
\begin{align*}
64 \times 37 &= 12.33 \\
192 &
64 \times 37 &= 12.33 \\
192 &
64 \times 37 &= 3.25 \\
192 &
\\
64 \times 122 &= 40.67 \\
192 &
64 \times 122 &= 40.67 \\
192 &
64 \times 122 &= 40.67 \\
192 &
\\
64 \times 33 &= 11 \\
192 &
64 \times 33 &= 11 \\
192 &
64 \times 33 &= 11 \\
192 &
\end{align*}
\]

(b) Calculation of the chi-square \((X^2)\)

\[
\begin{align*}
(31 - 12.33)^2 + 12.33 &= 28.27 \\
(0 - 12.33)^2 + 12.33 &= 12.33 \\
(6 - 12.33)^2 + 12.33 &= 6.56 \\
(33 - 40.67)^2 + 40.67 &= 1.45 \\
(32 - 40.67)^2 + 40.67 &= 1.84 \\
(57 - 40.67)^2 + 40.67 &= 6.56 \\
(0 - 11)^2 + 11 &= 11 \\
(32 - 11)^2 + 11 &= 40.09 \\
(1 - 11)^2 + 11 &= 0.09 \\
\end{align*}
\]

\[X^2 = 113.88, \quad \text{df} = 4\]

The researcher intended to test the hypothesis that there is no significant relationship between performance in Physical Skill and academic achievement among pupils in primary schools. The hypothesis was to be rejected if the computed chi-square value exceeds the tabulated value at \(\alpha\) level of significance. The researcher took the error to be 1% i.e. \(\alpha = 0.01\).

Then for the primary school pupils the tabulated chi-square value with four (4) degrees of freedom at \(\alpha = 0.01\) is 13.28, whereas the computed chi-square value is 113.88. Thus, 113.88 > 13.28.
Consequently, the hypothesis that there is no significant relationship between performance in Physical Skill and academic achievement amongst pupils in primary schools was rejected. It is therefore concluded that there was a significant relationship between performance in Physical Skill and academic achievement amongst pupils in primary schools.

4.7.2 The contingency coefficient (c)

Whereas the chi-square ($X^2$) test tells us the probability of having a correlation between the expected and the observed variables, the contingency coefficient (c) test shows the magnitude of such a relationship.

4.7.3 Calculation of the contingency coefficient (c)

The relationship between $C$ and $X^2$ is as follows:

$$C = \sqrt{\frac{X^2}{N + X^2}}$$

Whereas $X^2$ = calculated chi-square

$N$ = total number of observations.
The chi-square ($\chi^2$) value obtained in the table IV.32 was therefore substituted in the contingency coefficient formula in order to determine the magnitude of the relationship.

\[
C = \sqrt{\frac{113.88}{192+113.88}} = \sqrt{0.37}
\]

The coefficient of correlation of 0.61 was clear indication of positive relationship between the two sets of scores.

4.7.3 Correlation Coefficient, (r)

Correlation coefficient ($r$), indicates whether there is a simple relationship between two measures. Fitz-Gibbon and Morris (1978) explain that the correlation values range between -1 and +1. A positive $r$ value means that there is a positive correlation between the two measures. For example, if high scores in one measure tend to be obtained by the same pupils who obtained high scores on the other measure, and likewise low scores are associated with low scores, then there is a positive correlation between the two measures.

For purposes of calculating the correlation coefficient ($r$), the following formula was used.
For each school, the correlation coefficient \( r \) value was computed separately. The computation for school A is as given in the following table.

**Table IV.31: Showing the correlation coefficient \( r \) value between Physical skill performance and academic achievement for school A**

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
<th>X²</th>
<th>Y²</th>
<th>XY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance in physical skill</td>
<td>Academic achievement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>1</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>8.5</td>
<td>4</td>
<td>72.25</td>
<td>17</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>9</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>6.5</td>
<td>16</td>
<td>42.25</td>
<td>26</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>25</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>6</td>
<td>6.5</td>
<td>36</td>
<td>42.25</td>
<td>39</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>49</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>64</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>9</td>
<td>8.5</td>
<td>81</td>
<td>72.25</td>
<td>76.5</td>
</tr>
<tr>
<td>10</td>
<td>11</td>
<td>100</td>
<td>121</td>
<td>110</td>
</tr>
<tr>
<td>11</td>
<td>12</td>
<td>121</td>
<td>144</td>
<td>132</td>
</tr>
<tr>
<td>12</td>
<td>5</td>
<td>144</td>
<td>25</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td>78</td>
<td>650</td>
<td>649</td>
<td>520.5</td>
</tr>
</tbody>
</table>
Where \( x \) = pupil’s rank in physical skill performance

\( y \) = pupil’s rank in academic achievement

After substituting the computed values in the formulae, the value was found to be 0.09.

\[
\begin{align*}
\text{School} & \quad X & \quad Y & \quad \text{r} \\
1 & 80 & 122 & 0.44 \\
2 & 78 & 85 & 0.04 \\
3 & 90 & 98 & 0.88 \\
\end{align*}
\]

\[
\begin{align*}
\text{i.e.} \quad r & = \frac{n\Sigma xy - \Sigma x \Sigma y}{\sqrt{[n\Sigma x^2 - (\Sigma x)^2]} \left[ n\Sigma y^2 - (\Sigma y)^2 \right]} \\
& = \frac{(12 \times 520.5) - (78) (78)}{\sqrt{12(650) - (78)^2}} \left[ 12(649) - (78)^2 \right] \\
& = \frac{6246 - 6084}{\sqrt{7800 - 6084} (7788 - 6084)} \\
& = 162 \\
& \sqrt{1716}(1874) \\
& = 162 \\
& \sqrt{3061344} \\
& = 162 \\
& 1749.67 \\
& = 0.09
\end{align*}
\]

The correlation coefficient \( r \) value for each of the sixteen schools were computed. The \( r \) values are given in the following table.
Table IV.32: Showing the correlation coefficient (r) values between Physical skill performance and academic achievement for each of the sixteen (16) primary school

<table>
<thead>
<tr>
<th>School</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>0.09</td>
<td>0.47</td>
<td>0.39</td>
<td>0.07</td>
<td>0.43</td>
<td>0.51</td>
<td>0.43</td>
<td>0.49</td>
<td>0.04</td>
<td>0.47</td>
<td>0.48</td>
<td>0.47</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M</th>
<th>N</th>
<th>O</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.44</td>
<td>0.36</td>
<td>0.54</td>
<td>0.20</td>
</tr>
</tbody>
</table>

From the table, it can be observed that even though all the computed correlation coefficient (r) values are small, they are all positive values.

The researcher, then computed the overall correlation coefficient (r) values. To do so, the mean mathematics scores for all the sixteen (16) pupils in each ranked performance in physical skill were ranked (refer to table IV.29). The following table shows the computation of the overall correlation coefficient (r) value.
Table IV.33: Showing the computation of the correlation coefficient (r) value for the whole population using each rank’s mean mark

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
<th>X'</th>
<th>Y'</th>
<th>XY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance in physical skill</td>
<td>Academic achievement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>8</td>
<td>1</td>
<td>64</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>4</td>
<td>49</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>9</td>
<td>36</td>
<td>18</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>16</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>25</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>36</td>
<td>16</td>
<td>24</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>49</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>8</td>
<td>3</td>
<td>64</td>
<td>9</td>
<td>24</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
<td>81</td>
<td>81</td>
<td>81</td>
</tr>
<tr>
<td>10</td>
<td>11</td>
<td>100</td>
<td>121</td>
<td>110</td>
</tr>
<tr>
<td>11</td>
<td>10</td>
<td>121</td>
<td>100</td>
<td>110</td>
</tr>
<tr>
<td>12</td>
<td>12</td>
<td>144</td>
<td>144</td>
<td>144</td>
</tr>
<tr>
<td>Total</td>
<td>78</td>
<td>78</td>
<td>650</td>
<td>650</td>
</tr>
</tbody>
</table>

\[ r = \frac{n \Sigma xy - \Sigma x \Sigma y}{\sqrt{[n \Sigma x^2 - (\Sigma x)^2] \ [n \Sigma y^2 - (\Sigma y)^2]}} \]

\[ = \frac{12(752) - (78)(78)}{\sqrt{12(650) - (78)^2 \ [12(650) - (78)^2]}} \]

\[ = 0.45 \]
From the above calculation, it can be observed that the correlation coefficient (r) has a positive value. This finding reveals that there was a positive correlation between the two variables but at a low level.

4.8 Testing the existence and magnitude of relationship between performance in Physical Skill and Academic achievement amongst pupils in Rural primary schools

The researcher wished to find out if any relationship existed between performance in Physical Skill and academic achievement among pupils in rural primary schools. Ten (10) of the sixteen (16) primary schools included in this study were from a rural background. The ten (10) rural primary schools had one hundred twenty (120) pupils. Their standardized individual scores in Mathematics in the 1996 KCPE District mock examination are given in the following table.

The standardized values in the above table were used to compute the mean scores as well as the standard deviations. Furthermore, it was possible to classify the pupils into three categories as follows:

(a) Below normal (B)

In this category, the pupil's school scores were less than 12.74 or less than one standard deviation below the mean. That is, $x < 12.74$.
Table IV.34: Showing the rural pupils’ standardized individual scores in Mathematics in their 1996 KCPE District mock examination

<table>
<thead>
<tr>
<th>Pupils’ score in mathematics against their categorised performance in Physical Skill and rank</th>
<th>High performance (HP)</th>
<th>Moderate Performance (MP)</th>
<th>Low Performance (LP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>School</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>A</td>
<td>45</td>
<td>47</td>
<td>52</td>
</tr>
<tr>
<td>B</td>
<td>56</td>
<td>45</td>
<td>51</td>
</tr>
<tr>
<td>C</td>
<td>44</td>
<td>51</td>
<td>55</td>
</tr>
<tr>
<td>D</td>
<td>41</td>
<td>44</td>
<td>51</td>
</tr>
<tr>
<td>E</td>
<td>50</td>
<td>51</td>
<td>46</td>
</tr>
<tr>
<td>F</td>
<td>46</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>G</td>
<td>51</td>
<td>48</td>
<td>47</td>
</tr>
<tr>
<td>I</td>
<td>45</td>
<td>47</td>
<td>41</td>
</tr>
<tr>
<td>J</td>
<td>57</td>
<td>54</td>
<td>58</td>
</tr>
<tr>
<td>L</td>
<td>52</td>
<td>54</td>
<td>54</td>
</tr>
<tr>
<td>Mean Score</td>
<td>48.7</td>
<td>49.1</td>
<td>50.5</td>
</tr>
</tbody>
</table>

The standardized scores in the above table were used to compute the mean scores as well as the standard deviations. Accordingly, it was possible to classify the pupils into three categories as follows:

(a) **Below normal (BN)**

In this category were pupils whose scores were less than 42.74 or less than one standard deviation below the mean score i.e. $51.04 - 8.3 = 42.74$. 
(b) **Normal (N)**

Pupils in this category had scores between one standard deviation below and above the mean score.

(c) **Above Normal (AN)**

In this category were pupils whose scores were more than 59 or more than one standard deviation above the mean score i.e. $51.04 + 8.3 = 59.34$.

The computed standardized scores were then used for calculations of the chi-square ($\chi^2$) and contingency coefficient (c). Table IV.35 shows the computation of the expected frequency as well as the chi-square ($\chi^2$) value.

**Table IV.35: Showing the computations of the expected values and the observed value for the pupils in Rural Primary schools**

<table>
<thead>
<tr>
<th></th>
<th>Low Performance (LP)</th>
<th>Moderate Performance (MP)</th>
<th>High Performance (HP)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Normal (N)</strong></td>
<td>24 [26]</td>
<td>20 [26]</td>
<td>34 [26]</td>
<td>78</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>120</td>
</tr>
</tbody>
</table>
(a) Calculations for the expected values:

\[
\begin{array}{ccc}
40 \times 21 & = 7 \\
120 & \\
40 \times 21 & = 7 \\
120 & \\
40 \times 21 & = 7 \\
120 & \\
40 \times 78 & = 26 \\
120 & \\
40 \times 78 & = 26 \\
120 & \\
40 \times 21 & = 7 \\
120 & \\
40 \times 21 & = 7 \\
120 & \\
\end{array}
\]

(b) Calculations of the chi-square ($X^2$)

\[
\begin{align*}
(16 - 7)^2 \div 7 &= 11.57 \\
(0 - 7)^2 \div 7 &= 7 \\
(5 - 7)^2 \div 7 &= 0.57 \\
(24 - 26)^2 \div 26 &= 0.15 \\
(20 - 26)^2 \div 26 &= 1.38 \\
(34 - 26)^2 \div 26 &= 2.46 \\
(0 - 7)^2 \div 7 &= 7 \\
(20 - 7)^2 \div 7 &= 24.14 \\
(1 - 7)^2 \div 7 &= 5.14 \\
X^2 &= 59.41 \\
df &= 4
\end{align*}
\]

For the rural primary school pupils, the tabulated chi-square ($X^2$) value with four (4) degrees of freedom at $\alpha = 0.01$ is 13.28 whereas the computed chi-square ($X^2$) value is 59.41. Thus 59.41 $>$ 13.28. Consequently, the hypothesis that there is no significant relationship between performance in physical skill and academic achievement amongst pupils in rural primary schools was rejected. It was therefore concluded that there was a significant relationship between performance in physical skill and academic achievement amongst pupils in rural primary schools.
4.8.1 The Contingency Coefficient (C)

The chi-square ($X^2$) value obtained in table IV.37 was then substituted in the Contingency Coefficient (C) formula in order to determine the magnitude of the relationship.

$$ C = \sqrt{\frac{59.41}{120 + 59.41}} $$

$$ = 0.58 $$

The relationship of 0.58 is clear indication of positive correlation between the two sets of scores.

4.8.2 Correlation Coefficient (r)

For each of the ten (10) rural primary schools, the correlation coefficient (r) value was computed separately. The computations for all rural primary schools are given in the following table.

Table IV.36: Showing the correlation coefficient (r) values between Physical skill performance and academic achievement for each of the ten (10) rural primary schools.

<table>
<thead>
<tr>
<th>School</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>r Value</td>
<td>0.09</td>
<td>0.47</td>
<td>0.39</td>
<td>0.07</td>
<td>0.43</td>
<td>0.51</td>
<td>0.49</td>
<td>0.04</td>
<td>0.47</td>
<td>0.47</td>
</tr>
</tbody>
</table>
From the above table, it can be observed that all the r values are the same as those computed and recorded in the table IV:32.

The over-all correlation coefficient (r) value for the rural primary schools was computed and found to be 0.44. The r value of 0.44 for rural primary school pupils was not different from the r value of 0.45 for the whole population.

In conclusion, the finding reveals that there was a low positive correlation between the two variables.

4.9 Testing the existence and magnitude of relationship between performance in Physical Skill and academic achievement among pupils in urban primary schools

Six (6) out of the sixteen (16) primary schools involved in this study were from an urban background. Their standardized individual scores in mathematics in the 1996 KCPE District mock examination are given in the following table.
Table IV.37: Showing the urban pupils’ standardized individual scores in Mathematics in their 1996 KCPE District mock examination

<table>
<thead>
<tr>
<th>School</th>
<th>Pupil’s scores in Mathematics against their categorized and ranked performance in Physical Skill</th>
<th>Moderate Performance (MP)</th>
<th>Low Performance (LP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High performance (HP)</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>G</td>
<td>55</td>
<td>47</td>
<td>45</td>
</tr>
<tr>
<td>K</td>
<td>47</td>
<td>53</td>
<td>54</td>
</tr>
<tr>
<td>M</td>
<td>53</td>
<td>51</td>
<td>45</td>
</tr>
<tr>
<td>N</td>
<td>44</td>
<td>55</td>
<td>49</td>
</tr>
<tr>
<td>O</td>
<td>51</td>
<td>56</td>
<td>57</td>
</tr>
<tr>
<td>P</td>
<td>51</td>
<td>42</td>
<td>46</td>
</tr>
<tr>
<td>Mean Score</td>
<td>50.17</td>
<td>50.67</td>
<td>49.33</td>
</tr>
</tbody>
</table>

The standardized scores in the above table were used to compute the mean scores as well as the standard deviation. Accordingly, it was possible to classify the pupils into three categories as follows:

(a) **Below normal (BN)**

In this category were pupils whose scores were less than 41.95 or less than one standard deviation below the mean score i.e. 50.01 - 8.06 = 41.95.

