

A STUDY OF THE RELATIONSHIP BETWEEN  
KENYAN SECONDARY SCHOOL PUPILS' NEED TO ACHIEVE  
AND THEIR PERFORMANCE IN SCHOOL SUBJECTS

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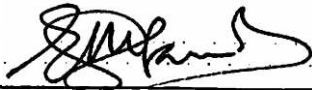
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This Thesis is my original work and has not been presented for a degree in any other University.



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A C K N O W L E D G E M E N T

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## ABSTRACT

One of the major concepts that is commonly used to explain human behaviour is motivation. In particular, achievement motivation studies have been conducted in an attempt to explain and interpret behaviour patterns of individuals who are motivated to achieve some degree of excellence.

The present study<sup>is</sup> aimed at establishing a relationship between achievement motivation and scholastic attainment. The study was conducted in two stages - a pilot stage followed by the main study or final phase.

The main purpose of the pilot study was three-fold:

- a) to refine the test instrument
- b) to improve the test administration procedures
- c) to improve the researcher's test - scoring ability.

During this stage a sample of 40 (forty) Form III boys from two Government secondary schools (20 from each school) were covered. A set of ten Thematic Apperception - type pictures were used as the test instrument and administered under a neutral test situation. Subjects were shown the pictures, one at a time for twenty seconds, and asked to write imaginative stories about them within four minutes using the following questions as a guide:

- a) what might have happened before the scene in the picture?
- b) what is happening now? what is being felt?
- c) what is likely to happen next? what will be the outcome?

The stories were then scored for achievement motivation using an n-Ach scoring system developed by Smith and Feld (1957) based on earlier systems produced by McClelland et al in the early 1950s. The scoring system followed in the present study appears in Appendix C. Subsequently five pictures were selected for use in the main study stage. The selection was based partly on the pictures' ability to evoke achievement imagery as well as on both their relative degree of ambiguity and the extent to which they were assumed to be familiar to the subjects.

The five pictures so selected were administered to a sample<sup>of</sup> 352 (three hundred and fifty two) from a total of eight government secondary schools, half of this number being boys' schools and the remaining half for girls. Further, two of the boys' schools and two of the girls' schools were relatively superior academically as compared with the remaining four schools as judged on the basis of the 1978 East African Certificate Examination results. The 'superior' schools were referred to as "good" schools while the relatively poor performing ones were termed "poor" schools.

The subjects covered in the final survey were given the same treatment as their counterparts covered in the pilot study except that the former had five pictures (instead of ten) which were in form of booklets while those used in the pilot study were drawn on manila sheets. However, the stories in the final survey were scored for n-Ach in the same way as for the pilot study. The n-Ach scores obtained were compared with the subjects' 1979 end-of-term average marks in Mathematics, Biology, Geography and English. The product-moment correlation coefficient method was used as a measure of relationship between achievement motivation and academic performance.

The data obtained revealed low, negative and insignificant correlation between n-Ach and scholastic attainment. However, the n-Ach scores were very low ranging from 0-24%. Further, the results showed that girls had a significantly higher achievement motivation level than boys and that there was no significant difference between the mean n-Ach score for girls from "poor" schools and that for girls from "good" schools. The findings also showed that pupils from "poor" schools as a whole were as achievement motivated as their counterparts from "good" schools. Similar equality among these two categories of schools was observed with respect to academic performance i.e the 1979 end-of-term marks in Mathematics, Biology, Geography and English were not significantly different among the "poor" and the "good" schools.

The study recommends that more research could be done covering all the various types of secondary schools in Kenya in an effort to obtain a more comprehensive picture about the relationship between achievement motivation and performance in school subjects. In this connection it would be advisable to use a common academic test for the subjects as well as raise the achievement motivation of subjects to a level that can yield substantial basis for comparison. Further, one may wish to include other variables related to achievement motivation such as self-concept and socio-economic background in an effort to obtain a more comprehensive picture of the relationship between the need to achieve and performance in school subjects.

## CHAPTER 1

### I N T R O D U C T I O N

#### 1.1 Purpose of the study

Each year thousands of Kenyan secondary school pupils sit for the East African Certificate Examination (EACE).<sup>1</sup> This examination is taken at the end of a four-year course which covers a variety of subjects such as English, Mathematics, Biology, Physics, Chemistry, Geography, History and Religious Education.

It has been observed that certain schools consistently do better than others at this examination despite the fact that all the schools follow common syllabuses for the various examination papers offered. What then could be the main factors which contribute to the differences in academic performance between schools? The following are some of the possible areas of investigation regarding performance difference indices in EACE in Kenyan secondary schools.

- (a) facilities (textbooks, laboratory, study rooms, educational films etc.)

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<sup>1</sup>Up to 1979, Form IV and Form VI students from Kenya and Uganda sat for the East African Certificate Examination and East African Advanced Certificate Examination respectively. These examinations were set by one body - The East African Examination Council. From 1980, Kenya will be setting its own Form IV and Form VI National Examinations following the demise of the East African Examination Council at the beginning of 1980.

- (b) teachers qualifications and teaching experience
- (c) socio-economic background of pupils and that of their teachers
- (d) intelligence of the pupils (i.e their mental ability)
- (e) achievement motivation of the pupils.

The purpose of this study was to establish the relationship between achievement motivation and scholastic attainment. In particular the investigation was aimed at finding out the relationship between scores obtained in school subjects by a sample of Kenyan Secondary boys and girls and their corresponding need to achieve (abbreviated as n-Ach) scores. The researcher sought to find out whether subjects who obtained relatively high academic scores also obtained high n-Ach scores or not; similarly the study wished to find out whether pupils scoring relatively low in school subjects also revealed low n-Ach tendencies or not.

The study of achievement motivation has continued to generate a great deal of interest particularly during the 1950s. In this connection Heckhausen observed in 1968 at a Nebraska symposium on motivation that "The Achievement Motive by McClelland, Atkinson, Clark and Lowell (1953) is responsible for setting a veritable

avalanche of investigations ---"<sup>2</sup> Since then considerable effort has been deployed in the search for solutions to various achievement - related problems. The present study is but one such an undertaking.

Further, this study hoped to stimulate interest for more research by interested parties in the world in general and in Kenya in particular.

## 1.2 Need for the Study

Research in achievement motivation and its relationship with academic performance has been carried out in a number of countries. In its book entitled "The Achievement Motive in High School Boys" published in 1969, the National Council of Educational Research and Training (NCERT)<sup>3</sup> of India opened their Introductory chapter by asking "What kind of ideas occupy the mind of a young high school boy?" Similarly, one might be curious to know what sort of aspirations engage the mind of the Kenyan high school boy or girl.

The investigator had, prior to undertaking the present research, not come across any work done in Kenya

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<sup>2</sup> Heinz Heckhausen, Achievement Motive Research: Current Problems and some contributions towards General Theory of Motivation, Nebraska Symposium on Motivation, ed. by Marshall R. Jones, Lincoln: University of Nebraska Press, 1968, p.103.

<sup>3</sup> National Council of Educational Research and Training, The Achievement Motive in High School Boys, New Delhi: Publication Unit, 9, Eastern Avenue, Maharani Bagh, 1969, pp.15 and 68.



to ascertain whether or not the need to achieve i.e the achievement motive, had any commonality with the level of performance in various school subjects. He therefore decided to study the relationship between n-Ach scores and academic achievement scores obtained by pupils from some of Kenya's Government Secondary Schools.

Further, the NCERT report found, inter alia, that some of the correlations between n-Ach and school marks were high and positive, while others were negative and still others neither positive nor negative i.e no relationship between n-Ach and academic performance. It was therefore a matter of curiosity regarding what the Kenyan situation had in stock about this issue. Hence the choice of the title for this research.

### 1.3 Statement of the Problem

The primary concern of the study was to compare n-Ach scores of some Kenyan Secondary School boys and girls with their corresponding school subject scores in an attempt to establish the relationship between the two types of scores. In studying this relationship, the investigator also wished to know whether pupils from certain schools (in Kenya) which repeatedly perform superiorly in EACE also score significantly higher in the n-Ach measure than their counterparts belonging to

the comparatively poor EACE performing category. Further, it was the intention of the researcher to find out how boys compared with girls in n-Ach and academic scores.

Thus the investigation was concerned with studying relationship between achievement motivation and scholastic performance regarding

- (a) boys from high EACE performing schools and their counterparts in comparatively poor EACE performing schools
- (b) girls from high EACE performing schools and those from poor EACE performing schools
- (c) boys and girls in general
- (d) boys and girls from high EACE performing schools and boys and girls from relatively poor EACE performing schools.

Thus the issue at hand was a study of the relationship between Kenyan secondary school pupils' need to achieve and their corresponding performance in various school subjects. The school subjects chosen for the study were English, Mathematics, Biology and Geography.

#### 1.4 Definition of Terms

At various sections of this thesis a number of terms are used so frequently that they warrant definition. It was the intention and hope of the investigator that by defining these terms those reading this

work would follow it through with better clarity.

The terms appearing in the research title are defined first followed by other terms frequently used in the body of the thesis. The terms in question together with their respective descriptions are as follows:

#### 1.4.1 Secondary School Pupils

The pupils used for the study (i.e the subjects) were boys and girls in their third year in Kenya Government secondary schools. In other words they were Form III pupils. In all ten schools were used in this study.

#### 1.4.2 Need to Achieve

This is the achievement motive. Achievement motivation means "the striving to increase or keep as high as possible one's own capabilities in all activities in which a standard of excellence is thought to apply and where the execution of such activities can therefore either succeed or fail."<sup>4</sup> Examples of achievement motivation include cases like one painting a picture with the aim of competing in a National Painting Festival; or, one studying hard to become a medical doctor.

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<sup>4</sup>Heinz Heckhausen, The Anatomy of Achievement Motivation, New York: Academic Press, 1967, p.4.

In the present study n-Ach scores were obtained and used as a measure of the level of the need to achieve. More details on n-Ach scores appear in 1.4.8 and 1.4.9 described below.

#### 1.4.3 School Subjects

These are the various types or departments of study in Kenyan secondary schools; such fields of study include History, English and Home Science. The actual school subjects used in this study were Mathematics, Biology, Geography and English. To distinguish these subjects from the pupils used in the study, the latter have been referred to as "subjects" while the former have been strictly referred to as "school subjects". Four school subjects were used in this study; these were Mathematics, Biology, English and Geography.

For each subject, all the end-of-term marks (in percentage form) for each of the four school subjects used in the study were averaged. The resulting score was used to represent the level of performance in that school subject for a given boy or girl.

#### 1.4.4 Relationship

The study wished to find out how n-Ach contrasts, corresponds or was connected to performance in school subjects i.e whether n-Ach was related to academic

performance and if so to what extent. The product-moment correlation coefficient method was used to measure the degree of relationship between the two variables, namely, academic performance and n-Ach."

#### 1.4.5 "Poor"/"Good" Schools

The subjects came from two types of schools - "poor" and "good". "Poor" schools here are those whose candidates do not normally perform particularly well in EACE. Similarly "good" schools are those whose candidates usually perform comparatively well in EACE. For research purposes the 1978 EACE results were used to select "poor" and "good" schools. Superior performance (characterising the good schools) was arbitrarily taken as being represented by minimum 80% pass in EACE between Division I and III; in other words a school was classified as "good" if its 1978 EACE candidates who obtained Division I, II and III together formed at least 80% of the total number of the 1978 EACE candidates for that school. On the other hand "poor" schools were chosen on the basis of a 40% or lower total pass between Division I and III in the 1978 EACE Examination.

#### 1.4.6 Neutral test situation

In test administration normally a definite set of circumstances obtains. This is the test situation or

environment. In the present study the subjects were not deliberately aroused motivationally prior to taking the achievement motivation test neither were they told that they needed not take the task they were going to be given seriously. The test situation was in between or neutral. This neutral situation is sometimes referred to as a 'state of no arousal'. Thus both achievement - oriented and relaxed situations were avoided. The intention for the investigation was to measure n-Ach in the pupils in a kind of 'potential state.'

#### 1.4.7 Test Instructions

After being introduced to the subjects by the class teacher in a given school, the researcher introduced the purpose of his presence in the school and hence in that particular classroom. This introduction of purpose led to the description of the task to be performed by the subjects including how it was to be performed. All these statements pertaining to the taking of the n-Ach test by the subjects constituted the test instructions appearing in Appendix B.

#### 1.4.8 Pictures

The tool used to obtain n-Ach scores was a set of TAT - type pictures. TAT means "Thematic Apperception Test" and is an example of projective techniques in which the subjects exhibit their experiences, aspirations etc.

without consciously knowing that they are doing so. In this study the subjects were required to write imaginative stories based on a number of pictures within a limited period of time per story. The pictures were deliberately drawn to manifest ambiguity and stand a reasonably good chance of evoking a variety of imageries and hence a variation in achievement motivation among the subjects.

During the pilot stage ten pictures were used from which five were subsequently chosen and used in the main or final study. The five pictures were compiled in form of a booklet and are the ones shown in Appendix A.

#### 1.4.9 n-Ach Scoring System

Smith and Feld (1957) developed a system for scoring imaginative stories, for achievement motivation. The system is known as Scoring System C. This system was based on earlier systems known as Scoring System A by McClelland, Clark, Roby and Atkinson (1949) and Scoring System B by Atkinson in (1950).

The three systems have been shown to yield very similar results only that Scoring System C has wider generality. This latest system was the one used when scoring for achievement motivation in the present study. For details of this system and its application in this study see Appendix C and E.

### 1.5 Hypotheses

During its study on achievement motivation among Indian high school boys in the late 1960s, the NCERT<sup>5</sup> found among other things that:

- (a) the negative correlations between n-Ach and school marks were low and insignificant
- (b) significant positive correlation between n-Ach and academic performance was shown only by high AS (Achievement Status) schools
- (c) there was no significant relationship between n-Achievement and school subject scores among Low AS, schools with Middle Low SES (Social Economic Status).

Studies by researchers like Krumboltz<sup>6</sup> point to little or no positive relationship between the two variables namely n-Ach and scholastic attainment. Further, Veroff (1950) and Wilcox (1951)<sup>7</sup> in separate studies on college women, came out with findings which appear to suggest that women score almost to their maximum

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<sup>5</sup>NCERT, op.cit., p.68-69 and p.71 Table 4.3

<sup>6</sup>John W. Atkinson and Joel O. Raynor, Motivation and Achievement, Washington D.C: V. H. Winston and Sons Inc., 1974 p.23.

<sup>7</sup>David C. McClelland, John W. Atkinson, Russel A. Clark and Edgar L. Lowell, The Achievement Motive, New York: Irvington Publishers Inc., 1976 pp.173-180.



under neutral conditions such that arousing their motivation later before testing them for achievement motivation adds very little if at all to the n-Ach score previously obtained. Other studies indicate that, appetite held constant, academically high achievers should also score higher in n-Ach measurement than those comparatively lower in the academic performance scale.<sup>8</sup>

In view of the above research findings along with other related findings the following hypotheses were cited and tested.

Hypothesis 1.5.1

There is significant correlation between n-Ach scores and scores in Mathematics.

Hypothesis 1.5.2

There is significant correlation between n-Ach scores and scores in Biology.

Hypothesis 1.5.3

There is significant correlation between n-Ach scores and scores in Geography

Hypothesis 1.5.4

There is significant correlation between n-Ach

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<sup>8</sup>Ibid., p.240-241

scores and scores in English.

These were the main hypotheses. However, the researcher included eight other hypotheses as additional hypotheses which although not directly linked to the title for the study are nevertheless related to it. These additional hypotheses appear as follows:

Hypothesis 1.5.5

There is no significant difference in n-Ach scores between boys and girls in general.

Hypothesis 1.5.6

There is no significant difference in n-Ach scores between pupils from poor schools and those from good schools.

Hypothesis 1.5.7

There is no significant difference in n-Ach scores between girls from poor schools and those from good schools.

Hypothesis 1.5.8

There is no significant difference in n-Ach scores between boys from poor schools and those from good schools.

Hypothesis 1.5.9

There is no significant difference in academic performance between boys and girls in general.

Hypothesis 1.6.0

There is significant difference in academic performance between pupils from poor schools and those from good schools.

Hypothesis 1.6.1

There is significant difference in academic performance between girls from poor schools and those from good schools.

Hypothesis 1.6.2

There is significant difference in academic performance between boys from poor schools and those from good schools.

1.7 Research Design

Among the most popular areas of research in motivation is that which is concerned with the need to achieve i.e achievement motivation. The present research focused mainly on the relationship between achievement motivation and academic performance among a sample of pupils from a number of secondary schools in Kenya.