(b) **Normal (N)**

Pupils in this category had scores between one standard deviation below and above the mean score.
(c) **Above normal (AN)**

In this category were pupils whose scores were more than 58.07 or more than one standard deviation above the mean score i.e. 50.01 + 8.06 = 58.07.

The computed standardized scores were then used for calculations of the chi-square ($X^2$) and contingency coefficient (c). Table IV.38 shows the computations of the expected frequencies as well as the chi-square ($X^2$) value.

**Table IV.38: Showing the computation of the expected values and the chi-square ($X^2$) value for the pupils in urban primary schools**

<table>
<thead>
<tr>
<th>Performance (LP)</th>
<th>Moderate Performance (MP)</th>
<th>High Performance (HP)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below Normal (BN)</td>
<td>15</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>[5.33]</td>
<td>[5.33]</td>
<td>[5.33]</td>
<td></td>
</tr>
<tr>
<td>Normal (N)</td>
<td>9</td>
<td>13</td>
<td>23</td>
</tr>
<tr>
<td>[15]</td>
<td>[15]</td>
<td>[15]</td>
<td></td>
</tr>
<tr>
<td>Above Normal (AN)</td>
<td>0</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>[3.67]</td>
<td>[3.67]</td>
<td>[3.67]</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>
(a) Calculation for the expected values

\[
\begin{align*}
\frac{24 \times 16}{72} &= 5.33 \\
\frac{24 \times 16}{72} &= 5.33 \\
\frac{24 \times 16}{72} &= 5.33
\end{align*}
\]

\[
\begin{align*}
\frac{24 \times 45}{72} &= 15 \\
\frac{24 \times 45}{72} &= 15 \\
\frac{24 \times 45}{72} &= 15
\end{align*}
\]

\[
\begin{align*}
\frac{24 \times 11}{72} &= 3.67 \\
\frac{24 \times 11}{72} &= 3.67 \\
\frac{24 \times 11}{72} &= 3.67
\end{align*}
\]

(b) Calculations of the chi-square ($X^2$)

\[
\begin{align*}
15 \times 5.33^2 + 5.33 &= 17.54 \\
(9-15)^2 + 15 &= 2.4 \\
(0-3.67)^2 + 3.67 &= 3.67
\end{align*}
\]

\[
\begin{align*}
(0-5.33)^2 + 5.33 &= 5.33 \\
(13-15)^2 + 15 &= 0.27 \\
(11-3.67)^2 + 3.67 &= 14.64
\end{align*}
\]

\[
\begin{align*}
(1-5.33)^2 + 5.33 &= 3.52 \\
(23-15)^2 + 15 &= 4.27 \\
(0-3.67)^2 + 3.67 &= 3.67
\end{align*}
\]

\[
X^2 = 55.31
\]

\[
df = 4
\]

The researcher intended to test the hypothesis that there is no significant relationship between performance in physical skill and academic achievement among pupils in urban primary schools. The hypothesis was to be rejected if the computed chi-square value exceeds the tabulated value at $\alpha$ level of significance. The researcher took the error to be 1% i.e. $\alpha = 0.01$.

Then for the urban primary school pupils the tabulated chi-square ($X^2$) value with four (4) degrees of freedom at $\alpha = 0.01$ is 13.28 whereas the computed chi-square ($X^2$) value is 55.31. Thus, 55.31 $>$ 13.28. Consequently, the
hypothesis that there was no significant relationship between performance in physical skill and academic achievement amongst pupils in urban primary schools was rejected. It was therefore concluded that there was a significant relationship between performance in physical skill and academic achievement amongst pupils in urban primary schools.

4.9.1 The contingency coefficient (c)

The chi-square ($X^2$) value obtained in table VI..40 was then substituted in the contingency coefficient ($c$) formula in order to determine the magnitude of the relationship.

\[
c = \frac{55.31}{\sqrt{72+55.31}} = \sqrt{0.43} = 0.66
\]

The overall contingency coefficient ($c$) value for the urban primary schools was determined and found to be 0.66. The correlation coefficient ($r$) value of 0.43.

The relationship of 0.66 was clear indication of positive relationship between the two sets of scores.
4.9.2 Correlation coefficient (r)

For each of the urban primary schools, the correlation coefficient (r) value was computed separately. The computations for all the six (6) urban primary schools are given in the following table.

Table IV.39: Showing the correlation coefficient (r) value for each of the six (6) urban primary schools

<table>
<thead>
<tr>
<th>School</th>
<th>G</th>
<th>K</th>
<th>M</th>
<th>N</th>
<th>O</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>r Value</td>
<td>0.43</td>
<td>0.48</td>
<td>0.44</td>
<td>0.36</td>
<td>0.54</td>
<td>0.20</td>
</tr>
</tbody>
</table>

From the table, it can be observed that all the r values were the same as those computed and recorded in table VI.32.

The overall correlation coefficient (r) value for the urban primary schools was computed and found to be 0.43. The correlation coefficient (r) value of 0.43 for urban primary schools was not different from the r-value of 0.45 for the whole population.

In conclusion, the finding reveals that there was a positive correlation between the two variables but at a low level.
4.10 Testing the existence and magnitude of relationship between performance in physical skill and academic achievement among boys in primary schools

One hundred and twenty-seven (127) of the pupils were boys spread in all the sixteen (16) primary schools participating in this study. Table IV.40 shows the boys standardized individual scores is mathematics in the 1996 KCPE District Mock Examination.

<table>
<thead>
<tr>
<th>School</th>
<th>Boys' performance (HP)</th>
<th>Standard performance (SP)</th>
<th>Lower performance (LP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table IV.40: Showing the boys’ standardized individual scores in mathematics in the 1996 KCPE District Mock Examination

<table>
<thead>
<tr>
<th>School</th>
<th>Boys' scores in mathematics against their categorized ranked performance in physical skill</th>
<th>High performance (HP)</th>
<th>Moderate performance (MP)</th>
<th>Low performance (LP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 2 3 4</td>
<td>5 6 7 8</td>
<td>9 10 11 12</td>
</tr>
<tr>
<td>A</td>
<td></td>
<td>52 52 49</td>
<td>56 69 57</td>
<td>47 40 36 51</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>56 45 - 48</td>
<td>56 58 60 63</td>
<td>42 42 40 -</td>
</tr>
<tr>
<td>C</td>
<td></td>
<td>44 51 55 54</td>
<td>58 - 62 -</td>
<td>45 41 39 39</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td>- - 51 50</td>
<td>67 - 54 -</td>
<td>- - 48 45</td>
</tr>
<tr>
<td>E</td>
<td></td>
<td>50 51 46 55</td>
<td>- - 56 57</td>
<td>37 41 40 45</td>
</tr>
<tr>
<td>F</td>
<td></td>
<td>46 50 - -</td>
<td>63 - 54 59</td>
<td>48 - - - -</td>
</tr>
<tr>
<td>G</td>
<td></td>
<td>55 - - 55</td>
<td>58 63 59 58</td>
<td>38 - - - -</td>
</tr>
<tr>
<td>H</td>
<td></td>
<td>51 48 47 -</td>
<td>64 - 68 -</td>
<td>- - 45 44 39</td>
</tr>
<tr>
<td>I</td>
<td></td>
<td>- - - - -</td>
<td>- 65 - -</td>
<td>- - 44 43 -</td>
</tr>
<tr>
<td>J</td>
<td></td>
<td>57 54 58 -</td>
<td>- - - 71 60</td>
<td>47 - - - - 50</td>
</tr>
<tr>
<td>K</td>
<td></td>
<td>- - - 58</td>
<td>58 61 52 58</td>
<td>52 53 49 33</td>
</tr>
<tr>
<td>L</td>
<td></td>
<td>- - 54 51 -</td>
<td>56 60 56 -</td>
<td>49 40 47 -</td>
</tr>
<tr>
<td>M</td>
<td></td>
<td>- 51 45 -</td>
<td>- 60 - 59</td>
<td>- - 39 44 35</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>44 55 49 49</td>
<td>50 50 65 66</td>
<td>47 47 42 37</td>
</tr>
<tr>
<td>O</td>
<td></td>
<td>- - 57 46 -</td>
<td>- - 52 59 61</td>
<td>- - - - -</td>
</tr>
<tr>
<td>P</td>
<td></td>
<td>- - 46 - -</td>
<td>- - - - - 63</td>
<td>39 - - - 49</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>50.38 50.78 45.92 50.78</td>
<td>58.6 58.63 60.38 60.09</td>
<td>44.58 43.1 42.17 42.30</td>
</tr>
</tbody>
</table>

The standardized scores in the above table were used to compute the mean scores as well as the standard deviations. Accordingly, it was possible to classify the pupils into three categories as follows:
(a) **Below normal (BN)**

In this category were pupils whose scores were less than 42.78 or less than one standard deviation below the mean score i.e. 50.96 - 8.18 = 42.78.

(b) **Normal (N)**

Pupils in this category had scores between one standard deviation below and above the mean score.
(c) **Above normal (AN)**

In this category were pupils whose scores were more than 59.14 or more than one standard deviation above the mean score i.e. $50.96 + 8.18 = 59.14$. The computed standardized scores were then used for calculations of the chi-square ($X^2$) value and contingency coefficient (c). Table IV.41 shows the computations of the expected frequencies as well as the chi-square ($X^2$) value.

Table IV.41: Showing the computation of the expected values and the chi-square ($X^2$) value for boys in primary schools

<table>
<thead>
<tr>
<th></th>
<th>Low Performance (LP)</th>
<th>Moderate Performance (MP)</th>
<th>High Performance (HP)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Above Normal (AN)</strong></td>
<td>3 [7.10]</td>
<td>38 [27.76]</td>
<td>0 [6.13]</td>
<td>41</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>22</td>
<td>86</td>
<td>19</td>
<td>127</td>
</tr>
</tbody>
</table>

(a) **Calculations of the expected values**

\[
\frac{22 \times 44}{127} = 29.8 \quad \frac{86 \times 44}{127} = 7.6 \quad \frac{19 \times 44}{127} = 6.58
\]

\[
\frac{22 \times 42}{127} = 28.44 \quad \frac{86 \times 42}{127} = 7.28 \quad \frac{19 \times 42}{127} = 6.28
\]

\[
\frac{22 \times 41}{127} = 27.76 \quad \frac{86 \times 41}{127} = 7.10 \quad \frac{19 \times 41}{127} = 6.13
\]
(b) Calculation of the chi-square (X²)

\[
(19-7.6)^2 + 7.6 = 17.1 \\
(25-29.8)^2 + 29.8 = 0.77 \\
(0-7.28)^2 + 7.28 = 7.28 \\
(23-28.44)^2 + 28.44 = 1.04 \\
(3-7.10)^2 + 7.10 = 2.37 \\
(38-27.76)^2 + 27.76 = 3.78 \\
X^2 = 70.81 \\
df = 4
\]

For the boys, the tabulated chi-square value with four (4) degrees of freedom at \( \alpha = 0.01 \) is 13.28, whereas the computed chi-square (X²) value is 70.81. Thus \( 70.81 > 13.28 \).

Consequently, the hypothesis that there was no significant relationship between performance in physical skill and academic achievement amongst boys in primary schools was rejected. It was therefore concluded that there was a significant relationship between performance in physical skill and academic achievement amongst boys in primary schools.

4.10.1 The contingency coefficient (c)

The chi-square (X²) value obtained in table IV.41 was then substituted in the contingency coefficient (c) formula in order to determine the magnitude of the relationship.
\[ C = \sqrt{70.81} \]
\[ = \sqrt{127 + 70.81} \]
\[ = \sqrt{0.36} \]
\[ = 0.60 \]

The relationship of 0.60 is a clear indication of positive correlation between the two sets of scores.

4.10.2 Correlation coefficient (r)

For the boys' scores in each of the sixteen (16) primary schools, the correlation coefficient (r) value was computed separately. The computations for the primary schools are given in the following table.

Table IV.42: Showing the correlation coefficient (r) value for the boys' scores in each of the sixteen (16) primary schools

<table>
<thead>
<tr>
<th>School</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>r Value</td>
<td>0.44</td>
<td>0.62</td>
<td>0.55</td>
<td>0.69</td>
<td>0.50</td>
<td>0.13</td>
<td>0.63</td>
<td>0.96</td>
<td>0.24</td>
<td>0.81</td>
<td>0.64</td>
<td></td>
</tr>
</tbody>
</table>

M  | N  | O  | P  |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.61</td>
<td>0.36</td>
<td>0.84</td>
<td>0</td>
</tr>
</tbody>
</table>
From the table, it can be observed that all the r values had positive values except school P which had an r value of zero (0). School P had only four (4) boys.

<table>
<thead>
<tr>
<th>School</th>
<th>Performance (LP)</th>
<th>Mathematics (LP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td>B</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>C</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>D</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>E</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>F</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>G</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>H</td>
<td>-10</td>
<td>0</td>
</tr>
<tr>
<td>I</td>
<td>-20</td>
<td>-10</td>
</tr>
<tr>
<td>J</td>
<td>-30</td>
<td>-20</td>
</tr>
<tr>
<td>K</td>
<td>-40</td>
<td>-30</td>
</tr>
<tr>
<td>L</td>
<td>-50</td>
<td>-40</td>
</tr>
<tr>
<td>M</td>
<td>-60</td>
<td>-50</td>
</tr>
<tr>
<td>N</td>
<td>-70</td>
<td>-60</td>
</tr>
<tr>
<td>O</td>
<td>-80</td>
<td>-70</td>
</tr>
<tr>
<td>P</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The overall correlation coefficient (r) value for the boys in primary school was computed and found to be 0.44. The r value of 0.44 for the boys in primary schools was not significantly different from the r value for the whole population.

In conclusion, the finding reveals that there was a low positive correlation between the two variables.

4.11 Testing the existence and magnitude of relationship between performance in physical skill and academic achievement among girls in primary schools

The sample comprised of sixty-five (65) girls spread in fifteen (15) out of the sixteen (16) primary schools participating in this study. Table IV.43 shows the girls standardized individual scores in mathematics in the 1996 KCPE District Mock Examination.
Table IV.43: Showing the girls’ standardized individual scores in Mathematics in the 1996 KCPE District mock examinations

<table>
<thead>
<tr>
<th>School</th>
<th>Girls’ Score in mathematics against their categorize and ranked performance in physical skill</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High performance (HP)</td>
<td>Moderate performance (MP)</td>
</tr>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8</td>
<td>9 10 11 12</td>
</tr>
<tr>
<td>A</td>
<td>45 - - - -</td>
<td>- 49 - -</td>
</tr>
<tr>
<td>B</td>
<td>- 51 - -</td>
<td>- - - -</td>
</tr>
<tr>
<td>C</td>
<td>- - - -</td>
<td>- 55 - -</td>
</tr>
<tr>
<td>D</td>
<td>41 44 - -</td>
<td>- 61 - 56</td>
</tr>
<tr>
<td>E</td>
<td>- - - -</td>
<td>62 60 - -</td>
</tr>
<tr>
<td>F</td>
<td>- - 50 54</td>
<td>- 58 - -</td>
</tr>
<tr>
<td>G</td>
<td>- 47 - -</td>
<td>- - - -</td>
</tr>
<tr>
<td>H</td>
<td>- - - 48</td>
<td>- 51 - 54</td>
</tr>
<tr>
<td>I</td>
<td>41 47 45 47</td>
<td>56 - 54 65</td>
</tr>
<tr>
<td>J</td>
<td>- - - 61</td>
<td>74 61 - -</td>
</tr>
<tr>
<td>K</td>
<td>- - - 54</td>
<td>- - - -</td>
</tr>
<tr>
<td>L</td>
<td>52 54 - -</td>
<td>- - - 67</td>
</tr>
<tr>
<td>M</td>
<td>53 - - 54</td>
<td>55 - 58 -</td>
</tr>
<tr>
<td>N</td>
<td>- - - -</td>
<td>- - - -</td>
</tr>
<tr>
<td>O</td>
<td>51 56 - -</td>
<td>56 - - -</td>
</tr>
<tr>
<td>P</td>
<td>51 42 - 52</td>
<td>53 66 53 -</td>
</tr>
<tr>
<td>Mean Scores</td>
<td>47.71 48.33 48.67 52.86 59.33 57.63 55 60.20 43.75 43.00 46.25 39.67</td>
<td></td>
</tr>
</tbody>
</table>

The standardized scores in the above table were used to compute the mean scores as well as the standard deviation. Accordingly, it was possible to classify the pupils into three categories as follows:
(a) **Below normal (BN)**

In this category were pupils whose scores were less than 42.38 or less than one standard deviation below the mean score i.e. $50.45 - 8.07 = 42.38$.

(b) **Normal (N)**

Pupils in this category had scores between one standard deviation below and above the mean score.

(c) **Above normal (AN)**

In this category were pupils whose scores were more than 58.52 or more than one standard deviation above the mean score i.e. $50.45 + 8.07 = 58.52$.

The computed standardized scores were then used for calculations of the chi-square ($X^2$) and contingency coefficient (c). Table IV.44 shows the computation of the expected frequencies as well as the chi-square ($X^2$) value.
Table IV.44: Showing the computations of the expected values and the chi-square value for the girls in primary schools

<table>
<thead>
<tr>
<th></th>
<th>Low Performance (LP)</th>
<th>Moderate Performance (MP)</th>
<th>High Performance (HP)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below Normal (DN)</td>
<td>11</td>
<td>0</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>[4.3]</td>
<td>[4.74]</td>
<td>[4.95]</td>
<td></td>
</tr>
<tr>
<td>Normal (N)</td>
<td>9</td>
<td>13</td>
<td>19</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>[12.6]</td>
<td>[13.9]</td>
<td>[14.51]</td>
<td></td>
</tr>
<tr>
<td>Above Normal (AN)</td>
<td>0</td>
<td>9</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>[3.08]</td>
<td>[3.4]</td>
<td>[3.5]</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>22</td>
<td>23</td>
<td>65</td>
</tr>
</tbody>
</table>

(a) Calculations of the expected values

\[
\frac{20 \times 14}{65} = 4.3 \\
\frac{22 \times 14}{65} = 4.74 \\
\frac{23 \times 14}{65} = 4.95
\]

\[
\frac{20 \times 41}{65} = 12.6 \\
\frac{22 \times 41}{65} = 13.9 \\
\frac{23 \times 41}{65} = 14.51
\]

\[
\frac{20 \times 10}{65} = 3.08 \\
\frac{22 \times 10}{65} = 3.4 \\
\frac{23 \times 10}{65} = 3.5
\]

(b) Calculation of the chi-square ($X^2$)

\[
(11-4.3)^2 + 4.3 = 10.44 \\
(0-4.74)^2 + 4.74 = 4.74 \\
(3-4.95)^2 + 4.95 = 0.77
\]

\[
(9 - 12.6)^2 + 12.6 = 1.03 \\
(13-13.9)^2 + 13.9 = 0.06 \\
(19-6.14.51)^2 + 14.51 = 1.39
\]

\[
(0-3.08)^2 + 3.08 = 3.08 \\
(9-3.4)^2 + 3.4 = 9.22 \\
(1-3.5)^2 + 3.5 = 1.79
\]

$X^2 = 32.52$

\[\text{df} = 4\]
For the girls in primary schools, the tabulated chi-square ($X^2$) value with four (4) degrees of freedom at $\alpha = 0.01$ is 13.28 whereas the computed chi-square ($X^2$) value is 32.52. Thus, $32.52 > 13.28$.

Consequently, the hypothesis that there is no significant relationship between performance in physical skill and academic achievement amongst girls in primary schools was rejected. It was therefore concluded that there was a significant relationship between performance in physical skill and academic achievement amongst girls in primary schools.

4.11.1 The contingency coefficient (c)

The chi-square ($X^2$) value obtained in table IV.44 was then substituted in the contingency coefficient (c) formula in order to determine the magnitude of the relationship.

\[
C = \sqrt{\frac{32.52}{65 + 32.52}} = 0.58
\]

The relationship of 0.58 was a clear indication of positive correlation between the two sets of scores.
4.11.2 Correlation coefficient (r)

The number of girls in most of the primary schools was too small. Consequently, it was felt that the computed correlation coefficient for most of the primary school would not give reliable values. Therefore, only the overall correlation coefficient $r$ for the girls was computed and found to be 0.42. The $r$ value of 0.42 for the girls in primary schools was not different from the $r$ value for the whole population. In conclusion, the finding reveals that there is a low positive correlationship between the two variables as far as girls are concerned.

4.12 Summary

Chapter Four has dealt with data analysis and observations were recorded. The data analysis techniques used are the chi-square ($X^2$) test, the contingency coefficient (c) test, and the correlation coefficient (r) besides descriptive analysis of the observations.

Chapter Five will deal with the discussions and interpretations of the data. The major findings on the results of the main objectives of the study will be highlighted.
CHAPTER FIVE

DISCUSSION OF THE RESULTS

5.1 Introduction

The discussion presented in this chapter is based on the general objectives of the study which were to gather data on:

(a) personal information of standard eight pupils;

(b) the pupils’ involvement in Physical Education lesson activities;

(c) the pupils involvement in out of class games and sports activities within the school;

(d) the pupils’ involvement in competitive games and sports activities within and outside the school;

(e) the effect of pupils’ engagement in games and sports practices and competitions on their concentration on academic studies, and

(f) the pupils’ academic achievement in the 1996 Kenya Certificate of Primary Education (KCPE) mock examination in mathematics.
Then on the basis of the gathered information to;

(g) establish if any relationship existed between the pupils level of performance in physical skill and their academic achievement;

(h) Make recommendations on how school games and sports activities can be made more relevant to the needs of primary school pupils;

(i) Establish a foundation for future studies on the role of regular Physical exercise and competitive sport to the academic excellence of pupils in primary school education.

The earlier chapters helped to lay a theoretical framework for the study. A questionnaire was used to collect the data from the pupils whereas an interview with the Physical Education teacher, school Games and Sports master as well as the Mathematics teacher was used to collect more data. The instruments used to collect the data were constructed, pretested and revised before being used to collect the data. A total of one hundred and ninety two (192) pupils drawn from four districts in Eastern, Nairobi and Rift Valley provinces in Kenya, completed the questionnaire which were used for data analysis.
The data analysis was presented in Chapter Four. This chapter will deal with discussion and interpretation of the results.

5.2 Personal Data

Five main variables were analyzed in this part. These were sex, age, distance from home to school and the means of transport used to reach school. Also the types of manual work carried out at home was analyzed.

5.2.1 Sex

The results showed that the sample consisted of one hundred twenty seven (127) boys and sixty-five (65) girls who were all in standard eight class in primary education. The smaller number of girls to boys revealed that more boys participated in competitive Games and Sports than girls. Also as pointed out by Eshiwani (1995), in his book, the enrolment of boys in Primary Education is higher than that of girls. Further, the school drop out rate in Primary Education is higher for girls than for boys.
5.2.2 Age

All the pupils in the sample fell in the 14-16 years of age group. However, the majority of the pupils in the high and moderate performance in physical skill category were the older ones, i.e. 16 years of age. This revelation is important in that the pupils excelling in physical skills in primary schools are the older ones whose bodies are more developed and stronger. It is also possible that such older pupils have been involved in Games and Sports activities much longer and therefore are more proficient in physical skill.

5.3 Pupils' involvement in Physical Education lesson activities while at school

The second specific objective of this study was to find out whether the pupils were involved in Physical Education lessons activities while at school. The literature reviewed indicated that the goals sought through the Physical Education activities as given by Kenya Institute of Education (1987) were similar to those sought through the Games and Sports programme in the school (as co-curricular activities). During the Physical Education lessons, the pupils were exposed to the various skills in each particular game or sport. As documented by Digolo (1985), each skill would be explained, and the correct procedure of executing the skill demonstrated by the teacher before the learner practiced it for masterly. If the learner was to gain in skill proficiency, and be able to apply the various skills together in a game or sport situation, then each
particular skill must be practiced singly then together with other skills in the particular game or sports, applied in a game situation. This process required that a competent Physical Education teacher instruct, supervise, correct and guide the pupils’ performance. However, the forty minutes per lesson and two lessons per week allocated to Physical Education for each lesson and week respectively as specified by Kenya Institute of Education (1985) was inadequate for pupils to learn a new skill, practice it for masterly and application in a real game situation (Muniu, 1985; Ngumo, 1995).

Ample time was therefore availed during the time allocated to Games and Sports activities (as co-curricular or extra-curricular activities). Any success in the school’s games and sports programme would therefore have its basis as the effective teaching of Physical Education.

5.3.1 Inclusion of Physical Education in the Class Timetable

One question put to the pupils in the present study was to indicate if Physical Education was one of the subjects appearing on their class timetable. Responses to the question showed that almost all the pupils (99.0%) had Physical Education appearing on their class timetable. Only 1.0% of the pupils did not respond to the item. This observation indicated that the Government directive to have Physical Education as a compulsory school subject was
adhered to in almost all primary schools. However, a subject appearing on the class timetable was not an indication that it was actually being taught. It is possible that a subject appears on the timetable but in reality it is not taught.

5.3.2 Number of Physical Education Lessons per Class each Week

The pupils were asked to indicate the number of lessons that were allocated to Physical Education for their class each week. Data analysis showed that majority of the pupils (84.9%) had three lessons of Physical Education each week indicated on their class-timetable whereas 13.5% had two lessons each week.

This revelation was important as it indicated that an acceptable minimum frequency of exposing the pupils to physical exercise as recommended by Krotee (1979), and other researchers in Physical Education was observed. However, as noted earlier, appearance of a subject in the class timetable did not mean that the subject was actually being taught as expected. It was therefore necessary to gather more information.
5.3.3 Physical Education Teachers’ Class Attendance

Ngumo (1995) in her study reveals that even though Physical Education lessons may appear on the class timetable, the time allocated may be used to teach other subjects which are examinable. A question was therefore included in the questionnaire to check on whether the Physical Education teacher attended to his class to teach and supervise the Physical Education lessons.

Data analysis indicated that very few (5.2%) of the pupils had their teachers always attending the timetabled lessons to teach, guide and supervise the lesson activities. Other responses showed that 41.1% of the pupils had their teachers turning up sometimes whereas 26.0% indicated that their teachers rarely turned up. A large number (27.6%) of the pupils indicated that the teachers never turned up.

This finding was very important information as it revealed that Physical Education as a school subject appeared on the class-timetable only to meet the ‘compulsory’ requirement as majority of the teachers never turned up to teach it. Additionally, it is possible that the teachers perceived the subject as of no importance as compared to the examinable subjects and therefore never bothered to attend the class.
5.3.4 Physical Education Teacher’s Observed Role During the Physical Education Lessons

The pupils who had indicated that their Physical Education teachers either always or sometimes attended to teach, guide and supervise their lessons were further asked to indicate what happened during the lesson’s duration. The results showed that 23.4% of the pupils were explained the skills before a demonstration was given by the teacher after which the teacher directed them to practise the skill. As the pupils performed, the teacher corrected and supervised their performance.

This number of pupils represented learners who were effectively taught Physical Education as a school subject. Of the remaining pupils, 32.3% indicated that the teacher stood at the edge of the play grounds and looked as the pupils did whatever they wished to do. A further 26.6% indicated that the teacher gave them balls to play within the field as he or she remained in the staffroom. These two groups represented pupils who were therefore not effectively taught as they were not guided or assisted by their teachers. Of the remaining pupils 6.3% of them gave no response to this item, whereas 16.5% of them responded to any other by stating that the following happened. The Physical Education teacher:

(i) joined the pupils in playing a game of soccer for the whole duration of the Physical Education lesson;
(ii) inspected the pupils nails, teeth, hair, ears and general cleanliness and explained the importance of cleanliness;

(iii) instructed the pupils to remain in the classroom and read anything on their own as he or she ensured that they maintained silence.

The results therefore showed that only 23.4% out of all the pupils involved in the study were exposed to effective teaching of Physical Education at school. It can therefore be concluded that majority of primary school pupils were not exposed to organized and effectively taught Physical Education curriculum.

This observation was very important as it revealed that probably the teachers had a low opinion on the importance of Physical Education as a school subject. The teachers therefore may have chosen not to follow the official curriculum or syllabus.

5.3.5 Use of time scheduled for Physical Education lessons to teach other subjects

The researcher found it necessary to find out how the time scheduled for Physical Education lessons was being spent in situation where Physical Education was not taught. Data analysis showed that 174 (90.6%) of the pupils were taught other school subjects, during the time meant for Physical Education lessons. This finding concurred with those of Ngumo (1995), who
stated that examinable subjects were taught during the time scheduled for Physical Education lessons. This was a very large number of pupils which should be a strong indication that Physical Education is not perceived as an important subject as compared to other school subjects. Probably, this is due to the fact that Physical Education is a non-examinable subject.

It is possible that the teachers equate the importance of a subject with it being examinable or that the primary school teachers are ignorant on the role of regular physical activity in the total development of the individual.

5.3.6 Subjects taught during time scheduled for Physical Education lessons

The pupils were asked to identify the subjects taught during the time scheduled for Physical Education lessons. A large number (69.5%) of the pupils indicated mathematics whereas 21.8%, 2.9%, 2.3%, 2.3%, 0.6% and 0.6% gave English, Business Education, Home Science, Art and Crafts, Swahili and GHC (Geography, History and Civics) respectively.

The findings of this item gave very interesting revelation that Mathematics is the most commonly taught subject during the time scheduled for Physical Education lessons. Further all the subjects indicated were examinable at the Kenya Certificate of Primary Education (KCPE) level. This finding confirmed
the importance attached to examinable subjects in Primary Education. It is possible that Mathematics requires more lessons per week than is currently allocated. Similarly, the other identified subjects may also be needing extra lessons each week for thorough coverage and revision in readiness for the KCPE examination. It is also possible that the primary school mathematics syllabus is too broad for coverage within the allocated time. The fact that the time scheduled for Physical Education lessons is used to teach examinable subject is clear indication that the subject is perceived as of less importance to the pupils needs than the other subjects.

5.3.7 Reasons for teaching pupils other subjects during time scheduled for Physical Education lessons

Question 12(c) in the questionnaire sought to identify the reasons given to the pupils by the teachers for being taught another subject during the time scheduled for Physical education lessons. Data analysis on the item showed that the reasons given were related to the fact that Physical Education was not an examinable subject at the KCPE level. This finding revealed that the effectiveness with which a subject was taught at the primary school level was related to whether the subject was examinable or not. It therefore appeared that making a school subject examinable was synonymous with the perceived importance and relevance of the subject to the pupil’s school and future life needs.
Since Physical Education is currently (1996) a non-examinable subject at the KCPE level, then the pupils are not given opportunities through which to experience well selected and guided movement. The pupils were therefore denied a vital component in their total development which could only be availed to them through a well guided Physical Education programme. Further the youth were denied an opportunity to be equipped with a variety of Physical activities (as in games and sports activities) out of which they could be effectively engaged in leisure activities in their future lives.

5.4 Involvement in out of class Games and Sports activities at school

The third specific objective of the study was to gather data on the pupils’ involvement in out of class games and sports activities. In the literature review, it was indicated that in four out of the five school days each week, after formal teaching, Games and Sports activities took place.

The benefits derived by the pupils from participation in these activities were well highlighted in the literature review. According to studies carried out by Muniu (1987), Simiyu (1990) and Ngumo (1995), in majority of primary schools in Kenya, there exists an acute shortage of both facilities and equipment to facilitate an effective Games and Sports programme.
Consequently, the types of Games and Sports activities to be found in most schools, are those that require cheap and minimal types of facilities and equipment. Soccer, volleyball, netball and handball as school games activities, each require an open space and use of one ball which can be played by many pupils at the same time. These games are commonly played in primary schools except handball which is fairly a newly introduced game. Running races (sprints and endurance races) are fairly cheap and are commonly practised in primary schools.