The subjects were Form III boys and girls from ten Government schools. Two of these schools were used during a pilot study stage while the remaining eight schools were used in the final or main study.

n-Achievement was measured by a set of TAT - type pictures - ten in the pilot study from which five were selected and used in the final study. The main criterion for selection of the pictures was their ability to evoke achievement imagery; however, other additional criteria were used, namely, similarity between any two pictures, relevance of the picture to Kenyan situation, ambiguity of the picture and the extent to which the picture depicted a competition with a standard of excellence. The subjects were shown one picture at a time for about twenty seconds and allowed to write an imaginative story about that picture within about four minutes. The test administration was conducted under neutral situation. Subsequently the stories were scored for n-Ach using Scoring System C.

It was necessary to obtain school subject scores for comparison with the n-Ach scores thus obtained. From the eight 'main study schools' were obtained the 1979 end-of-term test marks for the various school subjects. The school subjects used in this study were Biology, English, Mathematics and Geography. The 1979 end-of-term test marks for these school subjects were averaged. In an attempt to

make these average scores equivalent, standardization was done. Thereafter the n-Ach scores were correlated with the standard scores for each school subject using the product-moment correlation coefficient method. The resulting value for each school subject represented the measure of relationship between n-Ach and school marks. In addition, a comparison of n-Ach means for various subject groups e.g boys versus girls, girls from "good" schools versus girls from "poor" schools etc., was done. Similarly school mark means for the same subject groups were calculated. In both cases the t-test was used to compare any set of two means.

Calculation of the correlation coefficients was necessary if a measure of n-Ach - Academic performance relationship was to be obtained. On the basis of the coefficients it was possible to indicate whether or not pupils scoring high/low in n-Ach also scored high/low in school marks; same thing applied to those subjects scoring low in n-Ach.

Likewise comparison of the means among various subject groups served as a basis of finding out inter alia whether

- (a) pupils from poor schools were as achievement motivated as their counterparts from good schools
- (b) sex was a significant factor or not regarding n-Achievement and scholastic attainment.

From the analysis of the results it was possible to make some recommendations for future research work on achievement motivation and its bearing on performance in school subjects.

#### 1.8 Limitations

The study was beset by a number of limitations notably the following:

- (a) absence of Kenyan standardized TAT pictures for testing n-Ach
- (b) possible unreliability of the school subject marks used
- (c) lack of considerable n-Ach test administration and scoring ability on the part of the researcher
- (d) possible response - inhibitory effect on subjects by the type of test used
- (e) not all school subjects were included in the study
- (f) the subjects were not matched for intelligence quotient (IQ), socio-economic background, school learning experiences and self-concept.

The absence of n-Ach measuring tools for use in Kenyan schools was a major limitation in this study. Although it is generally accepted that any TAT - type pictures which are relevant to the general experiential background of the subjects under study will do, it would have been more appropriate in this study to use a set

of n-Ach pictures standardized in Kenya. Nevertheless, the fact that the pictures used in the present study did tap achievement imagery was a testimony to the working ability of the tool.

Regarding the school marks used in the study, a question may be asked about their reliability. The investigator would have preferred to use scores obtained in a common examination such as the EACE. However, circumstances did not permit this to be the case.

Also the researcher was beset by the handicap of lacking extensive experience of administering and scoring n-Ach tests. However, help in these two aspects was sought from related literature as well as from the internal supervisors. The experience thus gained made the investigator feel confident enough to venture into the field of n-Ach measurement.

The unfamiliarity of the subjects to the type of test used was also considered as a possible limitation. The possible feeling of discomfort, distrust and of generally asking "why this test?" by the subjects may have influenced the content of the stories they wrote and hence affected the n-Ach scores obtained.

The four school subjects used in the study constituted less than half of the total number of school subjects offered in Kenyan secondary schools. Thus the total picture of the relationship between the n-Ach scores

obtained in this study with all school subjects taught in Kenyan secondary schools was lacking. This was due to the fact that all the subjects took the whole range of school subjects offered in the Kenyan secondary schools. It turned out that the four school subjects (English, Biology, Geography and Mathematics) were taken by most of the subjects. Nevertheless the inclusion of many more school subjects would have widened our understanding of the relationship between the n-Ach scores obtained and the corresponding school subject marks.

A further limitation to the study was the fact that the subjects were not a matched group as far as IQ, socio-economic background, school learning experiences and self concept was concerned. It would have been more appropriate to use pupils who were of approximately the same level regarding factors such as these. In this way one would be getting closer to measuring n-Ach as a 'pure' variable - more disentangled from various possible intervening variables. Lack of locally standardized measuring instruments, time and several other factors did not render the selection of a more homogeneous group of subjects to be made.

### 1.9 Organization of the Thesis

The research was about the relationship between n-Ach scores and scores in school subjects obtained by a sample of Kenyan secondary school boys and girls.



The thesis is organized in FIVE chapters. Chapter I is devoted to a consideration of seven elements, namely, purpose of study, need for the study, statement of the problem, definition of terms, hypotheses tested, research design and limitations of the study.

In Chapter II, a review of literature related to the research is done. This review goes back to work done from the mid 1930s to the 1970s. Among other things, the literature survey reveals that considerable interest and activity in the area of human motivation has occupied many hours of various scholars over the years (notably after 1950 to the present days). However, at the time of embarking on this study, no research had been done in Kenya to establish the relationship between achievement motivation and academic performance and hence the decision to undertake the present study.

Methodology of the research is treated in Chapter III. Here a description is made of the pilot and final (main) study, the subjects used, and the treatment given to the subjects during the Pilot and final study. Also an account of how n-Ach scores and school subject scores were obtained is given in this third chapter.

Once the relevant data has been obtained it needs to be presented, analysed and interpreted in an effort to test the hypotheses defined for the study. This has been done in Chapter IV. In this chapter, n-Ach

scores and academic scores are presented in tabular form. This data is then analysed using appropriate statistical techniques. Consequently an interpretation of the results is made.

The last chapter (Chapter V), focuses on possible conclusions, implications and recommendations for further research in the area of achievement motivation and its bearing on academic performance among Kenyan secondary school pupils.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

#### 2.1 Introduction

The study of human motivation is increasingly becoming an important problem for psychologists. Some psychologists believe that the more we understand man's ways of thinking, his values, attitudes, emotions and motives, the better we are able to predict his actions and in general live more harmoniously as one human tribe. The importance of human motivation to man's survival has been underscored by various scholars such as Hilgard<sup>1</sup> who in 1964 at a symposium on motivation in Nebraska observed that:

"there is no more important problem for psychology than that of human motivation. The perilous age in which we live would be less hazardous if man understood each other better and were better able to predict and avoid the circumstances under which they engage in dangerous and self-destroying actions."

It may be emphasized therefore, that more energy, time and money should be spent studying human motivation than has been hitherto the case. From a decision making point of view for example, the central problem in human motivation studies would be that of explaining why an individual in a given situation decides to choose one

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<sup>1</sup>Ernest R. Hilgard, The Motivational Relevance of Hypnosis, Nebraska Symposium on Motivation, ed. by David Levine, Lincoln: University of Nebraska Press, 1964, p.1.

alternative from an array of available choices. The knowledge obtained from such and other similar studies on human motivation would undoubtedly add to the existing motivation theory. The formulated theory must according to Atkinson and Raynor<sup>2</sup> answer the following questions coherently:

"What are the various components or determinants of the strength of an inclination or tendency to engage in a particular activity,"

How is conflict among mutually incompatible inclinations, or tendencies resolved and expressed in the various measurable aspects of an individual's activity?"

One area of human motivation which has since late 1940s generated a considerable amount of interest and enthusiasm among scholars is achievement motivation. The present study was concerned with relationship between achievement motivation and academic performance among a sample of Kenyan secondary school pupils.

## 2.2 Meaning of achievement motivation and performance

Achievement motivation is made up of two words, namely, "achieve" and "motive". The term "achieve" is defined in the Concise Oxford Dictionary (1976 edition) as follows:- "accomplish; acquire; reach (success, glory, one's objective); attain desired level of performance."

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<sup>2</sup>John W. Atkinson and Joel O. Raynor, Motivation and Achievement, Washington D.C.: V. H. Winston & Sons Inc., 1974, p.3.

Performance is referred to as "achievement" in psychological terms. Further, in common usage the term "achievement" is associated with some type of performance which is measurable. Strictly speaking however, the term "achievement" is used with reference to some standard of excellence. An example of a standard of excellence would be like studying hard to become a medical doctor or practising hard in athletics with the hope of obtaining an Olympics gold medal. However, scratching one's itching back to stop the irritation does not fall within the confines of achievement. Further, achievement involves some uncertainty regarding the outcome of a given accomplishment otherwise such an accomplishment would be regarded as simply being a habit or some inevitable activity. In the words of Maehr:<sup>3</sup>

"--- achievement may be appropriately defined as (1) a measurable change in behaviour (2) attributed to some person as a causal agent (3) that is or can be evaluated in terms of a standard of excellence and (4) that typically involves some uncertainty as to the outcome or quality of the accomplishment."

Among the activities associated with achievement are school, athletics and business enterprise. In school programmes standards of excellence may be expressed in various ways e.g pass - fail; good - bad; successful - unsuccessful; strong - weak etc. The subjects for the present study may be assumed to have aimed for excellence in that each subject in

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<sup>3</sup>Martin L. Maehr, Socio-cultural origins of Achievement, Belmont, California: Wadsworth Publishing Co. Inc., 1974, p.4.

taking the school end-of-term tests for 1979 used in the present study, was not only eager to improve upon previous performance by accomplishing the task as successfully as possible, but was also looking forward to improving his or her class position.

Whether the achievement concerns school, athletics or business enterprises, one factor is common to all; there ~~is~~ the disposition to strive for success or attainment of set goals. This element is commonly known as the motive. This term has been variously defined. McClelland et al<sup>4</sup> define motives as "tensional states which energize organisms until relief is obtained or equilibrium reached." Thus a student struggling to improve his class position or a team practising to win the inter-schools challenge cup would of necessity work hard as much as possible to achieve their goal. In this struggle they may be said to be in a state of tension which would only be relieved on successfully attaining their goal namely securing a better class position or winning the trophy.

Other definitions of the term "motive" have been offered. Their essence like that of McClelland et al

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<sup>4</sup>David C. McClelland, John W. Atkinson, Russel A. Clark and Edgar L. Lowell, The Achievement Motive, New York: Irvington Publishers Inc., 1976, p.7.

The tension state view regarding motives expressed by McClelland and his collaborators is amply supported by such workers as Freud (1900), Hull (1943), Miller and Donald (1941) Murray (1948), Mowrer (1950).

emphasize a motive as being a kind of anticipatory goal state. One such definition has been put forward by Marx and Tombaugh<sup>5</sup> who state that:

"--- the term has referred to presumed internal activating and directive forces --- involves two components (1) habit or associative factor and (2) a drive or activating (energizing) factor."

Another definition is that by Atkinson and Feather<sup>6</sup> who describe a motive as a "disposition to strive for a certain kind of satisfaction as a capacity for satisfaction in the attainment of certain classes of incentives." The need to achieve is the type of motive chosen in the present study.

Defined in terms of competing with a standard of excellence, the need to achieve or achievement motivation has been observed by Veroff (1966) as "an overall tendency to behave with respect to achievement goals."<sup>7</sup> Further, Atkinson J.W. (1966) notes that achievement motivation will manifest itself in an individual when he is aware that his performance will be judged either by himself or by other people. In the present study the subjects definitely knew that their work would be judged by others namely, by their respective school subject teachers

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<sup>5</sup> Melvin H. Marx and Tom N. Tombaugh, Motivation: Psychological principles and educational implications, Scranton: Chandler Publishing Company, 1967, pp.1 and 10.

<sup>6</sup> John W. Atkinson and Norman T. Feather, A theory of Achievement Motivation, New York: John Wiley & Sons Inc., 1966, p.6.

<sup>7</sup> Mebo K. Mwaniki, The relationship between self-concept and academic achievement in Kenya pupils, A Ph.D.thesis, 1973, p.6.

in the case of the end-of-term tests, and by the researcher in the case of the stories they wrote based on some pictures. It may therefore be assumed that under the two types of test situations that prevailed, the subjects planned to and did their best in these tests. Further, it may be taken for granted that the subjects had some goal to achieve e.g getting among the top-ten in class, improving on school subject average score for the year, impressing upon the researcher that they could write creative stories that are interesting, and so on. As Heckhausen<sup>8</sup> observes:

"Achievement motivation is directed toward certain end results that are produced by one's own ability: namely to achieve success and to avoid failure. Achievement motivation is therefore markedly goal - directed."

### 2.3 Origin of Achievement Motivation

Although MacCleod (1957) dates the current interest in motivational phenomena to Darwinian and Freudian times, research on human motivation is a relatively recent attraction in the field of behavioural sciences. This impression is shared by outstanding scholars such as Cofer and Appley (1964). The NCERT (1969)<sup>9</sup> noted that work on the achievement motive is of relatively

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<sup>8</sup>Heinz Heckhausen, The Anatomy of Achievement Motivation, New York: Academic Press, 1967, p.67.

<sup>9</sup>National Council of Educational Research and Training, The Achievement Motive in High School Boys, New Delhi: Publication Unit, 9, Eastern Avenue, Maharani Bagh, 1969, p.1.



recent origin. The problem of measuring motivation in human beings particularly that using experimental approach was for example not delved into till late 1940s. NCERT further cites the first major report of the experimental work on measurement of human motivation, and in particular the achievement motive, as having appeared in 1953. The man behind this product was McClelland D.C., along with his co-workers namely, Atkinson J.W., Clark R.A. and Lowell E.L.

Studies on achievement motivation have been on the increase since early 1950s e.g by McClelland (1955), reports of the Nebraska symposia on motivation (1953-1968), McClelland (1961), Heckhausen (1967), NCERT (1969) and many, others not mentioned here. The present study is, albeit in a small way, contributing to research findings in the same field.

#### 2.4 Measurement of Motivation

To obtain indices of motivational reaction tendencies projective techniques are normally used. Here the subjects exhibit their motivational inclinations by the way they react to the provided test situations. According to Wallerstein (1964)<sup>10</sup> projection is "the interpretation of situations and events by reading into them our own experience and feeling." In the present study

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<sup>10</sup>Boris Semeonoff, Projective Techniques, New York: John Wiley & Sons Inc., 1976, p.6.

the subjects were presented with relatively ambiguous pictures and asked to write imaginative stories about them. The individual pupil's background experience obviously was expected to furnish ideas for the stories. In this situation as well as in other projective test situations, the subjects usually reveal some of their inner-self without consciously realising that they are doing so. This special nature of projective techniques has been described by Sandven<sup>11</sup> in the following words:

"Characteristic of projective approach in its basic form is that the subject discloses his traits in an indirect way, through his reactions to stimuli that to the subject have no evident relation to questions in the mind of the investigator."

Sandven further points out that the main strength of projective techniques lies in the fact that the reaction tendencies of subjects as expressed in such forms as inkblots, statements or stories based on pictures are so formulated without the subjects knowing the psychological implications of these expressions. In the present study for example, the subjects were simply told that the researcher was interested in finding out the different types of creative stories they could write and that their co-operation was essential in accomplishing the researcher's task. All they knew was that they were required to make up imaginative stories but not that

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<sup>11</sup>Johs Sandven, Projectometry, Norway: The Norwegian Research Council for Science and the Humanities, 1975, p.13.

the content of their stories would be scored for achievement motivation. In projective tests individuals are left alone to react along the lines of the dictates of their own inclinations and fantasies.

Some shortcomings regarding projective techniques have however, been pointed out. Among the weaknesses frequently sounded are those associated with the difficulty of interpreting and scoring subjects' responses. Also it has been observed that scoring the responses takes a relatively considerable length of time as compared to some other types of tests e.g True-False; Multiple Choice or Matching tests.

Lindzey (1959)<sup>12</sup> proposed that projective techniques could be classified into five categories namely, Association (e.g responding to inkblots in the Rorschach Test), Construction (e.g making up a story from a picture), Completion (e.g completing sentences like: Education \_\_\_\_\_), Choice or Ordering (multiple choice responses to stimuli provided) and Expression (e.g as contained in drawing and role-playing). These categories were based on the types of responses furnished by subjects. Of particular interest to our present study is the construction category; the subject was directed to produce stories based on a set of pictures, one story per picture.

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<sup>12</sup>Fred N. Kerlinger, Foundations of Behavioural Research, 2nd ed; New York: Holt, Rinehart and Winston, Inc., 1976, pp. 515-520.