However, some primary schools, especially in urban areas, play games and sports activities which are considered to be more expensive. Such games and sports activities include field hockey, badminton, basketball, lawn tennis, table tennis and swimming.

Due to shortage of facilities and equipment, for games and sports activities in primary schools, only the better able pupils in each school can get opportunities to practice during the games and sports activities time. Consequently, majority of the pupils can only spectate during the time scheduled for games and sports activities.
The items included in part three of the questionnaire were relevant to pupils in the high and moderate performance in physical skill categories. Such pupils were the ones expected to have been actively involved in the games and sports activities in the school.

5.4.2 Types of Games and Sports activities in which pupils were involved

The pupils were asked to indicate the types of Games and Sports activities they participated in at school. Sixty-four (64) pupils who represented 100% of the low performers in physical skill indicated that they did not engage themselves in any activity during the Games and Sports activities time. This finding was in agreement with the type of pupils selected for inclusion in the low performance category of the pupils.

The pupils indicated that they participated in volleyball and jumping events, Volleyball and throwing events, Netball and sprints, Netball and throwing events, Netball and jumping events, and Handball and endurance races respectively. The finding was important as it confirmed earlier observations (Muniu, 1987) that Games and Sports activities which require cheap facilities, equipment and minimal technical expertise are more common in schools.
5.4.3 Frequency of participation or practice in Games and Sports

An item was included in the questionnaire to elicit information on the frequency of participation (or practise) in the Games and Sports activities. The responses indicated that three and four days per week were the most common number of days for games and sports practices. Sixty-four (33.3%) of the pupils indicated that they did not participate in Games and Sports activities as out of class activities. These pupils represented the ones in the low performance category.

Most of the pupils (88.3%) indicated that they practised the activities for three or more days each week. Of the remaining 11.7% of pupils, 55 (34.2%) practised for five hours or more each day while 39 (25.8%) practised for less than five hours each day. Of these two groups, 24 (15.4%) practised for more than one hour but less than five hours each day. This result showed that some pupils were involved in games and sports practices for more days than the official four days each week. On the other side the pupils who practised for one or two days appeared to practise for some days then chose to spectate on the other days of the week.
This observation revealed that the primary school pupils who excelled in games and sports activities were exposed to a training programme that consumed most of the time meant for other activities.

5.4.4 Duration of participation in Games and Sports activities

A question was included to seek information on the duration of time spend each day while practicing the games and sports activities. Data analysis showed that 50 (39.1%) of the pupils practised for between 1 hour duration whereas 13 (10.2%) practised for 1/2 hour or less duration. Out of the 63 pupils who practiced for duration of less than one hour each day, 60 of them were in the category of moderate performers in physical skill. Of the remaining 65 pupils, 11 (8.6%) practiced for 1-2 hours duration and 55 (84.6%) practised for 2 hours or more each day. Out of the 66 pupils who practised for duration exceeding one hour each day, 62 were in the category of high performers in Physical skill.

This observation reveals that most pupils in the high performance in physical skill category participated or practised Games and Sports activities for longer duration of time. Majority of pupils in the moderate performance in physical skill category were involved in other activities.
skill category participated in Games and Sports activities for duration that are desirable.

According to Watson (1983) and Krotee (1979) for exercise to have a positive effect on the health related components of physical fitness, the individual must exercise for about thirty minutes duration. On the other side, long duration of physical exercise can be harmful to the individual (Bucher, 1964). Pupils in the high performance in physical skill category appear to be engaged in Games and Sports activities for longer duration than is desirable. Since the school’s Games and Sports programme has specified and fixed duration of time each day, it was necessary to find out if the pupils engaged in Games and Sports practices at other times of the day.

5.4.5 Time of day when pupils participated in Games and Sports

The pupils were asked to indicated the times of the day when they normally participated in games and sports practices. Data analysis on this item indicated that the pupils in the moderate and high performance in physical skill categories practice sessions fell into three parts. Evenings only was indicated by 66 (51.6%) pupils whereas mornings and evenings was indicated by 39 (30.5%) and mornings, mid-day and evenings by 23 (18%) pupils. Out of the 66 (51.6%) pupils who practised in the evenings only, 57 were in the moderate
performance category. All the 23 (18%) pupils who practiced in the mornings, mid-day and evenings as well as 32 out of the 39 (30.5%) pupils who practised in the mornings and evenings belonged to the high performance in physical skill category.

This revelation was very important as it indicated that most pupils in the high performance category used other times of the day each week for Games and Sports practices besides the officially set times. Most pupils in the moderate performance category did not use other times of the day other than those specified for Games and Sports activities to practice the activities. Besides over-straining themselves physically, it appears that pupils in the high performance category spent time on Games and Sports practices, which could have been used for private studies.

Pupils in primary school utilize any free time available on private studies which involve revision in preparation for the examinations. Committing such time to practices in games and sports can therefore disadvantage the pupil in his or her academic work. Additionally, engaging in strenuous Games and Sports practices early in the mornings can make the pupil too exhausted for effective concentration during the lessons later in the day. Further in many primary schools, adequate supply of water is not available. Consequently, pupils involved in games and sports practices at about mid-day would be very
uncomfortable as a result of sweating and lack of water to bathe for effective learning during lessons scheduled for later in the day. Such affected pupils would be expected to perform poorly in any ensuing academic tasks due to poor learning.

5.5 Pupils' involvement in competitive Games and Sports activities within and outside the school

The fourth specific objective was to gather data on the pupils' involvement in competitive Games and Sports activities within and outside the school. The games and sports activities in primary school are competition oriented. Halls (1973) emphasizes that the competitions begin at school level with such functions as inter-class, inter-year and inter-house competitions. At the school level, the main purpose of the competitions is to provide an opportunity for the better able pupils to be identified and recruited into the school teams in the various Games and Sports activities. However, once school teams are identified the focus shifts to preparing the teams in each Game or Sport for external competitions. The available facilities and equipment then become reserved for practices by the school teams. Consequently, the majority of the school pupils are 'forced' to become spectators. The pupils in the school's second and third teams in the same Game or Sport provide practice partners to those in the first team.
5.5.1 Pupils' participation in Games and Sports competitions

The pupils in the school’s first team in a particular Game or Sport were the ones who represented the school during the Games or Sports competitions. They therefore had to be involved in intense practice sessions in preparation for the competitions. Often, they engaged in friendly build up matches with neighbouring schools and clubs. Data analysis on this item revealed that the 64 pupils in the high performance in physical skill category had participated in Games and Sports competitions in which they represented the school. This confirmed that the sample selected for this category of pupils was the right one for this study.

5.5.2 Games or Sport in which the pupils were in the school’s first team

The pupils had been asked to identify the Game or Sport in which they had participated in competitions. Data analysis revealed that the Games and Sports activities were Soccer, Volleyball, Handball, Netball and running races as well as field events. Very few (3.1%) pupils had competed in Handball which is relatively a new game in primary schools in Kenya. Majority of the pupils had participated in Soccer and running races.

This finding supports earlier observations that Soccer, Volleyball, Netball and running races (athletics) are commonly played in primary schools. These
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This finding supports earlier observations that Soccer, Volleyball, Netball and running races (athletics) are commonly played in primary schools. These
Games and Sports activities require facilities that are cheap to put in place and to maintain. Further the equipment needed for pupils to use, are relatively cheap since one item is shared by many pupils.

5.5.3 Period when pupils participated in competitive Games and Sports activities as members of the school team and the highest level of competition

Data analysis revealed that games competitions were held in the period February to April 1996. The zonal, Divisional, District, Provincial and National competitions were held in February, March, and early April 1996 respectively. The running races (athletics) competitions at zonal, Divisional, District, Provincial and National level were held in June, July and early August 1996 respectively.

The pupils who had participated in the games competitions from February to April, were also the same ones who had participated in the running races and field events (athletics) competitions from June to August 1996. This observation was very important as it revealed that pupils involved in practice sessions and competitions in Games had a highly developed muscular endurance and strength such that when it came to running races and field events activities, they performed better than other pupils in the school.
Consequently, they were recruited to represent the school in the running races and field events (athletics) competitions. Therefore, it was mainly the same pupils who made use of the games and sport facilities in the primary schools.

The highest level of competition at which the pupils participated in ranged from zonal level to national level. Fewer pupils participated at the national level than did at the other levels.

5.5.4 School classes missed during Games or Sports competitions

Item number 16(a) was meant to elicit information on whether the pupils missed classes while attending to Games and Sports competitions. During the school’s inter-house Games or Sports competitions, the entire school suspended formal learning. Consequently, none of the pupils participating in the competitions missed class lessons. However, during the zonal, Divisional, District and other levels of Games and Sports competitions, normal teaching took place in the schools. A pupil taking part in such competitions was therefore greatly disadvantaged in his academic progress.

Only the sixty-four (64) pupils in the high performance in physical skill category responded to this question. The results showed that 60 (93.8%) of
the pupils participating in the competitions missed classes (school lessons). This was a large number of pupils.

This observation revealed that pupils representing their schools in competitive games and sports activities were disadvantage in their class work. It was possible that missed school classes could lead to poor academic achievement in the ensuing examinations.

5.5.5 The number of school days missed by the pupils while attending to Games or Sports training (practises) and competitions

The data analysis showed that pupils who participated in the Games and Sports competitions missed many school days while attending to training (practise) sessions and the actual competitions. The pupils who participated in competitions up to the zonal level only, missed fewer school days. However, as the level of competition rose, the number of missed school days increased.

The pupils who competed up to the national level in both Games and Sports activities cumulatively missed as many as ninety-six (96) school days while away in training (practice) sessions prior to the competitions as well as in the actual competitions. This result reveals that the pupils were greatly
disadvantaged in their academic work. The researcher felt that this was likely to have a major effect on their academic achievement.

Missing classes that were actually taught disadvantaged the pupils in several ways.

(i) The pupil was absent while his or her classmates were being guided by their teachers through the subject content in various subjects. Absent pupils did not benefit from this instruction. Consequently, question items based on the taught content and appearing in the Kenya Certificate of Primary Education (KCPE) mock examination would be performed poorly by the absent pupil.

(ii) If some remedial (or catch up) classes were organized for the ‘absent’ pupil, it would consume time which his or her classmates would be using to gain more ground in their private studies. Consequently, the pupils not participating in the competitions were expected to be finally better prepared for the KCPE mock examination than the ones participating in the competitions.

This finding was very important as it revealed that the pupils who excelled in Games and Sports competitions were disadvantaged in their academic work.
5.5.6 Arrangements made to cover the missed class work

An item was included in the questionnaire to seek information on the type of arrangements made by the school or teachers to help the pupils cover the missed class work. The results showed that 14 (21.9%) of the pupils had no arrangements made to assist them cover the missed class work. However, in situation where arrangements were made to cover the missed class-work the arrangements themselves were ineffective in assisting the pupils. For example, 20 (31.3%) of the pupils were expected to borrow other pupils notebooks and copy their notes.

The result therefore, showed that for 34 (53.13%) of the pupils who were representing the school in the games or sports competitions, no arrangements were made to assist them to cover the missed classes.

It was possible that examination question items could be focussed on content covered while some pupils were not in class. In such a situation, such pupils would perform poorly as compared to those not missing classes.

Further the results showed that for the 30 (46.87%) for whom arrangements were made to cover the missed class work, 16 (25%) of them had extra-classes scheduled for early mornings and late evenings. Early morning classes were
likely to get the learners too tired before the normal classes of the day began.

Also during the early mornings and Saturdays sessions for extra-classes, other pupils in the school would be advancing further in their revision and private studies in preparation for the KCPE mock examination.

Some of the pupils (6.3%) indicated that they were required to visit the teachers' houses on Saturdays whereas a similar number were to visit the teachers' houses at night for catch-up classes. Some of the pupils required to visit the teachers' houses were girls. Both arrangements appeared ineffective besides the dangers of pupils moving about at night.

From the above findings, it is clear that pupils who missed school class were not effectively assisted to cover the missed content. This practice therefore was likely to be harmful to the pupils' examination performance.

5.5.7 Reasons for participating in Games or Sports competitions or practices

In view of the observed lack of concern for the pupils' academic welfare for those representing the school in games or sports competitions, it was necessary to identify the pupils motives for engaging in competitive games or sports activities. The following reasons were given:
(i) Five (3.91%) of the pupils in the high performance category indicated that they were forced by their teachers. It was felt that this was very unfortunate as it meant that pressure was used to get them involved. Consequently, the pupils drained their energy for causes they felt were not of their own choice. They therefore missed classes possibly leading to poor academic achievement, while pursuing goals which had been forced on them. The researcher holds the view that involvement in sport should be as a result of voluntary decision by the pupil. Forcing a pupil to be involved in a Game or Sporting activity would lead the pupil into believing that he/she is doing it for some-one else. Consequently, once out of school or out of the influence of the teacher, the pupil would become negative to the game or sports activity. This would be a tragic situation considering the benefit to be accrued from regular participation in Games or Sports activities.

(ii) The pupils who indicated that their classmates encouraged them were 5.47%. This was therefore due to peer pressure. Such pressure would have been due to the peers recognizing a special talent in the pupil.

(iii) Majority of the pupils (71.88%) indicated that they chose to participate in games or sports activities due to intrinsic values they felt that they derived from such participation. These values included:

(a) feeling better after practicing,
(b) enjoying the experience of participating;

(c) feeling relaxed and able to concentrate better in studies.

This was a very important observation as it revealed that the pupils' participation was voluntary and guided by reasons that they believed in. Also the pupils felt that their participation brought about a good feeling which made them concentrated better in their studies. Participation in games or sports activities due to reasons that the pupils believed in was likely to lead to continued participation in the same activities even after school life.

(iv) Six (4.6%) of the pupils indicated that they were encouraged by their parents whereas seven (5.47%) were encouraged by their teachers.

(v) Nine (7.56%) indicated that they participated because the competitions gave them an opportunity to travel far away from school to the other areas. Whereas this was a positive point as it increased the pupils Geographical knowledge, it was achieved at the expense of missing classes at school.

(vi) Two (1.56%) of the pupils both belonging to the high performance category indicated that they were given money by the school to spend as they wished. This may have been money meant to cover the pupils travelling meals and accommodation while attending to the
competitions. This response was important as it revealed that money was seen by the pupils as a reward for participating in the competitions. However, the researcher felt that giving money to the pupils could lead them into engaging themselves in activities that could be detrimental to their academic pursuit.

Generally, the reasons given by the pupils in the high performance category, did not appear related to their academic pursuit at school unlike those given by pupils in the moderate performance category.

5.5.8 Exhaustion during practise sessions

As explained in the literature review, any physical activity involves muscular movement which needs energy to be used. The pupils were asked how they felt after the games and sports practice sessions. The responses showed that 41 (64.06%) of the pupils in the high performance in physical skill category felt exhausted and lacking in energy as compared to 11 (17.19%) pupils in the moderate performance category. This finding was very important as the pupils also needed energy to be able to concentrate on effective academic studies later in the evenings. Therefore, the conclusion was that majority of the pupils in the high performance category were exhausted during their Games and sports practice sessions.
5.5.9: Pupils feeling exhausted and unable to concentrate on effective academic studies after a Games or Sports practice sessions

An item was included to elicit information on whether the pupils felt exhausted and unable to concentrate on effective academic studies after a Games or Sports practice session. The results indicated that 53 (41.41%) of the pupils in the high performance in physical skill category and 8 (6.25%) of the moderate performance category indicated yes.

This finding showed that most of the high performance pupils were unable to concentrate on effective studies on the same days that they engaged in games or sports practices. This result was consistent with the revelation that pupils in the high performance were involved in Games and Sports practices for longer periods than those in the moderate performance category. The pupils in the high performance category were therefore disadvantaged in their academic pursuits as they were more exhausted for effective academic concentration than those in the moderate performance category. This was then expected to lead to poor academic achievement by pupils involved in intense Games and Sports practice who were also in the high performance in physical skill category.
5.6 **Most strenuous practice sessions**

For the pupils in the high performance category (44.50%) indicated that the practice sessions were most strenuous one week before the competition dates. The explanations showed that during the one week, the pupils preparing to compete in the next level of competitions were:

(i) Assembled at one venue to train as one team.

(ii) Trained throughout each day for the one week duration.

(iii) Trained by several coaches as a team or in turns.

This result revealed that each school, zone, division, district or province perceived winning at the Games or Sports competition as very important. Consequently, the pupils identified and selected to represent the zone, Division, District or Province were assembled at a central venue and exposed to intense training so as to guarantee victory at the competitions. This practice therefore denied the pupils opportunities to attend classes in their schools yet as observed earlier, no effective arrangements were made to cover such missed classes.

5.7 **Private Reading/Studying outside class time**

Private reading or studying by the pupils is very important as it reinforces what is covered with the teacher. The times available for the learner to have private studies are early in the mornings or in the evenings after school and over the
weekends. The same times available for private reading are also frequently used to teach, train and prepare school teams for Games and Sports competitions. It would appear that a pupils utilizing times for private studies would improve his subject understanding unlike one who does not. The pupils who trained for the Games or Sports competitions at these times cannot also utilize the same times for private reading. To get information on private studying outside class time the pupils were asked whether they studied on their own.

Data analysis showed that most (93.0%) of the pupils carried out private studies outside class time. Studying outside class time underlined a desire on the part of the pupils to enrich their understanding of what was taught in the class and also improve their performance in the Games or Sports practices on the school. Further, it was an indication of the pupils’ desire to perform well in their examinations.

5.7.1 Pupils time when private studies were carried out

A specific question was used to double check the earlier observation on private studying outside class time. The pupils were asked to indicate the times of the day when they carried out private studies. Most of the pupils (79.7%) indicated that they studied early in the mornings, before classes began, in the evenings after classes and before sleep time as well as at any time they were
free including over the weekend. Only 8 (4.2%) of the pupils studied early in the mornings whereas 31 (16.1%) studied in the evenings after school classes and before sleep time.

However, as a whole all the pupils in the high performance and moderate performance categories indicated that they studied privately outside class time. The results tell us that it was not possible for the pupils involved in games and sports practices to carry out effective private studies. The times when they could have studied were taken up by their games and sports practices. Such pupils therefore were greatly disadvantaged in their class work.

5.8 Interference of Games and Sports practice on the pupils private study times

The pupils were asked to indicate whether their games and sports practices interfered with their private study times. The results showed that 48 (37.21%) of the pupils out of whom 39 were in the high performance category and 9% in the moderate category indicated that games and sports practices interfered with their private studies time. The pupils who indicated that there was no interference, were 80 (62.79%) out of whom the majority (55) were in the moderate performance category.
The pupils who indicated that there was interference were further required to explain how the interference came about. In the explanations, it was indicated that most of the pupils' available time for studying on their own was taken up by games and sports practices so as to improve on their performance. Others explained that some of the practices especially prior to any competitions, were so intense that they felt too exhausted for any private studies for several days.

This finding implied that the pupils felt that the games or sports practices took the time they had for any private reading. Any poor performance in their class work and examinations could therefore be blamed on the games and sports practices.

5.8.1 Private studying on the same days that pupils' participated in Games and Sports practices

An attempt was made in this study to investigate whether the games and sports practices and competitions had any effect on pupils’ private study patterns. The first question in this line checked on whether the pupils held private studies on the same days in which they were engaged in games or sports practices.

As indicated in the earlier Chapters, four out of the five school days each week are devoted to Games and Sports activities. This time was most often used to
select, train and coach the school teams in various games and sports activities in preparation for competitions which were a main feature of primary school life in Kenya. As different levels of games and sports competitions drew near, the pupils to participate were exposed to more intense practice sessions. Also other times when the pupils were free from formal teaching were identified and used as extra practice sessions.

The results showed that a large number 39 (60.94%) of pupils in the high performance in physical skill category did not study on the same days that they practiced or participated in the Games or Sports competitions. This finding revealed that the games and sports practice sessions were so strenuous that the pupils involved could not concentrate on effective studies. Such a situation was negative to their academic pursuits and later examination performance. However, their class mates who were not involved in strenuous practices did not experience the same strain and consequently were able to mount effective private studies. Such studies enabled the pupils to enrich their subject content understanding and to expose them to different view points as presented in various textbooks and other resource materials which they had the time to study.
5.9 Private Studies on the same days that the pupils participated in Games or Sports competitions

The second question in the same line checked on whether the pupils held private studies on the same days that they were involved in games and sports competitions. Games and sports competitions were held at different levels beginning with internal competitions within the school. These included inter-class, inter-year, and inter-house competitions as well as school sports days. Outside the schools, the inter-school, zonal, divisional, district, provincial and national competitions in various games and sports were held.

Each level of competitions was preceded by intense coaching training and preparations of the individual pupils or teams to participate in the competitions. Therefore several days in each school term were taken up by the games and sports competitions.

The results showed that a very large number of pupils 60 (93.8%) out of the 64 pupils in the high performance category, did not involve themselves in private studies on the same days that they participated in games and sports competitions. This finding revealed that the physical strain and excitement of Games and Sports competitions, put the pupil participant in a state that could not facilitate effective reading or studying on their own. Thus, by participating
in Games and Sports competitions, the individual pupil was denied a chance to concentrate on effective studies. Yet the pupils not involved in such competitions had no hindrance to their private studies on the same days. Consequently, most pupils participating in Games or Sports competitions were likely to be ill-prepared for the KCPE Mock Examination in Mathematics besides other subjects.

5.10 Testing the existence and magnitude of relationship between performance in Physical Skill and academic achievement amongst

(a) the whole population;
(b) rural primary school pupils;
(c) urban primary school pupils;
(d) boys in primary schools;
(e) girls in primary schools.

The results obtained by computing the chi-square value, showed that there was a significant relationship between performance in physical skill and academic achievement amongst pupils in primary schools. Similar results were obtained from computations for pupils in rural and those in urban schools as well as for boys and girls.
Since the chi-square value was an indication of the probability of existence of a relationship between the variables, a computation of the contingency coefficient (c) was therefore carried out. The contingency coefficient (c) was more suitable in order to determine the magnitude of the relationship. The computed contingency coefficient (c) value for the whole population was 0.61, whereas the value for pupils in rural schools, urban schools boys and girls was 0.58, 0.66, 0.60, and 0.58 respectively. The obtained contingency coefficient (c) values in each relationship computed was a clear indication of positive correlation between performance in physical skill and academic achievement amongst pupils in primary schools.

The correlation coefficient (r) value for the whole population was also computed. The obtained value was 0.45, whereas the r values for pupils in rural schools, urban schools, boys and girls were 0.44, 0.43, 0.44, 0.42, respectively.

In each of these computations, the r value obtained was therefore low but positive. This result therefore revealed that there was a positive relationship between the two variables at a low level. In other words, the pupils who performed highly in Physical Skill are the same ones who scored highly in
academic performance. Likewise, pupils who scored low in Physical Skill also scored low in academic performance. The same trend was revealed for pupils in rural schools, urban schools boys and girls, where each relationship was computed separately.

The obtained results of the findings tell us that either there is a positive correlation on no correlation. In other words, negative correlation is not observed. The dubious notion that pupils having a high physical skill performance are academically low performers is therefore discarded.

Drawing from the above results, it can be concluded that the process of learning is the same regardless of how the information is received by the body. In learning a Physical Skill, the body may receive information through sight, hearing, movement or even feelings whereas in learning an abstract principle in science, the information may be received only through hearing. However, the learning process is the same and the brain is involved.

Accordingly an individual who displays high performance in Physical Skill should also perform highly in academic tasks. Consequently, a low performer in Physical Skill should not be expected to perform highly in academic tasks if the conditions of learning and performance are maintained the same
Regular physical exercise improves the individual’s total health. The vital body organs such as, the heart, the lungs and the blood vessels become more effective and efficient in performing their functions. Indeed all the body parts including the muscles, limbs, blood and the brain benefit from regular physical exercise. The brain in particular benefits from an increase in the density of the brain blood vessels. Consequently, oxygen supply to the brain becomes more efficient (improved). Accordingly, the brain would be expected to perform its functions of reasoning, solving, receiving, processing, storing and decoding information more effectively and efficiently. Therefore an individual involved in regular physical exercise would be expected to perform mental (academic) tasks more effectively than if the individual was not involved in regular physical exercise.

The obtained correlation coefficient (r) value for the whole population was low (but positive) possibly due to errors. Some possible causes of errors are:-

(a) sampling errors;

(b) subjective ranking by Physical Education teachers and Games Masters.
The same causes of errors can be attributed to the low \( r \) value obtained separately amongst pupils in rural primary schools, urban primary schools, boys as well as amongst girls.

In order to make the obtained \( r \) value for the relationship more reliable, some allied data was collected by means of the questionnaire. The data revealed that pupils who excelled in Games and Sports activities (or Physical Skills) in the primary schools were greatly disadvantaged. They spent more of their free time practicing Games and Sports activities while the less able ones were busy carrying out private studies and revision in preparation for the examinations. The same group of pupils also missed school classes (lessons) for several days in each school term while away from school attending to Games and Sports practices and competitions. Such missed classes were generally not compensated for.

Additionally, pupils in the high performance category appeared to have overdrained their physical energies in Games and Sports practices for effective concentration in academic work. These observations explain why pupils in the moderate category of performance in Physical Skill had a higher mean score in academic performance than the pupils in the high category of performance in Physical Skill. The moderate performance (MP) category pupils did not over involve themselves in Games and Sports practices. Also they did not over
strain their bodies which would have been harmful for effective private studies and revision. They also had most of their free time available for private studies in preparation for the examination.

The pupils in the low performance (LP) category in Physical Skill had all the time and physical energy for concentration in their private studies. However, they did not accrue the benefits of regular physical activity. Their 'poor' body conditions possibly may not have been healthy (or favourable) enough for academic excellency. On the other hand, their low performance in Physical Skill may be due to their inability to understand, conceptualize, assimilate and apply the techniques, rules and skills that lead to proficient performance in any Game or Sport which is a mental process. Such a situation could also be observed in the pupils’ academic work which also was mental activity.

In conclusion therefore, the result reveals that the process of learning is the same regardless of how the body receives the information. A high performer in Physical Skill also performs highly in academic tasks. However, regular physical exercise can improve an individual’s performance mental (academic) tasks. Incidents in which an individual excels in Physical Skill but scores poorly in academic tasks can be attributed to specialization in Physical Skill at the expense of academic experience (work).
5.11 Summary

The results of the data analysis, discussions and explanations showed that all the nine objectives in this study were supported. A summary of the main points under each of the objectives are summarized in the succeeding pages.

The first objective was to gather data on the personal information of the primary school standard eight pupils. The pupils involved in this study were from sixteen (16) primary school and were 127 boys and 65 girls all in the age range 14 to 16 years.

From each school, twelve (12) pupils were selected to participate in the study.

Out of the twelve pupils,

(i) four (4) had participated in games and sports activities up to either the zonal, Divisional, District, Provincial or National level during the same school term.

(ii) four (4) were involved in regular games and sports practices within the school but had never participated in any competitions.
(iii) four (4) were not involved or shown interest any Games or Sports practices and were described as physically lazy. However, they were neither sick nor physically disabled.

None of the pupils was repeating the standard eight class. Most (70.38%) of the pupils resided more than one kilometre from the school and either walked, ran or walked and ran to school.

The second objective was to gather data on the pupils involvement in Physical Education lesson activities. The results revealed that Physical Education appeared on 99% of school class timetables.

The number of Physical Education lessons per class each week was indicated as three (3) by 84.9% of the pupils. However, effective teaching of Physical Education was not carried out amongst 95% of the pupils. In most cases, the time scheduled for teaching Physical Education was frequently used to teach the examinable subjects particularly mathematics which was indicated by 69.5% of the pupils.

The third objective was to gather data on the pupils’ involvement in out of class Games and Sports activities within the school. The results revealed that
the pupils in the low performance in Physical Skill category did not participate in such activities. All the pupils in the moderate and high performance in Physical skill categories participated in the school Games and Sports activities.

The fourth objective was to gather data on the pupils involvement in competitive Games and Sports activities within and outside the school. The results showed that only the pupils in the high performance category in Physical Skill were involved in competitive Games and Sports activities. The competitions were held at the zonal, Divisional, District, Provincial and National levels. Additionally, 93.8% of the pupils participating in the competitions, were absent from school for many school days during each school term while teaching was still going on.

The fifth objective was to gather data on the effect of the pupils participation in Games and Sports practicals and competitions on their academic studies. The results revealed that the pupils in the moderate performance in Physical Skill category did not have any negative effects. However, the pupils in the high performance category indicated that:

(i) they did not carry out private studies on the days that they were involved in Games and Sports competitions and on most days when they were involved in Games and Sports practices;
(ii) most of their free time was consumed by Games and Sports practices;

(iii) they missed many school days while away from school attending to Games and Sports practices and competitions;

(iv) they were not effectively assisted to cover the class content taught while they were away from school attending to Games and Sports practices and competitions.

The sixth objective was to gather data on the pupils' academic achievement in the 1996 KCPE District Mock Examination. The data was used to determine the existence and magnitude of relationship between the pupils’ performance in Physical Skill and their academic achievement.

The seventh objective was to determine the existence and magnitude of relationship between the pupils’ performance in Physical Skill and their academic achievement. To attain this, five Null hypotheses were tested using the chi-square (X) test.

The first hypothesis was that there was no significant relationship between performance in Physical Skill and academic achievement amongst pupils in primary schools. The results showed that there was a significant relationship between the two variables. The hypothesis was therefore rejected.
The second hypothesis was that there was no significant relationship between performance in Physical Skill and academic achievement amongst pupils in rural primary school. The results showed that there was a significant relationship between the two variables. The hypothesis was therefore rejected.

The third hypothesis was that there was no significant relationship between performance in physical skill and academic achievement amongst pupils in urban primary schools. The results showed that there was a significant relationship between the two variables. The hypothesis was therefore rejected.

The fourth hypothesis was that there was no significant relationship between performance in Physical Skill and academic achievement amongst boys in primary schools. The results showed that there was a significant relationship between the two variables. The hypothesis was therefore rejected.

Finally, the fifth hypothesis was that there was no significant relationship between performance in Physical Skill and academic achievement amongst girls
in primary schools. The hypothesis was rejected as the results revealed that there was a significant relationship between the two variables.

Whereas the chi-square ($X^2$) test showed the probability of having a correlation between the expected and the observed variables, the contingency coefficient ($c$) shows the magnitude of such a relationship. The contingency coefficient ($c$) test was therefore carried out on all the hypotheses. The results showed that in each of the five hypotheses, there was a clear indication of positive correlation relationship between the two sets of scores.

A correlation coefficient ($r$) test was also carried out on each of the five hypotheses. The results on each of the five hypotheses revealed that there was a positive correlation relationship between the two variables but at a low level.

The above observations revealed that performance in Physical Skill and academic achievement amongst pupils in primary schools has a correlation relationship. The pupils who scored highly in physical performance also scored highly in academic tasks. Similarly, pupils who scored poorly in Physical Skill performance also scored poorly in academic tasks.
From the above observations and results, the researcher tentatively concluded that:

(i) all learning regardless of the domain) involves information processing by the brain. Consequently, a high performer in Physical Skill would be expected to be a high performer in academic tasks since the process of learning each of them is the same.

(ii) regular physical exercise such (as regular practices in Games or Sports) enables the individual attain physical fitness and thus a healthy body. A healthy body means healthy body organs including the brain. Consequently, the healthy individual has a healthy brain which would not only endure sustained effort in solving academic tasks but also perform such tasks more efficiently.

A part from achieving the objectives in this study, many important findings were highlighted in Chapter Five. The Eighth and Ninth objectives were on making recommendations on the basis of the conclusions of this study. Chapter Six will deal with conclusions and recommendations based on the findings of the study.
CHAPTER SIX

CONCLUSIONS AND RECOMMENDATION

6.1 Introduction

The purpose of this study was to identify a group of pupils in primary standard eight class falling into three categories of performance in physical skill, and with data on their academic achievement, establish the extent of relationship between the two variables.