Kerlinger F. N. (1976)<sup>13</sup> has the impression that the study and measurement of achievement motivation by McClelland et al (1953) is perhaps the most highly developed use of the construction technique. The stimulus material in their studies was in part a series of TAT pictures. TAT, the short form for Thematic Apperception Test, is popularly known. Among the best known and commonly used forms of projective techniques in research work are the Rorschach Inkblot test and TAT. The present study itself used TAT-type pictures to measure n-Ach in some of the Kenyan secondary school pupils.

The TAT technique has its origin in Henry Murray (from Mid-1930s) who together with his collaborators at Harvard were able not only to define n-Ach, but also to obtain individual differences in motive strength by means of a questionnaire. TAT derives its name from the term "thema" which has connotations resembling the common word "theme" which is defined in the Concise Oxford Dictionary (1976 edition) as "subject on which one speaks, writes or thinks;" For example the theme for the Kenya's Freedom from Hunger Walk in May 1980 was: "Together we walk for a better tomorrow." The term "Apperception" also pertains to the description of TAT. This term refers to the process whereby perceptions are united and assimilated to ideas already possessed; the perceptions are conse-

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<sup>13</sup>Ibid.

quently comprehended and interpreted. In the process of thema apperception therefore, a subject recognizes in some way the content of the stimulus material such as pictures and consequently fleshes out from his internal repertoire of background experiences, reactions which are expressed in one way or another e.g in stories based on a set of pictures. Heckhausen (1967) maintains that present knowledge indicates that there is direct relationship between achievement motivation and TAT and that this relationship may be taken as an established fact.

Through TAT pictures, measurement for n-Achievement levels among students has been done. This indirect way of getting at the achievement motive of an individual is probably better than if a researcher asked his subjects to list their aspirations and achievement needs on a piece of paper. According to Semeonoff (1976), Murray suggests that if the pictures are presented as a test of imagination (which was the case for the present study) the subject's interest in addition to the need for approval due to exceptional performance engulf his attention as he expresses himself in e.g story-writing. Semeonoff<sup>14</sup> observes that the subject can get so involved that he momentarily "forgets his sensitive self and the necessity of defending it against the probings of the examiner and before he knows it, he has said things about

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<sup>14</sup>Semeonoff, op. cit., p.105

an invented character that apply to himself in things which he would have been reluctant to confess in response to a direct question." Thus the chief value of the TAT technique resides in its power to evoke fantasies. It was therefore hoped that the pictures selected following the pilot study would stimulate a variety of thoughts among the main study subjects whose expressions on paper in the form of stories would be indicative of their respective levels of achievement motivation.

According to McClelland et al (1976) TAT was chosen as an instrument to measure n-Ach due to the acceptance of the Freudian hypothesis that a good place to look for the effects of motivation is in fantasy. McClelland et al further point out that TAT had itself been developed by Morgan and Murray (1935) for just this purpose viz, for "bringing to light the strivings of the individual in imaginative stories suggested by the stimulating pictures."<sup>15</sup> Thus TAT as an n-Ach measure is based on fantasy. What is fantasy? A dictionary of psychology (1975 edition revised by Wallerstein) defines fantasy as "a form of creative imagination activity, where the images and trains of imagery are directed and controlled by the whim or pleasure of the moment." It is an image-creating engagement similar to daydream associations. The type of fantasy used in the present study was

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<sup>15</sup>McClelland, Atkinson, Clark and Lowell, op.cit., p. 107.

projective fantasy which has been defined by Klinger (1971) as "--- a subject's overt symbolic behaviour when he is confronted with a more or less standard, more or less ambiguous stimulus and is instructed to communicate to an examiner certain of his responses to it."<sup>16</sup> In the Rorschach test the stimuli would be ink-blots while in TAT they would be pictures. In his work on "The Achieving Society" (1961) McClelland mentions fantasy as having its roots in the early life of a child during its interaction with its parents. He observes that infantile images of parents, jealousies and various strivings of competitive nature appear to persist into adulthood. Such experiences are part of the repertoire of tendencies which were brought to bear on the kind of stories written by the subjects in the present research and hence in the respective n-Ach levels obtained.

Fantasy has been used repeatedly in achievement motivation studies mainly because it has been shown to be more easily influenced than other kinds of behaviour. According to McClelland:<sup>17</sup>

"In fantasy anything is at least symbolically possible - a person may rise to great heights or sink into great depths ---"

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<sup>16</sup>Eric Klinger, Structure and Functions of Fantasy, New York: John Wiley & Sons Inc., 1971 p.90.

<sup>17</sup>David C. McClelland, The Achieving Society, Princeton: N.J.D. Van Nostrand Co., 1961, p.40.

In using fantasy as the basis of TAT to obtain achievement motive levels McClelland (1961) observed that meaningful individual differences in n-Ach are detectable as early as at the age of five years. In the present study the subjects used were about 14-16 years old; as such it was assumed that it would be easier to obtain n-Ach scores from them than from five year-olds due to such obvious advantages in the former as better language ability and richer experiential background which would be brought into the interpretation of the pictures and hence in the composition of the stories from which n-Ach scores would be obtained.

#### 2.5 Some Factors Affecting n-Ach

Students enter secondary school with different strengths of the achievement motive. At school, various formal and informal learning experiences could affect these pupils in different ways. During the vacation additional stimuli impinge on their personality in certain ways. Such experiences contribute to different n-Ach scores among any given set of subjects. McClelland et al (1976) have shown that those subjects who obtain relatively low n-Ach scores include many cases of individuals with strong fear of failure. A number of factors are thought to influence the motivation and thought processes of a secondary school pupil or indeed any other subjects when taking an n-Ach test. These factors include:<sup>18</sup>

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<sup>18</sup> McClelland, Atkinson, Clark and Lowell, op.cit., p.194-195.



- (a) school experiences gained before confronting the content of the test
- (b) the test situation i.e whether relaxed, neutral or achievement-related (arousal state)
- (c) cues in the pictures themselves.

McClelland (1961)<sup>19</sup> cites several possible indirect influences of n-Ach levels; these include physique, family, economy and physical environment. This is in agreement with Maehr (1974) who noted, that a person brings his background experience (from family, peers, teachers, physique, physical environment economy etc.) to bear on the situation at hand e.g taking an n-Ach test. Hence one should expect a variety of experiences or meanings to be read by subjects into projection cues such as the TAT picture cues used in the present study. Maehr<sup>20</sup> emphasizes the possibility of such a diverse outcome of responses when he points out that:

"the situation that motivates someone like George may have the exact opposite effect on Sonny. Motivation is a joint interaction function of person and situation."

Despite the possible variation in responses to TAT pictures, it is probably encouraging to note that achievement motivation tests have been established as

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<sup>19</sup>David C. McClelland, op.cit., p.373.

<sup>20</sup>Maehr, op.cit., p.48.

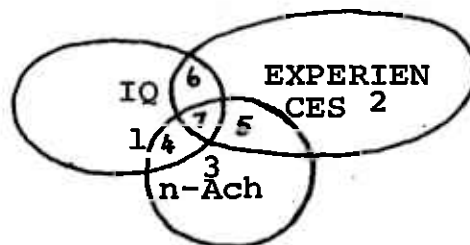
being generally capable of getting subjects responding.

As Heckhausen<sup>21</sup> puts it:

"--- psychological experimenters and testers have relied on no other motive to the extent which they have relied on achievement motivation to keep their subjects responding."

The effect of creativity and intelligence on n-Ach has also been studied. Marx and Tombaugh (1967)<sup>22</sup> observe that creative ideas may well be produced by children with IQ's which are less than brilliant. They point out that beyond IQ of about 120, measures of creativity and those of intelligence appear to be relatively independent. However, they also agree that subjects of superior intelligence tend to be more creative than those with relatively lower intellectual ability.

As mentioned above background experiences influence achievement projection. An interaction between IQ, n-Ach and background experience may thus be represented as follows



The portion represented by the numeral 7, indicates commonality, i.e common influence on n-Ach score by the

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<sup>21</sup>Heckhausen, op.cit., p.1.

<sup>22</sup>Marx and Tombaugh, op.cit., p.245

three variables namely IQ, background experiences and achievement motivation. It would have been better to obtain pupils with same IQ and similar background experiences then measure their respective achievement motives. However, this was not possible partly because there wasn't a standardized IQ test for Kenya at the time of undertaking this research. It was therefore not possible to select students with the same IQ. Further, time did not allow the selection of subjects with similar experiential backgrounds.

## 2.6 n-Ach and Success-failure Concept

Usually any normal person is primarily motivated to achieve success; this includes the secondary school boys and girls used for the present study. Success is sometimes associated with career choice. It has for example been shown that a student in whom the motive to achieve success is stronger than the motive to avoid failure ( $M_s > M_{A_f}$ ) is more motivated to achieve and hence receives a higher academic grade when this grade is related to his future career success than when it is not (Atkinson & Raynor 1974).<sup>23</sup> Success or failure may be said to be experienced when the task being tackled is of moderate difficulty - otherwise if it is too easy it presents no challenge; on the other hand, if it is too difficult it may be regarded as being beyond the subject's

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<sup>23</sup>Atkinson & Raynor, op.cit., p.173-180

ability. In this connection it should be appreciated that the subjects in particular and indeed all people in general, differ to some extent on what task is challenging, too easy or too difficult to them. In the case of the secondary school pupils used for this study, it was assumed that school teachers could set end-of-term tests which were of moderate difficulty so that the students had neither 'a walk-over' nor an impossible task; further, the n-Ach test pictures given were thought to be of reasonable familiarity to the students.

Pertaining to the concept of success is the idea of goal-setting. It is generally accepted that a success-motivated person considers the probability of success (Ps) rather than that of failure when setting a goal. This is in contrast to a failure - motivated individual who behaves in exactly the opposite way when setting goals for himself. Further, Heckhausen (1967; after Burnstein, Moulton and Liberty 1963) maintains that highly motivated persons usually attach more importance to excellence than to prestige, the reverse being the case for comparatively low motivated individuals. In the present study however, the investigator did not concern himself with these two aspects of goal-setting i.e probability of success/failure and excellence/prestige.

Atkinson (1974)<sup>24</sup> presents and uses theoretical

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<sup>24</sup>Ibid., p.13-14

mathematical assumptions concerning studies on achievement motivation. One of these formulations concerns the tendency to achieve success ( $T_s$ ) which is assumed to be a multiplicative function of three variables, namely,

- (i) motive to achieve success ( $M_s$ )
- (ii) strength of expectancy i.e subjective probability that performance of task will be followed by success ( $P_s$ ), and
- (iii) incentive value of success ( $I_s$ )

Thus  $T_s = M_s \times P_s \times I_s$ . Atkinson says that "the concept of motive here represents individual differences in liking for success in general."<sup>25</sup> Further the motive to avoid failure ( $M_{AF}$ ) has been related to probability of failure ( $P_f$ ), the tendency to avoid failure ( $T-f$ ) and the incentive value of failure ( $I_f$ ) as follows:  $M_{AF} \times P_f \times I_f = T-f$ .  $M_{AF}$  is thought of as a capacity for reacting with humiliation and shame after failing in a certain task. Studies in achievement-oriented behaviour are partly on the assumption that "all individuals have acquired a motive to achieve success ( $M_s$ ) and a motive to avoid failure ( $M_{AF}$ )."<sup>26</sup> It is thus assumed that all persons possess some capacity for interest in achievement and some capacity for anxiety about failure. Atkinson observes that both of these capacities are expressed in any given situation (such as the n-Ach testing situation) when the subject is aware that

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<sup>25</sup> Ibid., p.14

<sup>26</sup> Ibid., p.18

his performance in the task presented will be evaluated against some standard. In the case of the present study the subjects did not know that their stories would be graded for n-Achievement. However, it may be argued that since they were expected to write imaginative stories a possibility regarding capacity for wanting to show that they could write such stories does arise; similarly, it cannot be hurriedly concluded that none of the subjects experienced anxiety about failure. An experimental undertaking would be the ideal thing to do in order to establish whether or not the two capacities cited above obtain in a study such as the one being presently discussed in this thesis.

## 2.7 Conclusion

In a nutshell, the present study working within constraints mentioned in Chapter I and elsewhere in this thesis, set out to study the relationship between scores in school subjects and scores in achievement motivation. Literature survey available showed, inter alia, that there was a case for establishing the relationship between n-Ach and academic performance among secondary school pupils in Kenya and hence the choice of the topic for this thesis. Further, the literature review revealed that some studies showed positive relationship between n-Ach and scholastic attainment, while others came out with no such relationship. The investigator therefore

decided to find out how the Kenyan secondary school pupils stood with respect to their need to achieve success vis-a-vis their academic performance.

## CHAPTER III

### METHOD

#### 3.1 Introduction

The research was conducted in two stages, namely an initial or Pilot stage and the final or main study phase. The purpose of the pilot study was to prepare for the main study by:

- (i) determining appropriate timing for the n-Ach test
- (ii) obtaining appropriate style and content of the test instructions
- (iii) selecting fewer (five to be exact) TAT - type pictures
- (iv) gaining more practice in scoring imaginative stories for n-Ach.

In each of the two stages, subjects were chosen and an n-Ach test comprising a set of TAT type pictures administered to them. The subjects wrote stories based on these pictures under limited time conditions. The stories were then scored for achievement motivation. The n-Ach scores obtained from the pilot stage were used to help select five out of the ten pictures for use in the final study; in the case of the main study stage the n-Ach scores obtained were compared with academic scores of the subjects in order to establish the existing relationship between achievement motivation and scholastic performance among these subjects i.e



the secondary school pupils used for the study.

Form III pupils were used in the present study. The decision to use pupils from this class was arrived at on the basis of considerations about age, language ability, time of year and pictorial experience. Use of primary school pupils was discarded on the assumption that these pupils were considered too young to have developed sufficient schema and experiential background to cope with the demands of the task. Further, their use of English in expressing their ideas in story form was considered to be not only a limitation to them but also capable of presenting some problems when it came to scoring these stories for achievement motivation. Form I (secondary year I) pupils having just left primary schools were considered not reasonably different from primary school pupils and were eliminated on similar grounds as for the primary school children. Probably Form IV (secondary year IV) students might have been better than either Form II or III students on the account of mental maturity, background experiences and clearer career aspirations etc. Unfortunately the Form IVs were busy either preparing for or actually taking the EACE tests during the time the present research was being conducted and so could not be involved. This left Form II and III students. The Form IIIs were preferred to Form IIs on the score that they being closer to Form IV academically and generally being a little older than Form IIs they may be better placed, even if to a

small extent than Form II students in taking the n-Ach test due to a presumed upper hand regarding experiential background and future aspirations.

### 3.2 Sample

#### (i) Pilot Study

Two Government secondary schools were chosen on the basis of the 1978 EACE results. One of the schools was a "good" one while the other fell under the category of "poor". A "good" school was one which obtained 80% pass or more between Division I and III in the 1978 EACE. On the other hand the "poor" school category was the one with a maximum of 40% pass between Division I and III in the same examination. The two percentages were arbitrarily fixed by the researcher. Further, the two schools so chosen were labelled as Q and R for the "good" and the "poor" one respectively.

A total of twenty Form III boys were randomly selected from each school. The random selection was done as follows: In each school a Form III class was made available to the investigator. Twenty pieces of paper were numbered (i.e from 1 to 20) folded and placed in a chalkbox. In this box was placed an additional number of blank, folded pieces of paper such that the total number of pieces of paper equalled the number of pupils in the class in question. The box was then

shaken several times and passed to the pupils for them to pick one piece of paper each. Consequently the sample of 20 pupils was selected and used for the pilot study. This sample appears in Table 1 below.

TABLE 3.1 SHOWING  
SAMPLE FOR THE PILOT STUDY

SCHOOL LABEL	SCHOOL CATEGORY	NO. OF BOYS	NO. OF GIRLS
Q	"good"	20	-
R	"poor"	20	-
TOTAL		40	0

For more details about the two schools see Appendix J.

(ii) Main Study

A total of eight Government secondary schools were chosen on similar basis as for the pilot study. Half of these schools were "poor" and the other half "good". Further, in each of the "poor" and "good" categories two schools were for girls and two for boys.