The literature reviewed showed that although the newly adopted 8.4.4 system of education recognizes Physical Education as a compulsory school but the subject, the Physical Education teachers lack enthusiasm as emphasis is placed on the examinable subjects. The contribution of regular physical activity in the total well being of the individual does not appear to be given opportunity for the benefit of the pupil. The physically less able pupils appear to be denied an opportunity for regular physical activity and assigned the role of spectators. On the other hand, the superior pupil athlete sacrifices his/her academic pursuits in school due to peer, teachers and school pressure to bring fame and glory to the school, zone, Division and District through competitive sport.

Such and other observation led the present study to collect some information about the seriousness of teaching Physical Education in primary schools. The instruments used in the study included a questionnaire to gather data from the
primary school standard eight pupils. Also a personal interview schedule to the primary school standard eight Physical Education teacher and the Games and Sports master were used to identify the pupils. Another personal interview schedule to the standard eight class Mathematics teachers was used to gather data on the pupils Mathematics score in the 1996 Kenya Certificate of Primary Education (KCPE) District mock examination in each of the four districts included in this study.

One hundred and ninety-two (192) pupils correctly completed the questionnaire which generated the data for this study. Before the pupils completed the questionnaire, the Physical Education teachers and Games and Sports masters in the same primary school were personally interviewed by the researcher to help in identifying the type of pupils targeted for the study. They also helped to rank the pupils according to their performance in physical skill. Later in the same school term, the standard eight class Mathematics teacher was personally interviewed by the researcher to collect data on the pupils’ score in the 1996 (KCPE) District Mock Examination in Mathematics. The study was conducted in Eastern, Nairobi and the Rift Valley provinces of Kenya.

Chapter One of this study presented the background information on the study and stated the research problem. Chapter Two gave the related Literature
review on foreign as well as on local information. The objectives of the study as well as its theoretical framework were formulated.

Chapter Three dealt with the methodology of the study, the instruments and actual data collection procedures. Chapter Four focused on data analysis and presentation whereas Chapter Five was on the discussion of the results of the data analysis.

Chapter Six focuses on the findings, conclusions and recommendations of the study. The results of data analysis, presentation and discussion yielded several important tentative conclusions on the main variables studied.

6.2 Personal Data

Pupils in primary school education were found to fall into three categories of performance in physical skill identified as low, moderate, and high performance. However, majority of the pupils in the high performance category were found to be 16 years of age. This could be as a result of their bodies being more developed and stronger. It is also possible that the older pupils have been exposed to physical skill much longer and are therefore more proficient in physical skill.

The number of boys participating in competitive games and sports in primary schools was found to be more than for girls. This could be attributed to low
enrollment of girls as compared to boys as pointed out by Eshiwani (1993). However, it could also be due to the girls' being reluctant to engage in strenuous physical activity.

6.3 Involvement in Physical Education lesson activities while at School

The majority of the pupils (98.9%) had Physical Education as one of the school subjects appearing on their class timetable. This was expected since Physical Education is a compulsory teaching subject through a 1980 presidential directive to all primary and secondary schools in Kenya.

A large number of pupils (86.4%) had three lessons of Physical Education appearing on their class timetable each week. This number of lessons per week was consistent with the 'principle of regularity' for physical exercise to have positive effect on the health related components of physical fitness as explained by Krotee (1979). However, a very small number of pupils (5.2%) indicated that the Physical Education teacher turned up to teach, and guide the pupils through the lessons' activities and assist the learners where necessary during the lesson. Many of the pupils (41.7%) indicated that the teacher turned up sometimes whereas 26.1% and 27.1% indicated that the teacher rarely and never turned up respectively. Therefore even though on paper three lessons were allocated for Physical Education per class each week, in practice majority of the pupils were denied an opportunity to learn Physical Education and consequently, did not accrue the benefits to be gained through the teaching of
the subject. All pupils should be exposed to regular teaching of Physical Education. The rationale for teaching the subject should be made known to all school teachers.

6.4 Use of Physical Education lesson time for teaching other subjects

With regard to how the time scheduled for teaching Physical Education lessons was utilized in situations where the subject was not taught, the results revealed that other subjects were taught. Amongst the subjects taught were Mathematics, English Business Education and Home Science.

Reasons were given for teaching other subjects during time meant for Physical Education lessons. The reasons were related to the fact that Physical Education was a non-examinable subject whereas the other subjects were examinable. The examinable subjects were perceived as more important in the pupils future life than Physical Education.

The finding revealed that Physical Education was not seen as an important school subject. Also the pupils perceived the importance of a subject as synonymous to the subject being examinable. Therefore the role of Physical Education in the total development of the pupil together with its contribution to the individual’s health and the immense carry over values into future life were masked by the heavily examination oriented primary school curriculum.
Every school subject should be assigned adequate time to facilitate coverage of the syllabus. On the other side, the syllabus content should be trimmed to fit within the available time. Consequently, each school subject’s contribution to the pupil’s immediate and future needs should be respected and encouraged.

6.5 Pupils’ Involvement in out of Class Games and Sports activities at school

One of the important variables in this study was the pupils’ performance in physical skill. All the pupils in the moderate and high performance categories indicated that they were involved in Games and Sports activities at school. However, those in the low performance category did not participate in any Game or Sports activities. This was expected as not all school pupils could get the opportunity due to the limited facilities and equipment for Games and Sports activities. Only the better able pupils in Games and Sports activities got an opportunity to participate.

The types of Games and Sports activities commonly played in schools were given as Soccer, Netball, Volleyball and Netball besides running races (sprints and endurance races). These Games and Sports activities are mainly team sports. Team sports have poor carry over values to future (or adult) life as it is difficult to assemble free, willing and able persons to play a Game in adult life as opposed to individual or dual type of Games or Sports such as Swimming and Cycling.
This finding therefore, revealed a weakness in the types of Games and Sports activities commonly found in Primary Schools as they encourage spectating rather than participation in adult life.

It is therefore, necessary that the Physical Education activities in Primary School be broadened so as to accommodate the varying pupils' interests. Such broadening of the syllabus content would also overcome the problem of equipment and facilities' shortage.

6.6 Frequency, Duration and Intensity of participation in Games and Sports practices

(a) Frequency

The frequency, duration and intensity of participation in physical activity are important variables if exercise is to bring about positive changes in the health related components of physical fitness. On frequency, the results showed that pupils in the moderate performance category practiced for three or four days each week whereas those in the high performance category practiced for five or six days per week. Also on each day, pupils in the high performance category practiced for more than one session whereas most of those in the moderate performance practiced once only per day.
Excessive performance of physical activity can have negative effects in attaining the health related benefits of physical fitness as highlighted by Bucher (1964), Halls (1973) and Krotee (1979). Pupils in the high performance category appeared to have been involved in physical activity for too frequent sessions especially during the one week before each of the numerous Games and Sports competitions. Further the extra-practice sessions per week (besides the official four) were possible through utilizing other times of the day which were meant for the pupils private studies.

This finding revealed that the pupils in the high performance category exposed themselves to too frequent Games or Sports practices. Such frequency could be negative in assisting them derive the health related benefits of regular physical exercise. Also the pupils unlike those in the moderate performance category, sacrificed their free time meant for private studies and preparation for the 1996 Kenya Certificate of Primary Education (KCPE) District mock examination, to engage in Games or Sports practices.

The Games and Sports training should be spread throughout the year. Such a programme would lead to light but prolonged training which would also be less strenuous on the pupils.
(b) **Duration of Games or Sports practices**

The pupils' responses on duration of time spent on Games or Sports practice session indicated that most pupils in the high performance category spend more than two hours per day. The pupils in the moderate performance category spend about or less than one hour but more than half of an hour. A duration of between half to three-quarter of an hour is recommended as the optimum duration for physical exercise to cause positive changes in the health related components of physical fitness. This finding indicated that the high performance category pupils over-strained themselves through prolonged exposure to practice sessions. Unlike the pupils in the moderate performance category, the high performance pupils were likely to over-drain their physical energies for effective concentration on academic studies. Further, the fact that they spent more time in the practice sessions denied them enough time for private studies. These two factors were likely to lead to poor performance in their 1996 KCPE District mock examinations unlike was expected for the pupils in the low and the moderate performance categories.

The time spend in Games and Sports practise sessions each day should be harmonised with the pupils' need for Physical exercise as well as their other needs such as private studies.
6.7 Pupils involvement in competitive Games and Sports activities within and outside School

Primary school Games and Sports activities are strongly competition oriented. Due to the limited Games and Sports facilities and equipment in the schools, the most able pupils in Games and Sports were the ones recruited into the school teams. Consequently, these were the only pupils who used the limited Games and Sports facilities and equipment to engage in regular Games and Sports activities. The pupils responses showed that the pupils who belonged to the high performance category also belonged to the school’s first teams in various Games and Sports. The Games and Sports activities were given as Soccer, Volleyball, Netball and running races (Sprints and endurance) races.

These findings confirmed earlier observations that besides running races, most Games activities in primary schools were team Sports that required cheap and minimal facilities and equipment. The responses also indicated that the pupils in the schools’ first team had participated in Games or Sports competitions within the period February to August 1996. The levels of competitions in which they had participated were identified as zonal, Divisional, District, Provincial and National. This finding was in agreement with earlier observations on the Kenya Primary schools Sports Association (KPSSA)’s organization of Games and Sports competitions.
6.8 Pupils missing classes while attending to Games and Sports competitions

The Games and Sports competitions were scheduled on school days and mostly took one or two days to complete. However, due to long distances and many teams to participate, competitions at the District, Provincial and National levels took between several days to two weeks to complete. While the competitions were going on, teaching at the schools continued for the pupils not participating in the competitions.

The findings revealed that majority of the pupils (93.8%) in the high performance category missed classes while attending to Games or Sports practices and competitions. Also, for more than 50% of the pupils who missed classes, no arrangements were made for them to be taught the missed content (topics). Therefore, while winning in the Games or Sports competitions brought glory and fame to the particular schools, no one appeared concerned to assist the ‘heroes’ in their academic work.

Missing classes meant that the pupils were poorly prepared for the 1996 KCPE District mock examination in their respective district. Also the pupils were physically drained to concentrate on meaningful studies for some days after the competitions due to the effects of intense training, traveling and the excitement of the competitions. Consequently, these pupils were likely to perform poorer in the ensuing examination than those not involved in the competitions.
It is necessary that the primary school pupils be made aware of the benefits they can derive from involvement in regular Physical Exercise. Further, the pupils should be made aware of the possible negative effects on their academic work as a result of committing most of their time to Games and Sports practices and competitions.

6.9 Pupils’ Reasons for participating in Games and Sports practices and competitions

Responses from most pupils in the moderate performance category and a few from the high performance category showed that they engaged in games and sports practices out of self-initiated motives. The reasons which included feeling better, enjoying the play and feeling more relaxed, made them feel happy with themselves and mentally relaxed to concentrate on their studies. However, most pupils in the high performance category explained that they were forced by their teachers, pressurized by their classmates, while others indicated that they were encouraged by their teachers and parents. A large percentage of pupils in the high performance category indicated that they were motivated by the desire to travel away from school to see other places.

The results revealed that even though most pupils had self-initiated reasons for engaging in Games and Sports practices, the pressure exerted by teachers and peers was unfortunate. Such pressure was likely to make the pupils feel that
they were doing the activities for someone else. This was likely to lead to the pupil abandoning engagement in such activities as soon as the person initiating the pressure was no longer able to do so or as soon as they left the school. Such an eventuality would deny the pupils the life long benefit of regular physical exercise.

6.10 Pupils’ exhaustion after practice sessions and effective academic studies

The results indicated that majority of the pupils (84.1%) in the high performance and a few (15.9%) in the moderate performance category felt exhausted after games and sports practice sessions to concentrate on effective academic studies. This finding was important as it revealed that besides the practice sessions ‘eating’ into time for private studies, the pupils ended up exhausted for effective concentration in academic studies. This result therefore shows the pupils in the high performance in physical skill category as disadvantaged in their academic pursuits.

The pupils’ achievement in Physical skill (Games and Sports) should be quantified and translated into some benefit to the pupils. For example, during their selection to join Form One or other post primary school institutions, the pupil could be given preferential treatment.
6.11 Private Studies Outside Class Time

The responses showed that pupils carried out private studies early in the morning, evening and over the weekends. This revelation was very important as it indicated that the times available for private studies were the same ones frequently utilized for extra games and sports practices. The pupils mostly affected were the ones participating in the competitions (who were also in the high performance category). Such pupils were therefore likely to perform poorer in academic tasks as compared to others not involved in Games and Sports competitions.

The school should be responsible to help the pupils involved in competitive Games and Sports activities. Such pupils could be given extra private tuition so as to catch up on their academic work.

6.12 Interference of Games and Sports practices on the pupils private study times

The results indicated that majority of the pupils (60.9%) in the high performance category and a small number (14.1%) of those in the moderate performance category felt that the practices interfered with their private study times. This finding was very important for this study as it revealed that many pupils involved in the Games and Sports practices were not well guided by their teacher to have a proper balance between such Games and Sports practices and their academic studies.
The pupils' learning experiences in school should be in harmony and supportive to each other since ultimately all the school's experiences focus to the attainment of the same goals. None of the school’s experiences should seen as irrelevant or inferior to others.

6.13 Existence of relationship between performance in Physical Skill and Academic achievement amongst pupils in primary schools

The results obtained using the chi-square method revealed that a significant relationship existed between performance in Physical Skill and academic achievement amongst pupils in primary schools. Similar results were obtained for rural and urban pupils as well as for boys and girls in primary schools.

The results obtained using the contingency coefficient (c) method for the whole population as well as for the rural pupils, urban pupils, boys and girls (each computed separately), revealed a clear indication of positive correlationship between performance in Physical Skill and academic achievement. However, computation of the correlation coefficient (r) for the whole population gave a positive value at a low level. Similarly, the values obtained separately for pupils in rural and urban primary schools as well as for boys and girls were positive low values. This result revealed that a positive relationship was present for each of the computations but at low levels.
6.13.1 Information processing

The results of the findings tell us that pupils who performed highly in Physical Skill are the ones who scored highly in academic work. On the other hand, pupils who performed poorly in Physical Skill also scored poorly in academic work.

It can therefore be concluded that pupils who excelled in Physical Skill are the same ones who also excelled in academic achievement tasks or mental activities. Accordingly, excellence in Physical Skill can therefore be attributed to the individual’s mental ability rather than to mere presence of muscles. This conclusion concurs with a “Kamba” saying that “Nzamba ti i ngele” which means “The size of a man’s leg muscles is not an indication of his worthiness”.

This result can further be explained that the process of learning a Physical Skill is not pure psychomotor but rather a process that involves the mind. Consequently, to play any Game or Sport, the mind must be involved. In other words, muscular strength in an individual is not an indicator of the individual’s level of quality of performance in any Physical Skill. Even though physical strength is necessary in playing the Game or Sport, the quality of acquired technique in playing the game or sport (which is a mental quality) is necessary for one to excel in playing the Game or Sport.
Accordingly, it is expected that there would not be any relationship between physical strength and playing a Game such as Soccer. Therefore, it is difficult to measure correlation between physical strength and performance in a Game or Sport.

As a consequence of the above conclusion, it can be further concluded that the process of learning a physical skill is not different from learning an academic principle or concept in science. Consequently, an individual who can learn a Game or Sport (physical skill), and acquire the relevant techniques and excel in the competitive Game or Sport situation, should also excel in any other mental activity under similar circumstances. The process of acquiring a technique in a Game or Sport can therefore be seen as a mental process.

The absence of any negative correlation further revealed that learning is information processing which is universally the same. The information may come through movement, feeling or any of the body senses but the processing of the information (which is a mental activity) is the same.