Prior to visiting each school to conduct the research, letters were sent out to all the eight schools requesting a number of things from the headmasters/headmistresses; among these requests was making a Form III class of forty

pupils from each school available to the researcher. In practice however, the classes turned out to have either somewhat more or fewer pupils than forty. Unlike in the pilot stage no random selection of subjects was carried out. Thus the Form III pupils made available to the researcher by each school headmaster or head/mistress were all used in the study as it seemed to be administratively inconvenient to send away extra pupils above 40 or to ask for an additional number of pupils to make the number of pupils come up to 40 in the cases where fewer than 40 subjects were placed at the disposal of the investigator. Altogether 352 (three hundred and fifty two) pupils were tested for n-Ach from the eight schools; however, the figure appearing in Table 3.2 is 303 (three hundred and three) due to the following reasons:

1. some pupils' names did not appear in the class lists containing the end-of-term marks for 1979 sent to the researcher from the respective schools. Such subjects' n-Ach scores therefore were discarded in data analysis.
2. some pupils' did not have the end-of-term marks for all the four school subjects (i.e English, Geography, Mathematics, Biology) used for the study recorded against their names. The n-Ach scores for such subjects were not included in the data that was analysed.

The table below shows the number of subjects from the eight schools.

TABLE 3.2 SHOWING  
SAMPLE FOR THE MAIN STUDY

SCHOOL CODE	SCHOOL CATEGORY	NO. OF BOYS	NO. OF GIRLS
S	good	41	-
T	good	-	42
U	good	32	-
V	good	-	30
W	poor	39	-
X	poor	-	37
Y	poor	-	39
Z	poor	42	-
TOTAL		154	148

### 3.3 Instrumentation

In their discussion on the measuring instrument McClelland et al (1953) noted that there is no one best

way of measuring achievement motivation but that it is really a question of measuring it under different test situations using a variety of ways. The n-Ach scores so obtained are then used to interpret and perhaps predict behaviour under such conditions.

The type of technique used to measure n-Ach in the present study was a series of TAT type pictures which were ten in the pilot study from which were selected five for the main study. For the pilot study the pictures were drawn on manila sheets of paper, one picture per sheet. During the trial or pilot stage these sheets were found to be not only cumbersome to use but also easily torn or crumpled. Consequently the pictures used in the final stage were printed in form of a booklet. Here the pictures were numbered 1 to 5 (See Appendix A). There was ample space for writing a story on each picture before going to the next picture.

The current standard TAT technique comprises of twenty picture cards. Over the years it has been fashionable and practicable to use fewer than this number to assess the achievement motive due to the impression and observation that 20 is a bit too many for a single testing occasion. This point was supported by similar observations during the pilot stage for the present study. Semeonoff<sup>1</sup> observes that:

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<sup>1</sup>Boris Semeonoff, Projective Techniques, New York: John Wiley & Sons Inc., 1976, p. 107.

"Murray concedes that in certain circumstances it is permissible - possibly even advisable to use less than all the 20---"

Heckhausen (1967) himself mentions that the use of four to six pictures is common. NCERT<sup>2</sup> during its study of Indian high school boys' achievement motive used six pictures in their final survey.

### 3.3.1 Picture Selection

The ten pictures used in the pilot study are listed below.<sup>3</sup>

<u>PICTURE CODE</u>	<u>PICTURE CUE</u>
A	Doctor with patient
B	Girl writing
C	Man digging
D	Boy painting
E	Pupils in athletics competition
F	Boys practising football playing
G	Mechanic at work
H	Youngster learning to play drums
I	Furniture making
J	Dress-making

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<sup>2</sup>National Council of Educational Research and Training. The Achievement Motive in high school boys, New Delhi: Publication Unit, 9, Eastern Avenue, Maharani Bagh, 1969.

<sup>3</sup>Picture cues were the meanings read into the pictures by the investigator. These cues were not used as the standard for marking the stories.

From these ten pictures, five were selected for use in the main or final study. The criteria used to select the five pictures were similar to those used by NCERT<sup>4</sup> to select their six pictures. The major guiding thoughts used to select the pictures in the present research were that the pictures should:

- (i) depict situations that were familiar to the subjects irrespective of their individual socio-economic backgrounds
- (ii) be capable of eliciting achievement motivation imagery
- (iii) include as far as possible characters resembling high school pupils age group
- (iv) be fairly ambiguous so as to discourage outright description by the subjects when composing their stories.

The actual picture selection process was as follows:

1. The stories written during the pilot study stage were scored for n-Ach using scoring system C. This system is described more fully under the rubric "Story Scoring Procedure" in this chapter.
2. All the scores for each subject were added
3. The total n-Ach score for each of the subjects in the upper 27% of the whole pilot sample was obtained. Similarly the total n-Ach score for each of the subjects with-

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<sup>4</sup>NCERT, op.cit., p.9.





b) Lower 27% (11 subjects)

SUBJECT'S NO	n - Ach S C O R E S											TOTAL n-Ach SCORE
	2	4	7	19	24	30	36	37	16	18	26	
PICTURE												
A	0	0	0	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	1	0	1
D	0	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0	1	1
F	0	0	0	0	0	0	0	0	0	0	0	0
G	0	0	0	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	0	0	0	0
I	0	0	0	0	0	0	0	0	1	0	0	1
J	0	0	0	0	0	0	0	0	0	0	0	0

Considering the n-Ach total scores for each picture in both the upper and lower 27%, E, F, I, G and C should have been the 5 pictures that were selected for the final stage. However, only F, I and C were chosen G and E were dropped. G picture was discarded on the grounds that it was similar to I in the first place and that the former scored fewer points than I. E was dropped on the ground that in this athletics competition only the final result is shown i.e.

no instrumental activity for achieving goal is evident prior to the actual running itself. Thus two more pictures were needed to make up the required number (five).. A look at n-Ach totals revealed that Band H would be picked. However, A was chosen instead of H on the investigator's impression that in Kenya the teaching of drum playing is a relatively rarer experience for most high school pupils than their experience of seeing patients being attended to by a doctor or some other medical person. Thus using both the n-Ach total scores for each picture as well as some subjective judgement biased to the selection criteria mentioned earlier, the five pictures A, B, C and F were selected for and used in the main study stage. On selection the five pictures were compiled in form of a booklet and numbered 1, 2, 3, 4, 5 respectively. These five pictures are the ones appearing in Appendix A.

In addition to selecting the five pictures, the timing for the test and the test instructions used in the pilot study were reviewed. The timing was found appropriate for use in the final study and was therefore left unaltered; this was twenty seconds for looking at each picture followed by four minutes for writing a story about each picture. The test instructions were however, restated; the instructions used in the pilot study appear in Appendix B (i) while those used in the main (final) study are contained in Appendix B (ii).

### 3.3.2 Some Limitations of the Instrument

A number of limitations regarding the TAT instrument as a measure for the achievement motive have been sounded.<sup>5</sup> These limitations which include the following also apply to the tool used in the present study:

1. The n-Ach score obtained is a composite one - it contains both the motivation to succeed as well as the motivation to avoid failure
2. The scoring criteria possibly do not discriminate between affective responses concerned with the ability to get ahead, from those affective responses which suggest other emotional reactions like annoyance and hostility
3. Scores based on such procedures as in TAT seem unlikely to be pure measures of motivation - personality traits as well as expectations elicited by the testing situation are suggested as possibly being involved in the responses given by the subjects (McClelland 1958)

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<sup>5</sup>See the following references

- (i) David McClelland, John W. Atkinson, Russell A. Clark and Edgar L. Lowell, The Achievement Motive, New York: Irvington Publishers Inc., 1976, pp.215-216.
- (ii) C.N. Cofer and M.H. Appley, Motivation: Theory and Research, New York: John Wiley & Sons Inc., 1964, p. 800.
- (iii) Eric Klinger, Structure and Functions of Fantasy New York: John Wiley & Sons Inc., 1971, pp.312-315.

4. TAT scores according to Klinger (1971) provide direct evidence concerning enduring motivational dispositions in the sense that they are not strong enough to be relied upon in the prediction of an individual's behaviour at a later date in his life time. The scores obtained at a particular time reflect current concerns which are not necessarily manifested at a later time.

Through the recognition in full of the various limitations of the instrument improvements can be made that would be yet a step farther in increasing the exactitude with which to evaluate human achievement motivation. Klinger (1971)<sup>6</sup> has the following contribution to make in this connection:-

"The clinical use of the TAT can perhaps be improved for diagnostic purposes if the limitations of the instrument are fully recognized. Systems might be developed for taking account of the interactions between picture cues and current concerns instead of simply adding up scores across heterogeneous pictures, and the picture sets might themselves be improved so as to sharpen the quest for particular kinds of information."

### 3.3.3 In Support of the Instrument

McClelland et al (1953) validated the n-Ach scoring system following intensive and extensive studies which actively started in the late 1940s. Also they showed that the reliability of scoring could be as high as .90 or more depending on the scorer.<sup>7</sup>

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<sup>6</sup>Klinger, op.cit., p.314.

<sup>7</sup>McClelland et al, op.cit., p.110.

Further, the TAT technique has a unique way of detecting motives from subjects. Heckhausen<sup>8</sup> points out that:

"the strategy of the TAT method of content analysis employs three tactics in order to enter the hitherto impregnable fortress of differences in motivation potential:-

- (i) the subject remains unaware of the true aim of the test
- (ii) the TAT method allows a wide latitude within which person - environment relationships can be apperceived and elaborated in a most individual manner
- (iii) the inner motives of experience and behaviour are tapped in the fantasy stories ---"

To be able to write the creative stories, the subjects have to draw out ideas from their repertoire of experiences and relate them to the test requirements.

### 3.4 Treatment

There are six or so conditions under which TAT type pictures have been administered by various researchers; only three will be described here.<sup>9</sup> These are the relaxed, neutral (or normal) and achievement - oriented test conditions. In the relaxed condition, the subjects are given the impression that they don't have to take the

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<sup>8</sup>Heinz Heckhausen, The Anatomy of Achievement Motivation, New York: Academic Press, 1967, p.9.

<sup>9</sup>McClelland et al op.cit., pp.100-104.

TAT test seriously. In the neutral condition, which is the one used for the present study, the purpose of the TAT task is introduced in such a way that the subjects get the impression that the task is of importance and that their co-operation is needed. However, no extensive attempts are made to raise their motivation deliberately in such a way as to want to aim at competitive standards of excellence. The achievement related situation is characterised by intentional introduction of achievement cues. In the present study it was decided to assess the achievement motivation levels at a state of neutral arousal. The relaxed condition was left out on the basis of the assumption that the subjects might consider the test as being of little or no importance thereby greatly affecting the number of n-Ach containing stories that they would write. The achievement oriented test situation on the other hand was discarded on the basis of the apprehension that the subjects might not be that co-operative if deliberately given the impression that they would be competing in the story writing exercise (especially that the test was from a stranger whose intentions may have been deemed suspicious by them). Hence the neutral condition was decided upon as the testing situation for the study.

The 'standard' McClelland's<sup>10</sup> n-Ach test administration procedure involves mainly three stages:

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<sup>10</sup> Ibid

1. setting the test condition
2. giving a twelve - minute anagrams test in which the subjects are required to list as many words as possible from the word GENERATION within 12 minutes
3. TAT is administered under the prescribed test condition following standard procedure. In the case of ego - involved (i.e achievement - oriented) test condition, a second experimenter is used to administer the TAT. This is done to avoid creating a feeling among the subjects as they write the stories that they are not appearing intelligent or operating under a level of excellence.

The TAT administration procedure may be summarised as follows:

1. The purpose of the TAT is introduced in a manner that indicates the test condition desired
2. The questions meant to guide the subjects as they write their stories are introduced. These are as follows:-

What is happening now?

What is being done or felt?

What led to the situation shown in the picture?

What will happen next? What will be the outcome?

3. Subjects are invited to take the test taking about twenty seconds to look at each picture



then write a story about this picture within four to five minutes. In the present study, the timing used was twenty seconds and four minutes respectively.

It has been pointed out that responses depend very much on the test administration and the test condition. According to Klinger (1971)<sup>11</sup> "There is by now ample evidence (Maling 1960, 1966; Rosenthal 1966) that the kinds of responses subjects make to projective-test stimuli depend significantly on the examiner or experimenter and on the testing situation. Subjects incorporate the cues provided by the examiner of the kind of behaviour expected of them, and to a significant extent of their behaviour accordingly. Warm permissive examiners, for instance induce subjects to respond more openly." David Oliensis (1965) is also in agreement.

In the present study, the researcher was the sole administrator of the n-Ach test. Upon entering the class availed to him by the Headmaster or Headmistress in question, the researcher was first introduced to the class by one of the school teachers (the form master in most cases) who then left immediately leaving the investigator alone with the pupils. The purpose of the visit and n-Ach test were introduced in such a way that a neutral testing climate was created. The word 'test' was actually not mentioned (See Appendix B for full

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<sup>11</sup>Klinger, op.cit., p.340.

details of the instructions). These instructions were stated by the researcher and the guiding questions written on the chalkboard in the case of the Pilot study; in the main study the subjects were referred to the page in the booklet containing these questions. The pupils were allowed to see each picture for about 20 (twenty) seconds and thereafter write a story about each picture within about 4 (four) minutes. This timing applied for both pilot and final study. Ten pictures were used in the former stage from which five were selected and used in the later stage. During the pilot stage each picture was pinned on a portable cardboard while for the main study the five pictures were in a booklet. In each case the students were required to write only one story per picture taking one picture at a time. The stories were written on foolscap paper in the initial phase. As for the final stage, subjects were instructed to write their stories in the appropriate space provided in the test booklets.

In writing up the stories the students were not merely to describe the pictures but were expected to create stories about the pictures. These stories were to cover their lifespan in the sense that they were to include ideas about the past, present and future. After they wrote their first story, the researcher reminded them of the guiding questions and the fact that they were required to make up imaginative stories about

each picture but not merely describe it. Thereafter the subjects were left on their own; the investigator did not want to keep interrupting them although Semeonoff (1976) observes that the tester is the one to decide whether and to what extent to intervene. True, the experimenter may deem it fit to take out some time in between writing of the stories to comment on such aspects as timing, inclusion of past, present and future in the stories etc. However, he or she should be careful not to influence the subjects' expression of their respective n-Achievement levels. The tester should for example not mention statements that could be included in the stories.

### 3.5 Story Scoring Procedure

When scoring the stories of the present study, each story was first placed into any one of the following three main categories depending on its characteristics:

(i) Achievement Imagery (AI) - a story falls in this category when it contains elements of either competition with some standard of excellence (e.g trying to do better than others); or some unique accomplishment (e.g some invention or outstanding discovery); or bears evidence of long term involvement to attain a particular goal (e.g. working hard to become a doctor or a successful businessman).

The following is an example of an AI story written by subject No. 41 in the present study. The story is about picture No.2.

"School life is very interesting once you are used to it. Eliza found this only too short a time ago and here she was now trying to show how good it is for her it had been while she was at school. She used to write stories and she was used to being very happy when doing so. Today she was writing a novel which she was sure was to win the 1st prize in the competition of Novel-writing by school girls".

She had been writing it too hard but at last she found it hard to tell anybody about it because it was last among the good ones."

(ii) Doubtful Achievement Imagery or Task-related Imagery TI

When the story has some reference to achievement imagery but fails to meet any one of the three criteria named above it is classified under TI. Here is an illustrative story written about picture No. 4 by subject No. 285.

"Mr. Mwangi had a very big family but with the earning he had he could not manage to afford everything his family wanted. So one day he thought very much what other business he could start so that his family could stay well.

He thought and thought, at last he thought he could be a carpenter and with this he could earn alot. So he started making tables, chairs, capboards and many things afterwards he could see these things and get alot of money to manage his home well."

(iii) Unrelated Imagery (UI)

A story belongs to this category when it has no reference to achievement goals at all.

Once again an illustrative story is provided from the present study. It was written about picture No.1 by subject No. 76.

"For that solid day, Sarah had not been feeling well, in the classmate she seemed to be listening and yet her mind was far away from what the teacher was preaching.

At long last, the morning lessons were over, she went for lunch in her usual place whereby her main food was usually one plate of ugali. Because her home was abit far from school.

She didn't return back to the class during the afternoon lessons. Immediately she reached home, she went to sleep direct.

Without being told, her mother went for the doctor, who took care of her."

According to scoring system C, an AI story automatically scores 1 (one) point, a TI story zero while an UI story scores -1 (minus one). Only those stories which fall under the AI category are scored further for ten sub-categories. Each sub-category if expressed in a story, earns one mark regardless of how many times it is repeated in the story. The ten sub-categories are the ones really constituting a measure of n-Ach.<sup>12</sup> They are as follows:-

1. N - this letter stands for the Need sub-category. An example of an expressed need could be: He is *determined* to get the 1st prize.
  
2. I - this stands for 'Instrumental Activity.' A subject may express this element in various ways. Here again is an example: She has *worked actively*

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<sup>12</sup>NCERT op.cit., p.37.

throughout the week so as to finish the painting in time for the competition.

3.  $Ga^+$  - when a subject portrays himself or herself as anticipating a successful attainment of a goal, the  $Ga^+$  subcategory applies. Example: *She has a feeling that she can make it through University this year.*
4.  $Ga^-$  - this represents negative goal anticipation such as anticipating frustration or failure. An example of a statement describing  $Ga^-$  is as follows: *The farmer stands wondering if he will succeed in his current farm experiments.*
5. Bp - sometimes one may wish to achieve a certain objective but due to personal obstacles or blocks (Bp) he finds it difficult. An expression of personal blocks may include lack of confidence, inability to make decisions or responsibility for some failure  

Example: He would like to become a successful businessman but he *does not listen to advice* given by his instructor.
6. Bw - when obstacles hinder or frustrate the attainment of a desired goal (Bw) is scored. It refers to any environmental blocks to be overcome before one achieves the goal(s)

Example: She would like to continue with secondary education but her parents are unable to pay for her school fees.

7. Nup - this stands for "Nurturant Press."  
*It is also written as H (meaning help).*  
This sub-category is characterized by an expression of sympathy or help required by someone so as to facilitate goal attainment
- Example: The experienced coach is *advising his team on how to tackle their opponents* so as to end up winning the International Challenge Cup.
8. G<sup>+</sup> - this symbol represents positive emotion expressions.  
A statement describing this sub-category is as follows: The doctor says that he *will be very happy* if the patient he has been treating for the past two months ends up feeling well.
9. G<sup>-</sup> - this is the opposite of G<sup>+</sup>. It stands for the negative affect characteristics. Here is a statement illustrating this sub-category: *She felt very disappointed* when the essay she had worked so hard on did not win any prize at the National Creative Arts Festival.
10. Ach Th - this is an abbreviation for 'Achievement Thema. When the achievement imagery in the story is elaborated in such a way as to become conspicuously central to the story, Ach Th is said



to be portrayed. In this case there must be a major counter plot.

An example of a story that would be scored for Ach Th is cited below.<sup>13</sup>

"Father and son are having a serious talk. They are going bankruptcy because of a railroad strike. They are trying to remedy the situation by borrowing money from bankers. They do get some money but not as much as they need to get the business running successfully again. The business continues but does not make money until ten years later."

Appendix D shows a sample of illustrative stories which were further scored as shown under Appendix E. It is worth noting here that since the ten sub-categories are the ones which really constitute a measure of the achievement motive, stories were not scored for UI, TI or AI. Only the sub-categories were scored for those stories having achievement imagery (See Appendix C).

After all the stories were scored, the scores for the pilot study were used to help select the five pictures for the final study as described earlier. The scores for the main study were compared with academic scores for these same subjects to establish the relationship between the need to achieve (n-Ach) or achievement motivation, and academic performance. This comparison is described in the next chapter. The scores obtained in both pilot and main study stage were taken as representing relative

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<sup>13</sup> McClelland et al op.cit., pp. 137-138

strength in the need to achieve among the sample of Kenyan secondary school boys and girls chosen for the study.

## CHAPTER IV

### PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

#### 4.1 Introduction

In this chapter the n-Ach scores obtained from the stories written by the subjects covered in the final survey have been presented. Against each pupil's n-Ach score are recorded the respective scores in Mathematics, Biology, Geography and English. In addition, the subjects have been arranged into percentile rank groups for additional use in data analysis.

The analysis covers several aspects, namely, the correlation between n-Ach scores and school subject scores; inter-school subject correlation, comparison between the various percentile rank groups, comparison between pupils from 'good' schools with those from 'poor' schools as a whole as well as among the sexes (boys Vs boys, girls Vs girls). It is from the results of these analyses that a corresponding interpretation has been made. Each of the three parts of this chapter is discussed separately.

#### 4.2 Presentation of Data

The data presented here concerns the main or final study only. As was stated earlier, the n-Ach scores obtained in the pilot study were used in the selection of the pictures for use in the main study. The n-Ach scores presented here cover three hundred secondary school

pupils from eight Government schools. Against the n-Ach score for each subject are academic scores for the four school subjects mentioned above. These four school subjects were taught in all the schools chosen for this study and taken by most subjects; the other school subjects were either not offered at all in some of these research-chosen schools or were not taken by most of the pupils used as subjects for the research and were therefore discarded.

The academic scores were the end-of-term scores for 1979 from the eight "research schools." For each subject average raw scores for Mathematics, Biology, Geography and English were calculated; from these average scores the corresponding standard scores were calculated and used in the data analysis stage. The two types of scores (i.e raw and standard) are shown in Table 4.1. As the subjects sat for different end-of-term tests, it was necessary to at least standardize the raw scores thereby rendering them equivalent and hence comparable. It would have been better to have the subjects take common scholastic examinations thereby excluding differences in content, style, time etc., inevitably in the school tests given by the eight "research schools" on their own. However, the research schedule did not allow for construction of tests for the various school subjects by the investigator. Therefore the researcher decided to use the end-of-term tests offered by the schools them-

selves during 1979.

The following formula was used to convert raw scores into standard scores:

$$\frac{X - \bar{X}}{\sigma_x} = \frac{Y - \bar{Y}}{\sigma_y}$$

where

X = the desired standard score

$\bar{X}$  = constant mean (taken as 50)<sup>1</sup>

$\sigma_x$  = standard deviation constant (taken as 10)<sup>2</sup>

Y = a given raw score

$\bar{Y}$  = a given mean score for the raw data

$\sigma_y$  = standard deviation for the raw data for which  $\bar{Y}$  is the mean score.

The following is an example showing how to convert raw scores to standard scores using the formula just described. The raw scores used were obtained by pupil No. 41 appearing in Table 4.1<sup>3</sup>

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<sup>1</sup>The mean 50 is usually taken as the mid-point of scores ranging from 0 - 100.

<sup>2</sup>In a normal distribution curve there are usually three standard deviations on either side of the mean. A standard deviation of 10 is usually used for practical purposes. If the mean is taken as 50, and the bottom excellent score as 80, it can be realised that it will require 30 marks to reach 80; this would correspond to a constant standard deviation of 10.

<sup>3</sup>The Standard score obtained using the formula described represents the nearest whole number. A scientific calculator was used to obtain the standard scores appearing in Table 4.1

Mathematics

$$\bar{X} = 50$$

$$\sigma_x = 10$$

$$Y = 42$$

$$\bar{Y} = 50.20$$

$$\sigma_y = 18.40$$

$$\begin{aligned} \therefore X &= \left( \frac{Y - \bar{Y}}{\sigma_y} \right) \sigma_x + \bar{X} \\ &= \left( \frac{42 - 50.2}{18.4} \right) \times 10 + 50 \\ &= \left( \frac{-8.2}{18.4} \right) \times 10 + 50 \\ &= -(0.45 \times 10) + 50 \\ &= -4.5 + 50 \\ &= 46 \end{aligned}$$

Thus the raw score of 42 in Mathematics corresponds to the Standard score 45.

Biology

$$\bar{X} = 50$$

$$\sigma_x = 10$$

$$Y = 61$$

$$\bar{Y} = 74.40$$

$$y = 9.50$$

$$\begin{aligned} \therefore x &= \left( \frac{61 - 74.4}{9.5} \right) \times 10 + 50 \\ &= \frac{-13.4}{9.5} \times 10 + 50 \\ &= -(1.41 \times 10) + 50 \\ &= -14.1 + 50 \\ &= 36 \end{aligned}$$

### Geography

$$\bar{X} = 50$$

$$\sigma_x = 10$$

$$Y = 31$$

$$\bar{Y} = 46.10$$

$$\sigma_y = 11.20$$

$$\begin{aligned} \therefore x &= \left( \frac{31 - 46.10}{11.20} \right) \times 10 + 50 \\ &= \left( \frac{-15.1}{11.2} \right) \times 10 + 50 \\ &= -(1.35)10 + 50 \\ &= -13.5 + 50 \\ &= 37 \end{aligned}$$

English

$$\bar{X} = 50$$

$$\sigma_x = 10$$

$$Y = 58$$

$$\bar{Y} = 55.40$$

$$\sigma_y = 6.10$$

$$\begin{aligned} \therefore X &= \left( \frac{58 - 55.4}{6.1} \right) \times 10 + 50 \\ &= \left( \frac{2.6}{6.1} \right) \times 10 + 50 \\ &= (0.43)10 + 50 \\ &= 4.3 + 50 \\ &= 54 \end{aligned}$$

The full list of raw scores and their corresponding standard scores appears in Table 4.1.



TABLE 4.1 SHOWING n-Ach SCORES, RAW SCORES AND STANDARD SCORES FOR PUPILS COVERED IN FINAL SURVEY<sup>4</sup>

SCHOOL	PUPIL	% n-Ach SCORES	% SCORES IN SCHOOL SUBJECTS							
			MATHEMATICS		BIOLOGY		GEOGRAPHY		ENGLISH	
			R	S	R	S	R	S	R	S
K	41	8	42	46	61	36	31	37	58	54
	42	8	62	56	81	57	46	50	61	59
	43	0	60	55	64	39	45	49	50	41
A	44	4	47	48	75	50	56	59	48	38
	45	6	74	63	85	61	45	49	67	69
	46	4	39	44	79	55	71	72	67	69
G	47	0	84	68	83	59	73	74	55	49
	48	10	82	67	83	59	38	43	60	58
	49	0	53	51	80	56	49	53	64	64
U	50	0	47	48	84	60	58	61	54	48
	51	0	57	54	85	61	59	61	60	58
	52	0	47	48	73	48	35	40	50	41
M	53	0	60	55	79	55	64	66	50	41
	54	2	41	45	58	33	47	51	59	56
	55	0	41	45	73	48	51	54	61	59
0	56	8	20	34	74	49	48	52	56	51
	57	6	38	43	74	49	59	61	52	44
	58	0	64	57	70	45	56	59	52	44

SCHOOL	PUPIL	% n-Ach SCORES	% SCORES IN SCHOOL SUBJECTS							
			MATHEMATICS		BIOLOGY		GEOGRAPHY		ENGLISH	
			R	S	R	S	R	S	R	S
K	59	0	64	57	70	45	47	51	49	39
	60	0	74	63	76	52	41	45	62	61
	61	0	71	61	88	64	62	64	64	64
	62	0	47	48	76	52	36	41	59	56
A	63	4	33	41	74	49	47	51	53	46
	64	2	41	45	78	54	42	46	53	46
	65	6	34	41	63	38	43	47	55	49
G	66	18	55	52	76	52	44	48	57	53
	67	6	81	67	77	53	47	51	60	58
	68	0	55	52	86	62	54	57	53	46
U	69	0	41	45	80	56	35	40	54	48
	70	10	15	31	63	38	33	38	54	48
	71	0	48	49	82	58	54	57	65	66
M	72	4	69	60	74	49	38	43	54	48
	73	0	48	49	80	56	54	57	47	36
	74	0	24	36	74	49	46	50	51	43
O	75	4	58	54	83	59	38	43	62	61
	76	4	61	56	78	54	43	47	55	49
	77	0	83	68	79	55	43	47	59	56
	78	0	29	38	-	-	29	35	46	35
	79	0	22	35	48	22	26	32	40	25
	80	0	28	38	62	37	26	32	48	38
	81	0	20	34	47	21	33	38	48	38

SCHOOL	PUPIL	% n-Ach SCORES	% SCORES IN SCHOOL SUBJECTS							
			MATHEMATICS		BIOLOGY		GEOGRAPHY		ENGLISH	
			R	S	R	S	R	S	R	S
N	82	0	29	45	34	35	40	36	45	49
	83	12	37	51	51	57	50	53	47	55
	84	4	34	49	48	53	-	-	50	61
	G	85	0	24	42	38	40	40	36	39
86		0	43	56	43	47	51	55	47	55
87		0	23	41	34	35	43	41	40	42
88		4	29	45	44	48	54	60	44	49
A	89	8	23	41	50	56	52	57	46	53
	90	0	39	53	51	57	48	50	45	49
	91	0	33	48	54	61	40	36	53	66
	92	0	35	50	40	43	-	-	42	46
N	93	4	43	56	33	34	-	-	50	61
	94	8	40	54	53	60	57	65	52	64
	95	0	26	43	42	45	46	46	40	42
	96	8	25	42	50	56	-	-	43	48
D	97	2	37	51	45	49	47	48	44	49
	98	10	36	51	50	56	43	41	39	40
	99	0	19	38	38	40	-	-	36	35
	100	0	34	49	44	48	42	40	43	48
U	101	0	84	87	61	70	-	-	60	79
	102	0	29	45	45	49	50	53	55	70

SCHOOL	PUPIL	% n-Ach SCORES	% SCORES IN SCHOOL SUBJECTS							
			MATHEMATICS		BIOLOGY		GEOGRAPHY		ENGLISH	
			R	S	R	S	R	S	R	S
N	103	0	37	51	52	59	52	57	49	59
	104	6	44	57	46	51	51	55	43	48
	105	0	62	70	49	55	59	69	52	64
G	106	6	44	57	53	60	-	-	49	59
	107	2	30	46	40	43	44	43	39	40
	108	12	30	46	51	57	52	57	47	55
A	109	0	28	45	40	43	-	-	45	49
	110	0	41	54	56	64	43	41	46	53
	111	0	52	63	53	60	48	50	44	49
N	112	0	56	66	40	43	57	65	42	46
	113	6	15	35	35	36	-	-	43	48
	114	6	25	42	51	57	45	45	42	46
D	115	0	21	39	37	39	42	40	36	35
	116	0	21	39	52	59	-	-	47	55
	117	0	25	42	31	31	-	-	40	42
U	118	0	37	51	44	48	44	43	42	46
	119	0	14	34	28	27	39	34	31	25
	120	0	38	52	47	52	50	53	41	44
U	121	0	29	45	44	48	48	50	39	40
	122	0	39	53	57	65	56	64	47	55
	123	6	59	68	53	60	59	69	42	46

SCHOOL	PUPIL	% n-Ach SCORES	% SCORES IN SCHOOL SUBJECTS							
			MATHEMATICS		BIOLOGY		GEOGRAPY		ENGLISH	
			R	S	R	S	R	S	R	S
M	124	10	70	60	65	48	58	48	52	49
	125	2	55	49	51	34	68	56	48	45
	126	4	62	55	63	46	72	59	43	40
A	127	4	62	55	67	50	64	53	50	47
	128	0	71	61	62	45	52	43	53	50
	129	4	31	32	67	50	78	63	53	50
	130	0	47	43	51	34	64	53	42	39
S	131	4	29	31	71	54	64	53	64	61
	132	4	50	46	65	48	60	49	52	49
	133	0	73	62	73	56	66	54	59	56
	134	4	NOT IN SCHOOL'S CLASS LIST							
I	135	0	54	49	67	50	64	53	59	56
	136	0	58	52	62	45	70	57	56	53
	137	0	67	58	72	55	50	42	47	44
	138	6	46	43	50	33	48	40	44	41
I	139	0	58	52	79	62	64	53	57	54
	140	0	72	62	75	58	56	46	52	49
	141	0	61	54	65	48	54	45	52	49
	142	2	45	42	60	43	-	-	32	29
	143	0	38	37	43	26	-	-	42	39
	144	6	-	-	-	-	-	-	19	16
	145	0	46	43	76	59	74	60	56	53

SCHOOL	PUPIL	n-Ach %	SCORES IN SCHOOL SUBJECTS							
			MATHEMATICS		BIOLOGY		GEOGRAPHY		ENGLISH	
			R	S	R	S	R	S	R	S
M	146	8	46	43	65	48	32	28	55	52
	147	4	60	53	69	52	76	62	60	57
A	148	0	51	46	62	45	54	45	48	45
	149	0	69	60	80	63	64	53	61	58
	150	4	43	41	75	58	60	49	60	57
	151	6	NOT IN SCHOOL'S CLASS LIST							
S	152	0	61		43	26	54	45	61	58
	153	4	49	45	62	45	22	20	69	66
	154	8	63	55	83	66	76	62	41	38
	155	6	75	64	71	54	78	63	55	52
	156	4	80	68	79	62	82	67	60	57
	157	0	39	38	65	48	36	31	52	49
	158	4	40	38	74	57	62	51	58	55
I	159	0	80	68	77	60	66	54	69	66
	160	0	57	51	70	53	42	36	56	53
	161	4	72	62	78	61	70	57	57	54
	162	0	63	55	81	64	70	57	71	68
I	163	0	44	41	58	41	54	45	67	64
	164	8	30	31	64	47	64	53	47	44