In conclusion, the contribution of Physical Education to the total development of a pupil should not be neglected. The importance of Physical Education should be recognized as the non-curriculum, non-academic or extra-curricular activities form an essential part of the school curriculum. It should be treated as one of the main academic subjects.
6.13.2 Change in body efficiency with regular Physical exercise

The brain is a physiological organ. With regular physical exercise, the efficiency of the various body organs and limbs improves (Krotee; 1979). Consequently, with regular physical exercise, whatever happens to any body organ would happen to the brain. For the brain to be efficient (strong), then it must be healthy. Since regular physical exercise leads to a healthy body then it also leads to a healthy (or efficient) brain.

A healthy body therefore is not just strong muscles but the total body which includes the brain. Since a strong body does not tire easily in performing an activity, accordingly a strong (healthy) person would not be expected to tire or succumb to fatigue easily even when performing a mental activity. This can be attributed to the healthy body’s ability to supply oxygen to the active body tissues including the brain cells. This conclusion concurs with Aristotle’s (an outstanding Greek philosopher) view that:

“the body and soul are closely interrelated and that mental faculties are affected by bodily movement and conditions of body health” (Bucher, 1964).

In conclusion, the contribution of Physical Education to the total development of the pupil should not be neglected. The subject should not be referred to as co-curricular, non-academic or extra curricular but should be part of the school curricular. It should be treated as one of the normal (academic) subjects.
In studying Chemistry, Physics and other science subjects, movement of the learners or manipulation of his body limbs, objects, chemicals and matter is perceived as very vital. Yet the foundations of efficient body movement is in Physical Education which appears over-looked in the heavily examination oriented primary school curriculum. The contribution of Physical Education (through involvement in regular physical exercise) to the pupils’ academic excellence should be developed and appropriately harnessed for the learners benefit.

6.14 Recommendations

(a) General Recommendations

(1) Chronological Physical Education Syllabus

In order to effectively harness the benefits derived from regular physical exercise and appropriately channel them to the realization of academic excellence, an hierarchical and chronological Physical Education syllabus should be developed and put in place in each primary school. The syllabus should identify what is to be taught in each year in the various classes which should be related to the previously taught content as well as the content to be taught in the succeeding year.

(2) Regular teaching of Physical Education

Physical Education is the only subject in the school curriculum whose main responsibility is to develop physical fitness. Consequently, regular
teaching of Physical Education should be carried out in each school just like for any other subject.

(3) Regular teaching

It appears that learning in a subject is serious if the subject is examinable. Today in the entire Education system in Kenya, teaching and learning processes are dictated by examinations. Accordingly, regular examination in Physical Education should be carried out both at the different year levels as well as at the Kenya Certificate of Primary Education (KCPE) examination level. As a starting point (for example), a cluster of subjects could be identified to make up one examination paper whereby each subject constitutes one section of the examination.

(b) Specific Recommendations

(1) Extra Tuition

Schools need to be more responsible with respect to pupils involved in Games and Sports competitions. Such pupils should be given extra tuition so as to catch up on missed class work.

(2) Broaden the Physical Education curriculum

Every child has a natural desire to play. In order to channel and satisfy this urge appropriately, every pupil in the school should have adequate
opportunity to participate in a variety of physical activities. Accordingly, the primary schools’ Physical Education curriculum should be broadened so as to include indoor Games, small area Games, mind challenging Games (such as chess) and social as well as fan fare Games. Such a variety would cater for the varying pupils’ needs, interests and preferences. Additionally, each school should allocate time and place (either a Gymnasium or a play ground) within the school schedule, where the pupils can participate in the various Physical activities.

(3) **The school as a Sports Centre**

The school should develop into a Sport Centre in the community by availing its Sports facilities, equipment and expertise to the community. In the long run, the school would contribute to:

(i) improving the health of the community members who are also parents and relatives of the pupils.

(ii) creating positive awareness and attitude among the community members towards Games and Sports activities. Such awareness would reinforce the pupils’ appreciation of the role of regular Physical exercise in improving their (pupils’) quality of life.
(4) To avoid disadvantaging the pupils who excel in Games and sports activities, the preparations should not be narrow focused for example to achieve fame, glory and prestige.

The preparation should:

(i) be spread throughout the year such that it is light but prolonged so as to avoid overstraining the pupils;

(ii) the pupils should be trained at their individual schools and only the final touches be made a central place just before the competitions. Such an arrangement would avoid a crush training programme;

(iii) there is need to quantify the pupils’ achievement in Physical skill for translated into preferential treatment when being selected for admission to secondary school and other post-primary school institutions.

6.15 Recommendations for Further Research

(a) Additional research on the relationship between performance in physical skill and academic achievement amongst pupils in primary education should be carried out in other areas not covered in the present study so as to get a comparative view of the findings of this study.
A broader sample with a bigger proportion of girls to boys and covering a wide geographic area would give more understanding on the relationship of performance in physical skill and academic achievement.

(b) Similar studies on other Games and Sports activities not included in this study should be carried out for comparison purposes.

Findings of this study should be made available to heads of primary schools and educational institutions, the school teachers, and others concerned with the management of education. This would inform them on the contribution of regular physical activity on academic achievement of the pupil and consequently make them appreciate and support Physical Education and Games and Sports programme in the school as a vital ingredient in the child's total development.

Such appreciation and support would lead to the design of a more appropriate Physical Education and Games and Sports curriculum that helps in the development of the pupils' optimum health.

It is hoped that the findings of this study will contribute to an increased awareness that a healthy body can be more effective in aiding the pupils in their pursuit of academic achievement and other goals.
This information, plus more from additional researches will prepare the school teachers, headteachers, curriculum developers, and education policy-makers to appreciate, develop and encourage the contribution of Physical Education in the maintenance of good health consequently, they would play their roles appropriately to assist the pupils' experience adequate and well balanced physical activities in their school experiences.

In conclusion, it is important to emphasize that this study has generated tentative findings, conclusions and recommendations, and a lot remains to be done in the area of the relationship between performance in physical skill and academic achievement in Kenya.

References:
BIBLIOGRAPHY


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: **Syllabuses for Kenya Primary School, Standards VII and VIII.** Nairobi, Jomo Kenyatta Foundation, 1984.

: **Syllabus for Primary Schools Volume II Upper Primary.** Nairobi, Nairobi, Jomo Kenyatta Foundation, 1986.


Nzivo, Stephen,  **A Retired Primary School Headmaster, Oral Interview**, Kitonyini Village, Machakos, July 20th, 1995,


APPENDIX A

Kenyatta University
Department of Educational
Communication & Technology
P.O. Box 43844
NAIROBI.

The District Education Officer (D.E.O)
Kiajiado District
Kerich District
Machakos District
Nairobi District

Dear Sir/Madam,

RE: GATHERING RESEARCH DATA

I am carrying out a research on the relationship between performance in Physical Skill (Games and Sports activities) and academic achievement amongst pupils in primary schools in four District in Kenya.

The research aims at establishing the truth of the dubious notion that pupils who excell in Games and Sports activities at school score poorly in academic work. The findings of the study will therefore yield very important conclusions.

I am therefore concerned with identifying four primary schools within your District, each within a different Division whereby:

(i) the school has a standard VIII class this year;
(ii) the school pupils participated in the Games and Sports competitions organized by the Kenya primary schools sports Association (KPSSA) up to the provincial level during the current school term;
(iii) the standard VIII pupils in the school should be sitting for the 1996 KCPE District Mock Examination later in this school term.

Excluded from the study are boarding schools as well as school for the physically disabled. Your assistance in identifying the schools will be highly appreciated.

Yours faithfully

Daniel Muindi
Lecturer/Researcher, Kenyatta University
APPENDIX B

Kenyatta University
Department of Educational Communication & Technology
P.O. Box 43844
NAIROBI.

21st June, 1996

The Headmaster,

Primary School

District

Dear Sir/Madam,

RE: GATHERING RESEARCH DATA

I am gathering research data on the relationship between performance in Physical Skill (Games and Sports activities) and academic achievement amongst pupils in primary schools. Your school has been selected to participate in this study together with three others from the district. The findings of the study will therefore yield very important conclusion. I will also send a copy of the study to interested individuals.

I therefore request for the assistance of the standard VIII class Physical Education teacher and the school Games and Sports master in identifying the pupils in standard VIII who will participate in this study.

I will also return to your school in early September, 1996, to gather data from the standard VIII Mathematics teacher on the pupils’ scores in the 1996 KCPE District Mock Examination.

Your assistance will be highly appreciated.

Yours faithfully

Daniel Muindi
Lecturer/Researcher, Kenyatta University
APPENDIX C

Kenyatta University
Department of Educational Communication & Technology
P.O. Box 43844
NAIROBI.

2nd July, 1996

1. The Physical Education Teacher
   Standard VIII class

2. The Games and Sports Masters

Primary School

District

Dear Sir

RE: GATHERING RESEARCH DATA

I am gathering research data on the relationship between performance in Physical Skill (Games and Sports activities) and academic achievement amongst pupils in primary schools in Kenya. Your primary school is one of the four selected to participate in this study from your district.

The research aims at establishing the truth of the dubious notion that pupils who excel in Games and Sports activities score poorly in their academic work.

The findings of this study will therefore yield very important conclusions.

I therefore need your assistance to identify twelve (12) pupils in the Standard VIII class who are:

(i) boys and/or girls;
(ii) in the age range 14 to 16 years;
(iii) have never repeated any class while in primary school;
(iv) neither sick nor physically disabled.

The pupils will be put into three categories such as:
(a) High performance (HP) in physical skill category. These will be four (4) pupils who are:
   (i) actively involved in regular practices in Games and Sports activities
   (ii) have represented the school in Games and Sports competitions during the current school term up to either the Zonal, Divisional, District, Provincial, or National level.

(b) Moderate performance (MP) in physical skill category. These will be four (4) pupils who are:
   (i) actively involved in regular practices in Games and Sports activities at school
   (ii) have never represented the school in any Games or Sports competitions during the current year.

(c) Low performance (LP) in Physical skill category. These will be four (4) pupils who are:
   (i) generally physically lazy (least active)
   (ii) are not involved in regular practices in any Game or Sport
   (iii) have never represented the school in any Game or Sports competitions.

You will further assist me in ranking the pupils in each category of performance in Physical Skill such that (for example) in the high performance (HP) category, the most active pupil is assigned rank 1 and the least active pupil rank 4. The other two pupils will be appropriately ranked.

The same procedure of ranking will be observed for pupils in each of the other two categories.

The attached for (Appendix ) will assist in indicating the pupils' names and rank for future use.

All the twelve (12) pupils will respond to the attached questionnaires. Your assistance will be highly appreciate.

Yours faithfully

Daniel Muindi
Lecturer/Researcher, Kenyatta University
APPENDIX D

PUPILS' CATEGORY AND RANK ACCORDING TO THEIR PERFORMANCE IN PHYSICAL SKILL.

Name of School: ____________________________ Date: ____________________________

Division: ________________________________________________________________

District: _________________________________________________________________

<table>
<thead>
<tr>
<th>Name of Pupil</th>
<th>Pupils’ Performance and rank in Physical Skill</th>
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<tbody>
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<td></td>
<td>Category</td>
</tr>
<tr>
<td>1</td>
<td>High Performance</td>
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<td>High Performance</td>
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<tr>
<td>3</td>
<td>High Performance</td>
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<td>4</td>
<td>High Performance</td>
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<td>Moderate Performance</td>
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<td>11</td>
<td>Low Performance</td>
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<tr>
<td>12</td>
<td>Low Performance</td>
</tr>
</tbody>
</table>
APPENDIX E

PUPILS' QUESTIONNAIRE

The following questionnaire aims at gathering information on the relationship between performance in Physical skill and academic achievement amongst pupils in Primary Education.

Please answer all questions below. Take your time and be as honest and as accurate as possible.

PART ONE

Personal Data

1. Name ____________________________ Class ______________________
2. Male or Female ____________________________
3. Age ____________________________
4. Name of your school ____________________________
5. Name of district ____________________________
6. How far is your home from the school?
   [Tick (✓) the appropriate one]
   Less than 1 km (  )
   1-2 kms (  )
   2-3 kms (  )
   More than 3kms (  )

7. How do you travel to school each day?
   [Tick (✓) the appropriate one]
   walking (  )
run

bicycle

matatu

driven to school in family car

Any other (state)___________________________

8. State two main types of manual or physical work that you do most of the time while at home in the evenings and over the weekends.

________________________________________

________________________________________

9(a) Is Physical Education (PE) one of the subjects taught to you at school?

Tick (✓) one.

Yes ( )

No ( )

(b) If yes, how many Physical Education lessons are taught per week for your class?__________________________________________

PART TWO

Pupils’ involvement in Physical Education lesson activities while at school.

9(a) Is Physical Education (PE) one of the subjects taught to you at school?

Tick (✓) one.

Yes ( )

No ( )

(b) If yes, how many Physical Education lessons are taught per week for your class?__________________________________________
10. How often does your Physical Education teacher come to your class during the Physical Education lessons’ time? Tick (√) one.

Always ( )
Sometimes ( )
Rarely ( )
Never ( )

11. If you indicated always or sometimes to question number 10 above, which of the following statements best describes what happens during the 40 minutes duration of your Physical Education lessons? Tick (√) one.

(i) The teacher explains the activity demonstrate them, then instructs us to perform them as they as he corrects us. ( )

(ii) The teacher stands at the edge of the field and looks at us as we do whatever we want. ( )

(iii) The teacher gives us balls to play in the field and then he or she remains in the staffroom. ( )
12(a) Are your Physical Education lesson sometimes used by your teachers to teach other subjects? Tick (✓) one.

- Yes ( )
- No ( )

(b) If yes, identify (Name) one of the subjects taught.

(c) What reasons are usually given to you for being taught another subject during time for Physical Education.

- Throwing events in athletics
- Jumping events in athletics
- Basketball
- Hockey
PART THREE

Involvement in out-of-class games and sports activities in the school.

13. Which of the following games and sports activities have you been participating in while at school between January and August 1996?

[Tick (✓) the appropriate ones].

- Soccer ( )
- Volleyball ( )
- Netball ( )
- Handball ( )
- Running short distance races ( )
- Running long distances races ( )
- Throwing events in athletics ( )
- Jumping events in athletics ( )
- Basketball ( )
- Hockey ( )
14. How often have you been participating or practicing in the game or sport activity you ticked above?

(a) Each week?

(i) Six days ( )

(ii) Five days ( )

(iii) Four days ( )

(iv) Three days ( )

(v) Two days ( )

(vi) One day ( )

(vii) If none of the above, explain.
(b) Each day?

(i) More than two hours ( )

(ii) One to two hours ( )

(iii) Thirty minutes to two hours ( )

(iv) Less than thirty minutes ( )

(c) Which times of the day have you normally been practicing? [Tick (✓) the appropriate ones].

(i) Early morning before class began. ( )

(ii) In the evenings after classes. ( )

(iii) Mornings and evenings ( )

(iv) Mornings, mid-day and evenings ( )

(v) Any other (explains).
PART FOUR

Involvement in competitive games and sports activities within and outside school.

15(a) Have you ever participated in any games or sports competitions as a member of your school team between January and August 1996?

Yes ( )

No ( )

(b) If yes, name.

(i) The game or sport

(ii) The month or months when you last participated

(iii) The highest level of competition in which you participated [Tick (✓) the appropriate ones].

Inter-schools (Zonal) ( )

Inter-zonal (divisional) ( )

Encouraged to enter

Inter-divisional (district) ( )

Inter-district (provincial) ( )
16(a) When you attended such competitions, did you miss some classes?

Yes ( )

No ( )

(b) If yes, state the number of days you missed classes during the period between January and end July 1996?

(c) Explain the arrangements made for you to be taught the classes you had missed.

18. Which of the following best describes your reasons for participating in games or sports practices and/or competitions. [Tick (✓) one.

(i) Forced by my teachers. ( )

(ii) Encouraged by classmates ( )

(iii) Felt better after practicing. ( )

(iv) Enjoyed the experience of playing. ( )

(v) Felt more relaxed and able to concentrate better in my
studies.  

(vi) Encouraged by my parents.  

(vii) Encouraged by my teachers.  

(viii) Gave me an opportunity to travel far away from school and other areas.  