SCHOOL	PUPIL	n-Ach % SCORES	% SCORES IN SCHOOL SUBJECTS							
			MATHEMATICS		BIOLOGY		GEOGRAPHY		ENGLISH	
			R	S	R	S	R	S	R	S
M	165	0	53	61	77	70	67	66	50	48
	I	166	6	34	52	37	43	34	41	28
S	167	0	10	40	29	38	31	39	52	49
	168	0	53	61	69	65	60	61	68	61
Y	169	12	10	40	36	42	30	38	54	51
	170	0	30	50	56	56	60	61	48	47
A	171	2	10	40	46	49	34	41	51	49
	172	0	18	44	36	42	49	53	44	44
N	173	0	46	58	53	54	59	60	56	52
	174	0	6	38	27	36	34	41	61	56
I	175	0	49	59	52	53	44	49	59	54
	176	0	20	45	45	48	51	54	74	65
	177	10	47	59	40	45	44	49	35	38
	178	2	65	67	68	64	65	65	53	50
	179	0	25	47	50	52	38	44	41	42
	180	2	73	71	69	65	64	64	45	45
	181	0	6	38	47	50	37	42	67	60
	182	6	53	61	47	50	42	47	33	36
	183	0	13	41	24	34	30	38	41	42
	184	0	7	38	33	40	30	38	58	54
	185	14	6	38	51	52	40	46	78	68
	186	0	15	42	40	45	41	46	68	61





SCHOOL	PUPIL	n-Ach	% SCORES	% SCORES IN SCHOOL SUBJECTS							
				MATHEMATICS		BIOLOGY		GEOGRAPHY		ENGLISH	
				R	S	R	S	R	S	R	S
A	202	0		76	63	56	50	64	57	56	43
	L	203	4	65	55	58	52	61	53	61	52
		204	4	88	73	75	71	80	80	77	78
L	205	0		66	55	49	42	63	56	58	46
	206	0		56	47	65	60	62	55	67	61
I	207	0		60	51	58	52	68	63	65	58
	208	0		41	36	48	41	56	46	67	61
A	209	6		88	73	71	67	67	61	65	58
	210	6		82	68	66	61	67	61	66	60
N	211	0		NOT	IN	SCHOOL'S	CLASS	LIST			
	212	0		70	59	53	47	61	53	62	53
C	213	0		54	46	69	64	59	50	65	58
	214	0		48	41	52	46	50	38	57	45
E	215	0		60	51	65	60	54	43	63	55
	216	0		57	48	63	58	55	45	61	52
	217	0		60	51	48	41	54	43	57	45
	218	6		36	32	46	39	51	39	57	45
	219	6		61	52	55	49	53	42	64	56
	220	0		52	44	48	41	55	45	54	40
	221	0		63	53	55	49	65	59	55	42

SCHOOL	PUPIL	% n-Ach SCORES	% SCORES IN SCHOOL SUBJECTS							
			MATHEMATICS		BIOLOGY		GEOGRAPHY		ENGLISH	
			R	S	R	S	R	S	R	S
A	222	4	53	45	62	57	-	-	61	52
	223	0	65	55	65	60	63	56	55	42
L	224	6	34	30	44	37	45	31	49	32
	225	6	58	49	69	64	64	57	60	50
I	226	2	48	41	42	35	56	46	55	42
	227	0	43	37	41	34	53	42	47	28
A	228	0	63	53	-	-	51	39	58	46
	229	6	53	45	40	33	46	32	50	33
N	230	12	48	41	53	47	57	47	58	46
	231	4	56	47	51	45	65	59	67	61
C	232	0	64	54	56	50	55	45	61	52
	233	0	61	52	57	51	63	56	57	45
E	234	6	68	57	51	45	58	49	65	58

SCHOOL	PUPIL	n-Ach % SCORES	% SCORES IN SCHOOL SUBJECTS							
			MATHEMATICS		BIOLOGY		GEOGRAPHY		ENGLISH	
			R	S	R	S	R	S	R	S
K E	235	0	75	64	45	46	60	40	62	51
	236	4	62	55	50	52	63	45	51	35
N	237	0	66	58	49	50	79	68	65	56
	238	4	60	54	57	60	65	47	69	62
Y A	239	10	49	46	45	46	64	46	65	56
	240	0	56	51	44	44	60	40	57	44
A	241	4	55	50	50	52	62	43	55	41
	242	10	67	59	53	55	62	43	59	47
H	243	4	61	54	57	60	71	56	69	62
	244	8	85	72	67	72	82	72	73	68
H I	245	0	62	55	54	56	74	61	57	44
	246	0	56	51	49	50	69	53	61	50
I G	247	18	28	30	39	38	-	-	49	32
	248	8	47	44	43	43	64	46	61	50
G H	249	14	47	44	47	48	60	40	64	54
	250	14	49	46	39	38	-	-	58	45
H	251	0	49	46	53	55	-	-	62	51
	252	0	26	29	22	28	-	-	51	35
	253	0	77	66	64	68	73	59	78	75
	254	0	70	61	51	53	57	36	51	35
	255	4	46	43	51	53	77	65	67	59

SCHOOL	PUPIL	% n-Ach SCORES	% SCORES IN SCHOOL SUBJECTS							
			MATHEMATICS		BIOLOGY		GEOGRAPHY		ENGLISH	
			R	S	R	S	R	S	R	S
K E N Y A  H I G H	256	10	66	58	53	55	53	30	55	41
	257	14	49	46	60	64	67	50	62	51
	258	4	51	47	44	44	68	52	60	48
	259	16	48	45	41	41	66	49	61	50
	260	8	34	35	40	40	-	-	69	62
	261	10	40	39	51	53	-	-	70	63
	262	8	74	64	43	43	68	52	64	54
	263	12	63	56	50	52	-	-	56	42
	264	10	41	40	53	55	67	50	57	44

SCHOOL	PUPIL	n-Ach % SCORES	% SCORES IN SCHOOL SUBJECTS							
			MATHEMATICS		BIOLOGY		GEOGRAPHY		ENGLISH	
			R	S	R	S	R	S	R	S
K	265	0	15	49	5	32	12	38	45	51
	266	0	14	48	13	42	15	40	21	23
O	267	0	6	39	14	44	35	56	41	46
	268	0	19	53	39	77	56	72	51	58
I	269	0	8	42	11	40	22	46	41	46
	270	0	40	75	20	52	39	59	66	76
N	271	4	5	38	17	48	32	53	33	37
	272	0	12	46	16	46	33	54	34	38
A	273	0	11	45	11	40	22	46	43	49
	274	4	26	61	18	49	37	57	41	46
N	275	0	15	49	34	70	40	60	56	64
	276	0	31	66	22	54	46	64	47	54
G	277	0	-	-	-	-	-	-	-	-
	278	0	15	49	16	46	13	39	53	61
E	279	0	12	46	17	48	30	52	53	61
	280	4	13	47	18	49	13	39	37	42
G	281	0	7	41	10	38	21	45	42	48
	282	0	32	67	23	56	47	65	34	38
E	283	0	23	57	28	62	24	47	50	57
	284	4	24	58	17	48	47	65	35	39
E	285	8	12	46	19	50	22	46	41	46
	286	0	7	41	15	45	13	39	46	52
	287	6	10	44	13	42	13	39	50	57

SCHOOL	PUPIL	n-Ach % SCORES	% SCORES IN SCHOOL SUBJECTS							
			MATHEMATICS		BIOLOGY		GEOGRAPHY		ENGLISH	
			R	S	R	S	R	S	R	S
K	288	0	13	47	26	60	38	58	44	50
	289	0	11	45	15	45	20	44	35	39
O	290	2	39	74	30	65	15	40	52	59
	291	0	5	38	9	37	13	39	46	52
I	292	0	18	52	33	69	28	50	56	64
	293	0	37	72	21	53	36	56	40	45
N	294	4	14	48	18	49	38	58	45	51
	295	2	14	48	34	70	43	62	41	46
A	296	0	15	49	27	61	54	70	61	70
	297	0	6	39	17	48	12	38	34	38
N	298	0	7	41	20	52	10	36	52	59
	299	0	29	64	10	38	20	44	47	54
G	300	0	8	42	15	45	36	56	42	48
	301	0	15	49	13	42	17	42	37	42
E	302	0	14	48	21	53	30	52	43	49
	303	0	10	44	18	49	14	39	36	41
	304	0	8	42	12	41	18	42	43	49

SCHOOL	PUPIL	% n-Ach SCORES	% SCORES IN SCHOOL SUBJECTS							
			MATHEMATICS		BIOLOGY		GEOGRAPHY		ENGLISH	
			R	S	R	S	R	S	R	S
K	305	0	40	56	38	53	17	38	23	33
	I	306	0	20	45	40	55	22	42	46
A	307	0	31	51	23	44	18	39	33	41
	308	4	27	49	18	40	31	47	60	63
	309	0	69	70	74	77	68	70	48	53
	310	0	34		33	*	44	*	45	*
M	311	0	35	53	41	55	36	50	51	56
	312	0	16	43	25	45	18	39	28	37
	313	0	31	51	28	47	28	45	38	45
	314	0	56	64	27	46	27	45	49	54
B	315	0	16	43	18	40	39	52	46	52
	316	0	25	48	22	43	41	53	37	45
	317	0	-	-	-	-	-	-	-	-
A	318	0	20	45	21	42	6	32	30	39
	319	0	56	64	46	59	41	53	30	39
	320	0	14	42	42	56	50	59	65	67
A	321	6	21	46	26	46	45	56	49	54
	322	0	48	60	39	54	41	53	50	55
	323	2	45	58	39	54	63	67	59	62
	324	0	6	38	43	57	39	52	47	53
	325	0	13	42	29	48	39	52	45	51

SCHOOL	PUPIL	n-Ach % SCORES	% SCORES IN SCHOOL SUBJECTS							
			MATHEMATICS		BIOLOGY		GEOGRAPHY		ENGLISH	
			R	S	R	S	R	S	R	S
K	326	4	60	66	45	58	38	52	39	46
	327	2	26	48	13	37	32	48	42	48
I	328	0	11	41	10	35	10	34	15	27
	329	0	-	-	-	-	-	-	-	-
M	330	6	10	40	18	40	37	51	62	64
	331	0	4	37	27	46	34	49	27	37
	332	0	84	78	64	70	60	65	63	65
B	333	0	25	48	23	44	-	-	54	58
	334	0	54	63	78	79	58	64	47	53
	335	0	NOT IN SCHOOL'S LIST							
A	336	0	21	46	32	49	24	43	49	54
	337	8	38	55	60	68	60	65	73	73
	338	0	20	45	18	40	-	-	51	56
A	339	0	20	45	41	55	38	52	54	58
	340	0	NOT IN CLASS LIST							
	341	6	54	63	29	48	37	51	40	47
	342	0	52	62	19	41	25	43	39	46
	343	0	0	35	25	45	67	70	18	30
	344	6	5	38	20	42	15	37	40	47
	345	6	31	*	30	*	-	-	51	*
	346	0	11	41	26	46	31	47	36	44



SCHOOL	PUPIL	n-Ach SCORES	% SCORES IN SCHOOL SUBJECTS							
			MATHEMATICS		BIOLOGY		GEOGRAPHY		ENGLISH	
			R	S	R	S	R	S	R	S
	347	0	11	41	26	46	31	47	36	44
	348	2	29	50	44	57	52	60	54	58
	349	0	28	*	26	*	35	*	40	*
	350	0	0	35	20	42	2	29	33	41
	351	0	28	49	42	56	40	53	49	54
	352	0	-	-	-	-	-	-	-	-

Further, the pupils used in the final survey were clustered into percentile rank groups with respect to their n-Ach scores. All the pupils not appearing in the class list of a particular school as well as those without academic marks for all the four school subjects considered were not included in the percentile rank groups. This brought the total number of pupils covered in the percentile rank groups to 303 (three hundred and three). In order to facilitate easy calculation of the n-Ach percentile ranks, three pupils (Nos. 310, 345 and 349), all from the same school, were further excluded leaving a total of 300. The raw scores of the three pupils excluded were approximately the same as the mean raw scores for that school in the four school subjects covered in the final survey. The percentile rank groups obtained appear in Table 4.2.

\* Excluded for purposes of compiling the percentile rank groups

4(a) Legend R = raw score  
S = standard score

(b) Appendix F shows means and standard deviations for raw scores of subjects covered in the final survey.

TABLE 4.2 SHOWING STANDARD SCORES FOR THE PUPILS IN THE FIVE n-Ach PERCENTILE RANK GROUPS.

GROUP 1: 90th Percentile<sup>5</sup>

SUBJECT'S CODE NO.	% n-Ach SCORE	S T A N D A R D S C O R E S			
		MATHEMATICS	BIOLOGY	GOEGRAPHY	ENGLISH
48 Kg	10	67	59	43	58
66 Kg	18	52	52	48	53
70 Kg	10	31	38	38	48
83 Ng	12	51	57	53	55
98 Ng	10	51	56	41	40
108 Ng	12	46	57	57	55
124 Ma	10	60	48	48	49
169 Ms	12	40	42	38	51
177 Ms	10	59	45	49	38
185 Ms	14	38	52	46	68
196 Ms	24	50	48	56	52
198 Ms	14	36	34	33	33
230 Al	12	41	47	47	46
239 Kh	10	46	46	46	56
242 Kh	10	59	55	43	47
247 Kh	18	30	38	-	32
249 Kh	14	44	48	40	54
250 Kh	14	46	38	-	45
256 Kh	10	58	55	30	41
257 Kh	14	46	64	50	51

SUBJECT'S CODE NO.	% n-Ach SCORE	S T A N D A R D S C O R E S			
		MATHS	BIOLOGY	GEOGRAPHY	ENGLISH
259 Kh	16	45	41	49	50
261 Kh	10	39	53	-	63
263 Kh	12	56	52	-	42
264 Kh	10	40	55	50	44

GROUP II: 80th Percentile

SUBJECT'S CODE NO.	% n-Ach Score	S T A N D A R D S C O R E S			
		MATHS	BIOLOGY	GEOGRAPHY	ENGLISH
41 Kg	8	45	36	37	54
42 Kg	8	56	57	50	59
45 Kg	6	63	61	49	69
56 Kg	8	34	49	52	51
57 Kg	6	43	49	61	44
65 Kg	6	41	38	47	49
67 Kg	6	67	53	51	58
89 Ng	8	41	56	57	53
94 Ng	8	54	60	65	64
96 Ng	8	42	56	-	48
104 Ng	6	57	51	55	48
106 Ng	6	57	60	-	59
113 Ng	6	35	36	-	48
114 Ng	6	42	57	45	46
123 Ng	6	68	60	69	46
138 Ma	6	43	33	40	41
144 Ma	6	-	-	-	16
146 Ma	8	43	48	28	52
154 Ma	8	55	66	62	38
155 Ma	6	64	54	63	52
164 Ma	8	31	47	53	44

SUBJECT'S CODE NO.	% n-Ach SCORE	S T A N D A R D S C O R E S			
		MATHS	BIOLOGY	GEOGRAPHY	ENGLISH
166 Ms	6	52	43	41	33
182 Ms	6	61	50	47	36
192 Ms	8	61	71	66	56
197 Ms	8	59	63	56	62
209 Al	6	73	67	61	58
210 Al	6	68	61	61	60
218 Al	6	32	39	39	45
219 Al	6	52	49	42	56
224 Al	6	30	37	31	32
225 Al	6	49	64	57	50
229 Al	6	45	33	32	33
234 Al	6	57	45	49	58
244 Kh	8	72	72	72	68
248 Kh	8	44	43	46	50
260 Kh	8	35	40	-	62
262 Kh	8	64	43	52	54
285 Sk	8	46	50	46	46
287 Sk	6	44	42	39	57
321 Kb	6	46	46	56	54
330 Kb	6	40	40	51	64
337 Kb	8	55	68	65	73
341 Kb	6	63	48	51	47
344 Kb	6	38	42	37	47

GROUP III: 70TH PERCENTILE

SUBJECT'S CODE NO.	% n-Ach Score	S T A N D A R D S C O R E S			
		MATHS	BIOLOGY	GEOGRAPHY	ENGLISH
44 Kg	4	48	50	59	38
46 Kg	4	44	55	72	69
63 Kg	4	41	49	51	46
72 Kg	4	60	49	43	48
75 Kg	4	54	59	43	61
76 Kg	4	56	54	47	49
84 Ng	4	49	53	-	61
88 Ng	4	45	48	60	49
93 Ng	4	56	34	-	61
127 Ma	4	55	50	53	47
126 Ma	4	55	46	59	40
129 Ma	4	32	50	63	50
131 Ma	4	31	54	53	61
132 Ma	4	46	48	49	49
147 Ma	4	53	52	62	67
150 Ma	4	41	58	49	57
153 Ma	4	45	45	20	66
156 Ma	4	68	62	67	57
158 Ma	4	38	57	51	55
161 Ma	4	62	61	57	54
190 Ms	4	39	48	53	54
203 A1	4	55	52	53	52
204 A1	4	73	71	80	78

SUBJECT'S CODE NO.	% n-Ach Score	S T A N D A R D   S C O R E S			
		MATHS	BIOLOGY	GEOGRAPHY	ENGLISH
222 Al	4	45	57	-	52
231 Al	4	47	45	59	61
236 Kh	4	55	52	45	35
238 Kh	4	54	60	47	62
241 Kh	4	50	52	43	41
243 Kh	4	54	60	56	62
255 Kh	4	43	53	65	59
258 Kh	4	47	44	52	48
271 Sk	4	38	48	53	37
274 Sk	4	61	49	57	46
280 Sk	4	47	49	39	42
284 Sk	4	58	48	65	39
294 Sk	4	48	49	58	51
308 Kb	4	49	40	47	63
326 Kb	4	66	58	52	46

GROUP IV: 60th Percentile

SUBJECT'S CODE NO.	% n-Ach Score	S T A N D A R D S C O R E S			
		MATHS	BIOLOGY	GEOGRAPHY	ENGLISH
54 Kg	2	45	33	51	56
64 Kg	2	45	54	46	46
97 Ng	2	51	49	48	49
107 Ng	2	46	43	43	40
125 Ma	2	49	34	56	45
142 Ma	2	42	43	-	29
171 Ms	2	40	49	41	49
178 Ms	2	67	64	65	50
180 Ms	2	71	65	64	45
194 Ms	2	51	51	49	40
226 Al	2	41	35	46	42
290 Sk	2	74	65	40	59
295 Sk	2	48	70	62	46
323 Kb	2	58	54	62	62
327 Kb	2	48	37	48	48
348 Kb	2	50	57	60	58



GROUP V: 10th - 50th Percentile

SUBJECT'S CODE NO.	% n-Ach Score	S T A N D A R D S C O R E S			
		MATHS	BIOLOGY	GEOGRAPHY	ENGLISH
43 Kg	0	55	39	49	41
47 Kg	0	68	59	74	49
49 Kg	0	51	56	53	64
50 Kg	0	48	60	61	48
51 Kg	0	54	61	61	58
52 Kg	0	48	48	40	41
53 Kg	0	55	55	66	41
55 Kg	0	45	48	54	59
58 Kg	0	57	45	59	44
59 Kg	0	57	45	51	39
60 Kg	0	63	52	45	61
61 Kg	0	61	64	64	64
62 Kg	0	48	52	41	56
68 Kg	0	52	62	57	46
69 Kg	0	45	56	40	48
71 Kg	0	49	58	57	66
73 Kg	0	49	56	57	36
74 Kg	0	36	49	50	43
77 Kg	0	68	55	47	56
78 Kg	0	38	-	35	35

SUBJECT'S CODE NO.	% n-Ach Score	S T A N D A R D S C O R E S			
		MATHS	BIOLOGY	GEOGRAPHY	ENGLISH
79 Kg	0	35	22	32	25
80 Kg	0	38	37	32	38
81 Kg	0	34	21	38	38
82 Ng	0	45	35	36	49
85 Ng	0	42	40	36	40
86 Ng	0	56	47	55	55
87 Ng	0	41	35	41	42
90 Ng	0	53	57	50	49
91 Ng	0	48	61	36	66
92 Ng	0	50	43	-	46
95 Ng	0	43	45	46	42
99 Ng	0	38	40	-	35
100 Ng	0	49	48	40	48
101 Ng	0	87	70	-	79
102 Ng	0	45	49	53	70
103 Ng	0	51	59	57	59
105 Ng	0	70	55	69	64
109 Ng	0	45	43	-	49
110 Ng	0	54	64	41	53
111 Ng	0	63	60	50	49
112 Ng	0	66	43	65	46
115 Ng	0	39	39	40	35

SUBJECT'S CODE NO.	% n-Ach Score	S T A N D A R D   S C O R E S			
		MATHS	BIOLOGY	GEOGRAPHY	ENGLISH
116 Ng	0	39	59	-	55
117 Ng	0	42	31	-	42
118 Ng	0	51	48	43	46
119 Ng	0	34	27	34	25
120 Ng	0	52	52	53	44
121 Ng	0	45	48	50	40
122 Ng	0	53	65	64	55
128 Ma	0	61	45	43	50
130 Ma	0	43	34	53	39
133 Ma	0	62	56	54	56
135 Ma	0	49	50	53	56
136 Ma	0	52	45	57	53
137 Ma	0	58	55	42	44
139 Ma	0	52	62	53	54
140 Ma	0	62	58	46	49
141 Ma	0	54	48	45	49
143 Ma	0	37	26	-	39
145 Ma	0	43	59	60	53
148 Ma	0	46	45	45	45
149 Ma	0	60	63	53	58
152 Ma	0	54	26	45	58
157 Ma	0	38	48	31	49

SUBJECT'S CODE NO.	%	n-Ach Score	S T A N D A R D S C O R E S			
			MATHS	BIOLOGY	GEOGRAPHY	ENGLISH
159 Ma		0	68	60	54	66
160 Ma		0	51	53	36	53
162 Ma		0	55	64	57	68
163 Ma		0	41	41	45	64
165 Ms		0	61	70	66	48
167 Ms		0	40	38	39	49
168 Ms		0	61	65	61	61
170 Ms		0	50	56	61	47
172 Ms		0	44	42	53	44
173 Ms		0	58	54	60	52
174 Ms		0	38	36	41	56
175 Ms		0	59	53	49	54
176 Ms		0	45	48	54	65
179 Ms		0	47	52	44	42
181 Ms		0	38	50	42	60
183 Ms		0	41	34	38	42
184 Ms		0	38	40	38	54
186 Ms		0	42	45	46	61
187 Ms		0	49	52	38	51
188 Ms		0	64	49	49	39
189 Ms		0	42	38	56	51

SUBJECT'S CODE NO.	% n-Ach Score	S T A N D A R D   S C O R E S			
		MATHS	BIOLOGY	GOEGRAPHY	ENGLISH
191 Ms	0	36	34	29	33
193 Ms	0	66	48	57	54
195 Ms	0	53	48	46	42
199 Ms	0	52	59	69	68
200 Ms	0	48	43	50	41
201 Ms	0	62	68	57	70
202 A1	0	63	50	57	43
205 A1	0	55	42	56	46
206 A1	0	47	60	55	61
207 A1	0	51	52	63	58
208 A1	0	36	41	46	61
212 A1	0	59	47	53	53
213 A1	0	46	64	50	58
214 A1	0	41	46	38	45
215 A1	0	51	60	43	55
216 A1	0	48	58	45	52
217 A1	0	51	41	43	45
220 A1	0	44	41	45	40
221 A1	0	53	49	59	42
223 A1	0	55	60	56	42
227 A1	0	37	34	42	28
228 A1	0	53	-	39	46
232 A1	0	54	50	45	52

SUBJECT'S CODE NO.	% n-Ach Score	S T A N D A R D S C O R E S			
		MATHS	BIOLOGY	GEOGRAPHY	ENGLISH
233 Al	0	52	51	56	45
235 Kh	0	64	46	40	51
237 Kh	0	58	50	68	56
240 Kh	0	51	44	40	44
245 Kh	0	55	56	61	44
246 Kh	0	51	50	53	50
251 Kh	0	46	55	-	51
252 Kh	0	29	28	-	35
253 Kh	0	66	68	59	75
254 Kh	0	61	53	36	35
265 Sk	0	49	32	38	51
266 Sk	0	48	42	40	23
267 Sk	0	39	44	56	46
268 Sk	0	53	77	72	58
269 Sk	0	42	40	46	46
270 Sk	0	75	52	59	76
272 Sk	0	46	46	54	38
273 Sk	0	45	40	46	49
275 Sk	0	49	70	60	64
276 Sk	0	66	54	64	54
278 Sk	0	49	46	39	61

SUBJECT'S CODE NO.	% n-Ach Score	S T A N D A R D S C O R E S			
		MATHS	BIOLOGY	GEOGRAPHY	ENGLISH
279 Sk	0	46	48	52	61
281 Sk	0	41	38	45	48
282 Sk	0	67	56	65	38
283 SK	0	57	62	47	57
286 Sk	0	41	45	39	52
288 Sk	0	47	60	58	50
289 Sk	0	45	45	44	39
291 Sk	0	38	37	39	52
292 Sk	0	52	69	50	64
293 Sk	0	72	53	56	45
296 Sk	0	49	61	70	70
297 Sk	0	39	48	38	38
298 Sk	0	41	52	36	59
299 Sk	0	64	38	44	54
300 Sk	0	42	45	56	48
301 Sk	0	49	42	42	42
302 Sk	0	48	53	52	49
303 Sk	0	44	49	39	41
304 Sk	0	42	41	42	49
305 Kb	0	56	53	38	33
306 Kb	0	45	55	42	52
307 Kb	0	51	44	39	41

SUBJECT'S CODE NO.	% n-Ach Score	S T A N D A R D S C O R E S			
		MATHS	BIOLOGY	GEOGRAPHY	ENGLISH
309 Kb	0	70	77	70	53
311 Kb	0	53	55	50	56
312 Kb	0	43	45	39	37
313 Kb	0	51	47	45	45
314 Kb	0	64	46	45	54
315 Kb	0	43	40	52	52
316 Kb	0	48	43	53	45
318 Kb	0	45	42	32	39
319 Kb	0	64	59	53	39
320 Kb	0	42	56	59	67
322 Kb	0	60	54	53	55
324 Kb	0	38	57	52	53
325 Kb	0	42	48	52	51
328 Kb	0	41	35	34	27
331 Kb	0	37	46	49	37
332 Kb	0	78	70	65	65
333 Kb	0	48	44	-	58
334 Kb	0	63	79	64	53
336 Kb	0	46	49	43	54
338 Kb	0	45	40	-	56
339 Kb	0	45	55	52	58
342 Kb	0	62	41	43	46



SUBJECT'S CODE NO.	% n-Ach Score	S T A N D A R D S C O R E S			
		MATHEMATICS	BIOLOGY	GEOGRAPHY	ENGLISH
343 Kb	0	35	45	70	30
346 Kb	0	41	46	47	44
347 Kb	0	50	46	45	45
350 Kb	0	35	42	29	41
351 Kb	0	49	56	53	54

<sup>5</sup>Legend

(a) Kg = Kagumo High School

Ng = Ngandu Girls High School

Al = Alliance Boys High School

Ma = Masii Secondary School

Ms = Misyani Girls Secondary School

Sk = Senior Chief Koinange Sec. School

Kb = Kiambaa Boys High School

(b) n-Ach scores for the various percentile rank groups were as follows:

90th percentile : 8.80% (approx. 9)

80th percentile : 6.09% (approx. 6)

70th percentile : 4.34% (approx. 4)

60th percentile : 1.75% (approx. 2)

10-50th percentile: 0

#### 4.3 Analysis of Data

The main hypotheses for the research maintained that there is significant correlation between n-Ach score and academic performance among secondary school pupils. To check whether these hypotheses held water with respect to the data gathered, the product-moment correlation coefficient (r) technique was employed using the following formula:

$$r = \frac{\sum XY - NM_x M_y}{\sqrt{[\sum X^2 - NM_x^2][\sum Y^2 - NM_y^2]}}$$

where

r = correlation coefficient

X = raw or obtained score

Y = raw or obtained score from set different from X

N = number of individuals

M<sub>X</sub> = mean of scores in X set

M<sub>Y</sub> = mean of scores in Y set

In the present study n-Ach scores category were labelled as X, Mathematics scores Y, Biology scores Y<sub>1</sub>, Geography Y<sub>2</sub>, and English Y<sub>3</sub>. Each school subject set of scores (e.g Mathematics) were correlated with the corresponding n-Ach scores set. Only subjects with positive n-Ach scores were included in the correlation

formula; the total number of subjects with positive n-Ach scores was 122 (one hundred and twenty-two). However, since not all the pupils had scores for all school subjects, the value of N varied from one school subject to the other. Thus for Mathematics N was 121, Biology 121, Geography 109 and English 122. The standard scores were correlated with the n-Ach scores yielding the results shown in Table 4.3 below. A scientific calculator was used to compute the correlation coefficients. See Appendix G for more details.

TABLE 4.3 SHOWING PRODUCT-MOMENT CORRELATION COEFFICIENTS BETWEEN n-Ach AND SCHOOL SUBJECTS

n-Ach Vs SCHOOL SUBJECTS	N	CORRELATION COEFFICIENT (r)
n-Ach Vs. Mathematics	121	-0.16
n-Ach Vs. Biology	121	-0.07
n-Ach Vs. Geography	109	-0.18
n-Ach Vs. English	122	-0.04

For the sake of additional scrutiny two other calculations were done. These were the inter-school subject correlation and the comparison of means among the five percentile rank groups previously described. The product-moment correlation coefficient method

was applied in the school subject score comparison while the t-test was used in the comparison of the percentile rank group means. The findings are summarised in the three tables that follow:

TABLE 4.4 SHOWING PRODUCT MOMENT CORRELATIONS  
COEFFICIENT AMONG SCHOOL SUBJECTS

SCHOOL SUBJECTS	N	r	LEVEL OF SIGNIFICANCE (p)
Mathematics and Biology	121	0.56	0.01
Mathematics and Geography	109	0.39	0.01
Mathematics and English	121	0.24	0.01
Biology and Geography	109	0.55	0.01
Biology and English	121	0.39	0.01
Geography and English	109	0.36	0.01

TABLE 4.5 (a) SHOWING SIGNIFICANCE OF DIFFERENCE  
BETWEEN n-Ach MEANS OF VARIOUS PERCENTILE RANK GROUPS

COMPARISON NO.	PERCENTILE RANK GROUP	N	MEAN	STANDARD DEVIATION (SD)	MEAN DIFFERENCE (D)	t p	
						t	p
1	I	24	12.75	3.41	5.98	8.46	0.01
	II	44	6.77	0.97			
2	I	24	12.75	3.41	8.75	12.63	0.01
	III	38	4.00	0.00			
3	I	24	12.75	3.41	10.75	15.51	0.01
	IV	16	2.00	0.00			
4	I	24	12.75	3.41	12.75	18.40	0.01
	V	178	0.00	0.00			
5	II	44	6.77	0.97	2.77	19.79	0.01
	III	38	4.00	0.00			
6	II	44	6.77	0.97	4.77	34.07	0.01
	IV	16	2.00	0.00			
7	II	44	6.77	0.97	6.77	48.36	0.01
	V	178	0.00	0.00			
8	III	38	4.00	0.00	2.00	--	--
	VI	16	2.00	0.00			
9	III	38	4.00	0.00	4.00	--	--
	V	178	0.00	0.00			
10	IV	16	2.00	0.00	2.00	--	--
	V	178	0.00	0.00			

\*Not possible to say what the value of t is since the calculation ends up being  $\frac{2}{0}$ ,  $\frac{4}{0}$  and  $\frac{2}{0}$  respectively, hence no significance level can be indicated.