(ix) Given some money by the school to spend as I wished.  

Any other (State)  

18. Did you feel exhausted and lacking in energy after a Games or Sports practice sessions?  

Yes ( )  

No ( )  

19. Immediately after the practice session, did you feel exhausted and unable to concentrate on effective academic studies?  

Yes ( )  

No ( )
20. When were your practice sessions most strenuous or demanding? (Explain).

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

21. Do you study on your own outside class time.

Yes ( )

No ( )

If yes, tick (✓) from the times listed below the ones you use to study.

(i) Early in the mornings before classes begin. ( )

(ii) In the evenings after school. ( )

(iii) Over the weekends. ( )

Any other (State)__________________

22. Do your games and sports practices interfere with your study times?

Yes ( )

No ( )
23. Do you study on the same days that you participate in Games or Sports practices.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
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</tbody>
</table>

24. Do you study on the same days that you participate in games or sports competitions.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX F

Kenyatta University
Department of Educational Communication & Technology
P.O. Box 43844
NAIROBI.

16th June, 1996

The Mathematics teacher
Standard VIII class

Primary School,

District,

Dear Sir/Madam,

RE: GATHERING RESEARCH DATA

I am gathering data on the relationship between performance in Physical Skill (Games and Sports activities) and academic achievement amongst pupils in primary schools. The purpose is to establish the truth of the dubious notion that pupils excelling in games and sports activities score poorly in academic work.

It is expected that the findings of this study will yield important conclusions.

I have already collected preliminary data on twelve (12) pupils in your school whose names are recorded on the attached form labelled Appendix.

Kindly assist me gather additional data on the pupils’ scores in the 1996 KCPE District Mock Examination in Mathematics by listing the marks in the spaces provided against the pupil names.

Your assistance in identifying the schools will be highly appreciated.

Yours faithfully

Daniel Muiindi
Lecturer/Researcher, Kenyatta University
APPENDIX G

PUPILS' EXAMINATION SCORE CARD
(K.C.P.E. MOCK EXAMINATION 1996)

Name of School: ___________________________ Date: ___________________________

Division: ____________________________________________________________

District: _____________________________________________________________

<table>
<thead>
<tr>
<th></th>
<th>Name of Pupil</th>
<th>1996 District (KCPE) Mock Examination Mathematics Score (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
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<tr>
<td>4</td>
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<td>5</td>
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<td>6</td>
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<td>9</td>
<td></td>
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<tr>
<td>10</td>
<td></td>
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<tr>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## APPENDIX H

<table>
<thead>
<tr>
<th>Code</th>
<th>District</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>A</td>
<td>Kericho: St. Patricks Primary school</td>
</tr>
<tr>
<td>2.</td>
<td>B</td>
<td>Kericho: Chagoik Primary school</td>
</tr>
<tr>
<td>3.</td>
<td>C</td>
<td>Kericho: Karenga Primary school</td>
</tr>
<tr>
<td>4.</td>
<td>D</td>
<td>Kericho: Kabarangan Primary school</td>
</tr>
<tr>
<td>5.</td>
<td>E</td>
<td>Machakos: Myanyani Primary school</td>
</tr>
<tr>
<td>6.</td>
<td>F</td>
<td>Machakos: Ikumini Primary school</td>
</tr>
<tr>
<td>7.</td>
<td>G</td>
<td>Machakos: Township Primary school</td>
</tr>
<tr>
<td>8.</td>
<td>H</td>
<td>Machakos: Musaalani Primary school</td>
</tr>
<tr>
<td>10.</td>
<td>J</td>
<td>Kajiado: Ololua Primary school</td>
</tr>
<tr>
<td>11.</td>
<td>K</td>
<td>Kajiado: Ngong Township Primary school</td>
</tr>
<tr>
<td>12.</td>
<td>L</td>
<td>Kajiado: Embul bul Primary school</td>
</tr>
<tr>
<td>13.</td>
<td>M</td>
<td>Nairobi: Maina Wanjigi Primary school</td>
</tr>
<tr>
<td>14.</td>
<td>N</td>
<td>Nairobi: Huruma Primary school</td>
</tr>
<tr>
<td>15.</td>
<td>O</td>
<td>Nairobi: Visa Oshwal Primary school</td>
</tr>
<tr>
<td>16.</td>
<td>P</td>
<td>Nairobi: Plainsview Primary school</td>
</tr>
</tbody>
</table>
MACHAKOS DISTRICT
CONTINUOUS ASSESSMENT TEST
STANDARD 8 TERM II 1996

MATHEMATICS

READ THESE INSTRUCTIONS CAREFULLY

You have been given this question booklet and a separate answer sheet. The question booklet contains 50 questions.

Do any necessary rough work in this booklet.

When you have chosen your answer, mark it on the ANSWER SHEET, not in this question booklet.

HOW TO USE THE ANSWER SHEET

Use only an ordinary pencil.

Make sure that you have written on the answer sheet:

YOUR INDEX NUMBER
YOUR NAME
NAME OF YOUR SCHOOL

By shading the correct numbered ellipse (small oval shapes) mark your full Index Number (i.e. School Code Number and three-figure Candidate's Number) in the grid near the top of the answer sheet.

Do not make any marks outside the ellipses.

Keep the sheet as clean as possible and do not fold it.

For each of the questions 1-50 four answers are given. The answers are lettered A, B, C, D. In each case only ONE of the four answers is correct. Choose the correct answer.

On the answer sheet show the correct answer by shading the ellipse in which the letter you have chosen is written.

Example

In the Question Booklet:

What is the value of 1.08 + (0.09 x 0.24)?

A. 5
B. 0.05
C. 50
D. 0.5

The correct answer is 50.

On the Answer Sheet:

A  B  C  D
2 3

The third set the ellipse with C printed inside it is shaded.

Your shading MUST be within the ellipse. Make your shading as DARK as possible.

For each question, ONLY ONE ellipse is to be shaded in each set of four ellipses.
Which one of the following numbers is eleven
million, two hundred and eleven thousand, one
hundred and eleven?
A. 112111111  B. 110211111
C. 112110111  D. 112011111

What is the value of \( \frac{1}{3} \) of \( \frac{2a^2 - k}{m} \) if \( a=4 \), \( k=2 \) and
\( m=5 \)?
A. 6  B. \( \frac{2}{5} \)  C. 2  D. 14

A box containing 12 books weighs 4.8 kg. If the box
when empty weighs 1.2 kg what is the weight in
grams of each book?
A. 30 g  B. 40 g  C. 300 g  D. 400 g

What is the value of \( 9.52 - 1.08 \) ?
A. 20  B. 2  C. 200  D. 0.2

The marked price of a jacket was sh. 500. After a
price increase the marked price of the jacket
became sh. 555. What was the percentage
increase?
A. 55%  B. 111%  C. 10%  D. 11%

Which of the following numbers goes up by 100?
A. 1003501, 1003601, 1003701, 1003801.
B. 1003501, 1003511, 1003611, 1004611.
C. 1003501, 1003601, 1003611, 1003712.
D. 1003501, 1004501, 1004401, 1004411.

A mason ladder was 17 m long. He placed it on a
wall which was 8 m in height. What was the
distance from the wall to the ladder?
A. 29  B. 15  C. 16  D. 8

The following bar graph shows the sales of a
manufacturing firm in the first half of last year.

What was the average production during the period?
A. 30  B. 30000  C. 36  D. 36000

9. In the triangle XYZ below \( YX=YZ \), angle \( XYZ=50^\circ \)
and angle \( WZX=30^\circ \) Calculate the size of angle
\( ZXY \)?

A. 50\(^\circ\)  B. 75\(^\circ\)  C. 35\(^\circ\)  D. 65\(^\circ\)

10. Kariuki bought 25 kg of tomatoes for sh. 400. He
discovered that 20\% of them were spoiled. How
much would he sell a kilogram of the remaining
tomatoes in order to make a profit of 15\%?
A. Sh. 23  B. Sh. 11.50  C. Sh. 4  D. Sh. 20

11. Express 721897 to three significant figures.
A. 222000  B. 722  C. 721000  D. 721

12. The clock alongside shows the time that Mutiso
reached Voi in the afternoon. He started his journey
two hundred and twenty five minutes before the
time shown. At what time did his journey begin?
A. 5.15 a.m.  B. 10.05 a.m.  C. 12.05 p.m.
D. 11.05 a.m.

13. What is the value of \( x \) in the equation.
\[ \frac{x + 4}{3} = \frac{x - 3}{2} \]
A. 21  B. 8  C. 23  D. 17

14. Three different bells are rung at intervals of 36 min,
40 min and 48 min. If they were rung together at
10.00 a.m. at what time would they be rung
again?
A. 10.00 a.m.  B. 10.00 p.m.  C. 9.00 a.m.
D. 10.20 p.m.

15. Mutinda had an average mark of 75 for four
examination papers. She took six papers
altogether. What should be her average mark in the
last two papers in order that she will have an
average of 80 for the whole examination?
A. 90  B. 50  C. 70  D. 180
In the triangle ABC for which AB = 6 cm, angle BAC = 60° and AC = 5 cm. Draw a perpendicular line from C to AB. Let this perpendicular line meet AB at M. What is the length of AM in cm?

In the figure below, WX is the diameter of the circle. Angle XWZ is 30° and angle YZX = 40°. What is the size of angle YXZ?

Mutua has x mangoes. John has 3 less than Mutua and Muli has 4 more than John. Altogether, they have 52 mangoes. How many mangoes does John and Mutua have altogether?

The figure below represents a cylindrical block of wood. Its diameter is 28 cm and its height 10 cm. A rectangular hole is cut through the block. If the hole measures 4 cm by 3 cm, find the volume of the remaining block of wood. \( \pi = \frac{22}{7} \).

How much did Anne pay for three kilograms of meat?

Find the value of x.

A crate measures 80 cm long, 56 cm wide and 28 cm high. Cylindrical tins measuring 20 cm high and 7 cm diameter are placed in the carton. What is the maximum number of tins which can fill the carton?

The mean of 6 numbers is 5.5. Five of these numbers are 2, 4, 8, 4 and 10. What is the median of the six numbers?

A lorry carries 12 crates of soda only. Each crate of soda contains 24 bottles. How many trips must this lorry make to transport 5040 bottles of soda in such crates?

The hire purchase terms of a gas cooker require a deposit of sh. 3400 and 8 equal monthly instalments of sh. 750. Its cash price is 15% less than the hire purchase price. What is its cash price?
What is the bearing of point P from point Q?

315° B. 135° C. 045° D. 225°

map whose scale is 1:5000 a square plot has a
of 4 cm. What is the size of this plot in ha?
B. 800 C. 400 D. 4000

is the sum of the next two numbers in the
7, 13, 21,
B. 52 C. 74 D. 43

the week a farmer collects an average of 8
es from every tree in his garden. In six weeks
the farmer collected 288 oranges. How many
es are there in his garden?
B. 6 C. 48 D. 12

son Pri. School has 720 children. The circle
shows the information on children preference.
many children like football more than P.E.?

volleyball

30°

120°

Netball

A. 80° B. 140° C. 240° D. 100°

if \( \frac{2}{3}(6a + 9b - 3c) + \frac{3}{4}(16a + 4b - 12c) \)

A. 9b - 9c B. 16a + 9b + 11c C. 9b - 11c D. 16a + 9b + 11c

ndo left town A at 9.00 a.m. and travelled
town B at an average speed of 70 km/hr. An
ater Mathu left town B for town A at the same
time. The distance between the two towns is 420
km. How far from town A was their meeting point?

5km B. 245 km C. 350 km D. 160km

l deposited sh. 7200 in a bank which gives
interest at the rate of 14% p.a. How much
interest did he collect at the end of two years and
months?

2268 B. sh. 9468 C. sh. 4932 D. sh. 5580

4. The graph shows Kioko's cycle journey from his
home to the market. He left home at 7.30 a.m. and
arrived at the market at 11.30 a.m.

What was the average speed of the journey?
A. \( \frac{3}{4} \) km/hr B. \( \frac{23}{8} \) km/hr
C. \( \frac{9}{6} \) km/hr D. \( \frac{11}{3} \) km/hr

Water is leaking at a rate of \( \frac{1}{2} \) litre every 3 minutes.

How many litres of water will be wasted from
10.40 to 4.16 pm.
A. 4 litres B. 16 litres C. 112 litres D. 12 litres

6. In an iron dish the ratio of weight of maize to that of
beans is 3:2. Mwani Mwangi made 15 kg of iron for a
party. If 1 kg of beans costs sh. 21, how much did
she spend on beans?
A. sh. 189 B. Sh. 315
C. sh. 105 D. sh. 126

6. Six men can dig a piece of land in 8 days. How long
will 4 men take to dig it?
A. 8 B. 12 C. 4 D. 12

38. Kamende has a rectangular field 25 m by 10 m. He
wants to build a fence around all the four sides of
his field. The fence consists of three strands of
barbed wire and posts 5 m apart as shown in the
diagram below.

If 1 m of the barbed wire costs sh. 8 and the posts
cost sh. 10 each, how much did Kamende spend
on fencing his field?
A. Sh. 140 B. Sh. 210
C. Sh. 1680 D. Sh. 1820
Find the area of this figure. Take $\pi = 3.14$. 

\[ \text{Area} = \frac{1}{2} \times \text{base} \times \text{height} \]

\[ \text{Area} = \frac{1}{2} \times 10 \times \text{height} \]

\[ \text{Height} = \frac{\text{Area}}{5} \]

The table below shows the cost of sending letters post up to a weight of 2 kg.

<table>
<thead>
<tr>
<th>Letter</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Shs.</td>
</tr>
<tr>
<td>Over 20 g</td>
<td>3</td>
</tr>
<tr>
<td>Over 50 g</td>
<td>3</td>
</tr>
<tr>
<td>Over 100 g</td>
<td>4</td>
</tr>
<tr>
<td>Over 250 g</td>
<td>6</td>
</tr>
<tr>
<td>Over 500 g</td>
<td>10</td>
</tr>
<tr>
<td>Over 1 kg</td>
<td>17</td>
</tr>
<tr>
<td>Over 2 kg</td>
<td>25</td>
</tr>
</tbody>
</table>

Mutua sent five letters. Three of them were 150g each. One weighed 980g. He paid sh. 46.50 for the postage. What is the possible weight of the 5th letter?

A. Not over 20 g
B. Not over 1 kg
C. Not over 2 kg

Construct a triangle $ABC = 70^\circ$. Draw a circle touching the three points $A$, $B$ and $C$. Measure the radius of the circle?

A. 1.7 cm
B. 2.5 cm
C. 3.3 cm
D. 4.2 cm

Mutuo deposited sh. 4000 in a bank which paid compound interest at the rate of 10% p.a. At the end of $\frac{1}{2}$ years, he withdrew all his money. How much money did he withdraw?

A. Sh. 4000
B. Sh. 620
C. Sh. 4620
D. Sh. 5000

What is the value of $\frac{1}{2} \times \frac{1}{4} \times \frac{2}{5}$?

A. $\frac{2}{20}$
B. $\frac{2}{10}$
C. $\frac{5}{8}$
D. $\frac{9}{28}$

The figure below is a trapezium. If the area of the figure is 192 cm$^2$. Calculate its height.

\[ \text{Height} = \frac{\text{Area}}{\text{Base} + \text{Top base}} \]

\[ \text{Height} = \frac{192}{14 + 18} \]

\[ \text{Height} = 6 \text{ cm} \]

Find the total number of tens in the product of 130 and 200.

A. 60000
B. 16500
C. 6600
D. 66000

The table shows distances in kilometres between four towns $A$, $B$, $C$ and $D$. What is the distance between $A$ to $D$ via $C$?

A. 202 km
B. 130 km
C. 220 km
D. 282 km

A water pipe is 21 m long and has a diameter of 10 cm. Find the surface area of the pipe.

\[ \text{Surface area} = \pi \times \text{diameter} \times \text{length} \]

\[ \text{Surface area} = 3.14 \times 10 \times 21 \]

\[ \text{Surface area} = 660 \text{ cm}^2 \]

Which pattern best fits the missing part?