TABLE 4.5(b) SHOWING SIGNIFICANCE OF DIFFERENCE OF SCHOOL SUBJECT MEANS AMONG DIFFERENT PERCENTILE RANK GROUPS<sup>6</sup>

COMPARISON NO	PERCENT-ILE RANK GROUPS	STANDARD DEV-IATION (SD)	N	MEAN	MEAN DIFFERENCE	t	p
1	I	9.32	24	M 47.13	M 3.27	1.25	0.10
		7.6	24	B 49.17			
	II	6.89	20	G 45.25	B 1.60	0.71	0.10
		8.49	24	E 48.79			
		11.69	43	M 50.40	G 5.52	2.39	0.02
		10.58	43	B 50.77			
	III	10.76	39	G 50.77	E 2.12	0.89	0.10
		10.82	44	E 50.91			
		9.32	24	M 47.13	M 3.08	1.27	0.10
		7.6	24	B 49.17			
2	I	6.89	20	G 45.25	B 2.65	1.40	0.10
		8.49	24	E 48.79			
		9.23	38	M 50.21	G 8.52	3.66	0.01
		6.61	38	B 51.82			
	III	10.36	35	G 53.77	E 4.18	1.78	0.10
		9.78	38	E 52.97			
		9.32	24	M 47.13	M 4.50	1.42	0.10
		7.6	24	B 49.17			
3	I	6.89	20	G 45.25	B 1.02	0.31	0.10
		8.49	24	E 48.79			
		10	16	M 51.63	G 7.15	3.07	0.01
		10.15	16	B 50.19			
	IV	11.64	16	B 50.19			
		8.85	15	G 52.40	E 1.04	0.44	0.10
		8.05	16	E 47.75			

<sup>6</sup>Legend

- M = Mathematics
- B = Biology
- G = Geography
- E = English

COMPARISON NO.	PERCENTILE RANK GROUPS	STANDARD DEVIATION (SD)	N	MEAN	MEAN DIFFERENCE	t	p
4	I	9.32	24	M 47.13	M 3.02	1.48	0.10
		7.6	24	B 49.17			
6.89		20	G 45.25	B 0.37	0.21	0.10	
8.49		24	E 48.79				
V	9.79	178	M 50.15	G 4.10	2.38	0.02	
	10.45	176	B 49.54				
	9.86	167	G 49.35	E 0.88	0.47	0.10	
	10.18	178	E 49.67				
5	II	11.69	43	M 50.40	M 0.19	0.08	0.10
		10.58	43	B 50.77			
10.76		39	G 50.77	B 1.05	0.54	0.10	
10.82		44	E 50.91				
III	9.23	38	M 50.21	G 3.00	1.22	0.10	
	6.61	38	B 51.82				
	10.36	35	G 53.77	E 2.06	0.90	0.10	
	9.78	38	E 52.97				
6	II	11.69	43	M 50.40	M 1.23	0.40	0.10
		10.58	43	M 50.77			
10.76		39	G 50.77	B 0.58	0.17	0.10	
10.82		44	E 50.91				
IV	10.15	16	M 51.63	G 1.63	0.57	0.10	
	11.64	16	M 50.19				
	8.85	15	G 52.40	E 3.16	1.22	0.10	
	8.05	16	E 47.75				
7	II	11.69	43	M 50.40	M 0.25	0.13	0.10
		10.58	43	B 50.77			
10.76		39	G 50.77	B 1.23	0.69	0.10	
10.82		44	E 50.91				
V	9.79	178	M 50.15	G 1.42	0.76	0.10	
	10.45	176	B 49.54				
	9.86	167	G 49.35	E 1.24	0.69	0.10	
	10.18	178	E 49.67				

COMPARISON NO.	PERCENT-ILE RANK GROUPS	STANDARD DEV-IATION (SD)	N	MEAN	MEAN DIFFERENCE	t	p
8	III	9.23	38	M 50.21	M 1.42	0.48	0.10
		6.61	38	B 51.82			
10.36		35	G 53.77	B 1.63	0.53	0.10	
9.78		38	E 52.97				
IV	10.15	16	M 51.63	G 1.37	0.48	0.10	
	11.64	16	B 50.19				
	8.85	15	G 52.40	E 5.22	2.04	0.05	
	8.05	16	E 47.75				
9	III	9.23	38	M 50.21	M 0.06	0.04	0.10
		6.61	38	B 51.82			
10.36		35	G 53.77	B 2.28	1.71	0.10	
9.78		38	E 52.97				
V	9.79	178	M 50.15	G 4.42	2.31	0.02	
	10.45	176	B 49.54				
	9.86	167	G 49.35	E 3.30	1.88	0.10	
	10.18	178	E 49.67				
10	IV	10.15	16	M 51.63	M 1.48	0.56	0.10
		11.64	16	B 50.19			
8.85		15	G 52.40	B 0.65	0.22	0.10	
8.05		16	E 47.75				
V	9.79	178	M 50.15	G 3.05	1.27	0.10	
	10.45	176	B 49.54				
	9.86	167	G 49.35	E 1.92	0.89	0.10	
	10.18	178	E 49.67				



In addition to testing the main hypotheses, eight hypotheses were also tested. These "extra" hypotheses maintained that there was:

- (i) no significant difference between n-Ach scores obtained by pupils from both "poor" and "good" schools
- (ii) significant difference between academic scores obtained by pupils from "poor" schools and those obtained by pupils from "good" schools.

To test the additional hypotheses the t-test was used to compare the n-Ach means and school subject means obtained by the pupils from both categories of schools. The data appear in Table 4.6 (a) and 4.6 (b).

TABLE 4.6 (a) SHOWING THE SIGNIFICANCE OF DIFFERENCE  
OF n-Ach MEANS FOR BOYS AND GIRLS FROM "POOR" AND  
"GOOD" SCHOOLS

COMPARISON NO.	SUBJECT GROUPS	N	MEAN n-Ach	STANDARD DEVIATION	D	t	p
1	Girls from "poor" schools	23	6.61	5.22	1.44	1.14	0.10
	Girls from "good" schools	37	8.05	3.96			
2	Boys from "poor" schools	30	4.87	2.05	1.13	1.71	0.10
	Boys from "good" schools	32	6.00	3.12			
3	Pupils from "poor" schools	53	5.62	3.87	1.48	2.14	0.05
	Pupils from "good" schools	69	7.10	3.74			
4	All Boys	62	5.45	2.72	2.05	3.01	0.01
	All Girls	60	7.50	4.54			

TABLE 4.6(b) SHOWING SIGNIFICANCE OF DIFFERENCE BETWEEN PUPILS' MEAN SCORES IN DIFFERENT SCHOOL SUBJECTS FOR BOYS AND GIRLS FROM "POOR" AND "GOOD" SCHOOLS<sup>7</sup>

COMPARISON NO.	SUBJECT GROUPS	Mathematics					Biology					Geography					English				
		N	M	D	t	p	N	M	D	t	p	N	M	D	t	p	N	M	D	t	p
1	Pupils from 'poor' schools	52	50.27				52	50.79				51	51.57				53	49.45			
	Pupils from 'good' schools	69	49.54	0.73	0.38	-	69	50.64	0.15	0.09	-	58	50.40	1.17	0.6	-	69	51.76	2.25	1.23	-
2	All Boys	61	49.61	0.49	0.26	-	61	49.89	1.64	0.99	-	59	51.03	0.19	0.10	-	62	51.77	2.14	1.20	-
	All Girls	60	50.10				60	51.53				50	50.84				60	49.63			

COMPARISON NO.	SUBJECT GROUPS	Mathematics			Biology			Geography			English		
		N	M	D t p	N	M	D t p	N	M	D t p	N	M	D t p
3	Girls from "poor" schools	23	51.65	2.51 0.93 -	23	51.96	0.69 0.29 -	23	50.57	0.5 0.18 -	23	47.39	3.64 1.53
	Girls from "good" schools	37	49.14		37	51.27		27	51.07		37	51.03	
4	Boys from "poor" schools	29	49.17	0.83 0.30 -	29	49.86	0.05 0.02 -	28	52.39	2.58 0.93 -	30	51.03	1.49 0.53
	Boys from "good" schools	32	50.00		32	49.91		31	49.81		32	52.47	

<sup>7</sup>(a) Standard deviations for the four groups compared appear in Appendix H.

(b) - indicates  $p < 0.1$

#### 4.4 Interpretation of Data

The purpose of the study was to establish the relationship between n-Ach scores and school subject scores obtained by a sample of Kenyan secondary school boys and girls. The data obtained lends itself to a number of interpretations. The data has been interpreted with respect to correlation coefficients obtained in Tables 4.3 and 4.4 as well as on the basis of the comparison of means expressed in t values contained in Tables 4.5(a), 4.5(b), 4.6(a) and 4.6(b).

4.4.1 Correlation between n-Ach scores and various school subjects: From the product-moment correlation coefficients shown in Table 4.3, it is evident that n-Ach is negatively correlated to Mathematics, Biology, Geography and English. This correlation is also low and insignificant ( $p < 0.05$  in all cases). This confirms NCERT's assertion that "empirical evidence on the relationship of n-Achievement and school (academic) performance has been inadequate and erratic,"<sup>8</sup> since some related studies show positive correlation while others don't, for example Riccuiti et al (1955)<sup>9</sup> found r values of 0.23 to 0.33 when he compared n-Ach and school grades. Uhlinger and Stephens (1960)

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<sup>8</sup> National Council of Educational Research and Training, The Achievement Motive in High School Boys, New Delhi: Publication Unit, 9, Eastern Avenue, Maharani Bagh, 1969, p.4.

<sup>9</sup> Ibid.

on the other hand found the two types of scores related only among superior ability students. Further, during their series of try-outs, NCERT (1969) found that out of the picture cues they had accepted for use in their final study, some showed no relationship, others negative relationship and still others showed high positive relationship between school grades and achievement motivation. However, during their main research work, NCERT (1969) found n-Ach scores to be significantly correlated with marks in the various school subjects for the combined sample i.e the sample consisting of High and Low academically achieving status schools.<sup>10</sup> In the case of the present study correlations were negative, relatively low and insignificant. This finding indicates that performance in school subjects is to some extent independent of achievement motivation. This no doubt raises eyebrows of those scholars who are staunch believers of the indispensability of motivation in high academic achievement.

#### 4.4.2 Correlation between School Subjects

In an attempt to scrutinize further the relationship between n-Ach and school subject marks, two extra tasks were undertaken. Correlations between the four school subject scores were calculated. The results are shown in Table 4.4. The inter-subject product-moment correlation coefficients indicate, among other things, that there is positive and significant relationship

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<sup>10</sup> Ibid., p.68

between the various subjects i.e Mathematics and Biology, Mathematics and Geography, Mathematics and English, Biology and Geography, Biology and English, Geography and English ( $p > 0.01$  in all six sets of school subjects compared). This implies that a pupil scoring well in any one of these four school subjects is likely to do well in any other subject among the same four. The positive correlation among the four school subjects was consistent with the picture portrayed by the results in Table 4.3 cited above.

#### 4.4.3 Significance of Difference between Means

The second scrutineering check was based on percentile rank groups. As Table 4.5 (a) reveals pupils in the 90th and 80th percentile ranks performed significantly higher in the n-Ach test than those in the 10th-50th percentile ( $p > 0.01$ ). However, it was not possible to state whether the subjects in the 70th and 60th percentiles had significantly higher achievement motivation than their counterparts in group V (10th - 50th percentile) or not due to the Mathematical calculation arrived at as indicated by footnote 7. Nevertheless, the general trend was that there was significant difference in n-Ach scores among the various percentile rank groups - group I (90th percentile) being significantly better than group II, group II (80th percentile) better than III and so on.

Regarding academic performance the general observations are that there are no significant differences in academic attainment among the five percentile rank groups. Comparing this observation with that for n-Ach discussed above, it can be said that a subject's position on the n-Ach ranking appears to be independent of his/her academic standing. Table 4.5 (b) shows a comparison of academic performance among the various percentile rank groups. It is observable from this Table that pupils in the 80th percentile performed just as well academically as those in the 70th, 60th and 10th-50th percentile ranks ( $p < 0.1$ ). Similarly pupils in the 90th percentile performed equally well in Mathematics, Biology and English as their counterparts in the 80th, 70th and 10th - 50th percentile ranks ( $p < 0.1$ ). However, the case for Geography was different; pupils in the 90th percentile did significantly better in this school subject than those in the 80th, 70th, 60th, 10th - 50th percentile ranks ( $p = 0.02$ ). This is the only exception to the general observation cited above.

The general observation revealed by Table 4.5 (b) is also found in Table 4.6 (b). The information contained in the latter Table shows that there is no significant difference ( $p < 0.1$ ) in academic performance between

- i) pupils (whether boys or girls) "poor" schools and those from "good" schools
- ii) boys and girls in general.



However, the n-Ach case as shown in Table 4.5 (a) is slightly different in that in general girls showed significantly higher achievement motivation than the boys ( $p > 0.01$ ), and that pupils from "good" schools scored significantly higher in the n-Ach test than their counterparts from "poor" schools. As for the girls from "poor" and "good" schools there was no significant difference in achievement motivation among them ( $p < 0.1$ ). Similarly boys from "good" schools did not as a whole have any remarkably significant n-Ach score ( $p = 0.1$ ).

## CHAPTER V

### CONCLUSION, IMPLICATIONS AND SUGGESTIONS FOR FURTHER STUDY

#### 5.1 Introduction

In this chapter, the hypotheses cited for the research have been examined one by one with respect to the data obtained so as to see if the latter supports the defined hypotheses or not. Subsequently, conclusions have been drawn.

Further, an overview of the entire research project is made following which some implications and suggestions for further study have been put forward.

#### 5.2 Hypotheses

For each of the hypotheses a statement has been made describing what a particular hypothesis holds. Subsequently, in view of the results obtained, the action taken against each hypothesis has been stated.

##### 5.2.1 Hypotheses 1.5.1

According to this hypothesis there exists a significant correlation between n-Ach scores and scores in Mathematics.

An examination of the results (See Table 4.3) reveals low, insignificant and negative correlation

( $r = -0.16$ ;  $p < 0.05$ ). In other words one can say that according to the data obtained in the present study, performance in Mathematics does not depend on one's n-Ach score. In this case the hypothesis is rejected.

#### 5.2.2 Hypothesis 1.5.2

Like the above hypothesis, hypothesis 1.5.2 suggests that there is significant correlation between n-Ach and performance in Biology.

The results obtained however, showed the absence of such a relationship ( $r = -0.07$ ;  $p < 0.05$ ), indicating that one's n-Ach score is not dependent on one's score in Biology.

The hypothesis is therefore discarded.

#### 5.2.3 Hypothesis 1.5.3

This hypothesis maintains that there is a significant correlation between scores in Geography and n-Ach scores.

According to Table 4.3 no such relationship exists ( $r = -0.18$ ;  $p < 0.05$ ).

This hypothesis is also rejected.

#### 5.2.4 Hypothesis 1.5.4

According to this hypothesis there does exist a significant correlation between n.Ach score and performance

in English.

The information contained in Table 4.3 reveals however, that such a relationship does not exist in the present study ( $r = -0.04$ ;  $p < 0.05$ ).

Thus the hypothesis is discarded.

Thus the data obtained indicated that n-Ach scores had no commonality with academic scores as far as the Form III boys and girls studied was concerned. However, the absence of significant correlation between these two variables (n-Ach and academic performance) does not mean that one variable enhances the manifestation of the other since it is known that measures of correlation have no causal effect. Nevertheless the data does imply that the subjects' n-Ach levels did not correspond to their respective academic performance levels.

Hypotheses 1.5.1 - 1.5.4 were the main hypotheses for the study. However, eight additional hypotheses were also stated and tested. These were hypotheses 1.5.5 to 1.6.2.

#### 5.2.5 Hypothesis 1.5.5.

This hypothesis maintains that there is no significant difference in n-Ach scores between boys and girls in general.

According to the information contained in Table 4.6 (a), the mean n-Ach score for the girls is signi-

ificantly higher than that of the boys ( $p > 0.01$ ). Thus the above hypothesis was not supported. This finding bears resemblance to the studies by Veroff (1950)<sup>1</sup> who in partial explanation for girls' n-Ach superiority over boys proposed that under neutral conditions girls probably have their motivation raised to such a high degree that there is no room left for further motivational arousal even under achievement oriented condition. Thus the girls tested for n-Ach in the present study may have been relatively more highly motivated than the boys regarding the formulation of the stories they wrote.

#### 5.2.6 Hypothesis 1.5.6

According to this hypothesis, there is no significant difference in n-Ach scores between pupils from poor schools and those from good schools.

The study on the achievement motive in Indian high school boys by NCERT (1969)<sup>2</sup> revealed that boys at high academically achieving schools obtained higher n-Ach schools than their counterparts at relatively low academically achieving schools. The present study obtained

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<sup>1</sup>David C. McClelland, John W. Atkinson, Russel A. Clark and Edgar L. Lowell, The Achievement Motive, New York: Irvington Publishers Inc., 1976, pp. 167 and 172.

<sup>2</sup>National Council of Educational Research and Training, The Achievement Motive in High School Boys, New Delhi: Publication Unit, 9, Eastern Avenue, Maharani Bagh, 1969 p. 41-42.

similar results i.e pupils from poor schools had significantly lower n-Ach scores than their counterparts from good schools ( $p = 0.05$ ). Hypothesis 1.5.6 was therefore unsupported.

#### 5.2.7 Hypothesis 1.5.7

The position of this hypothesis is that there is no significant difference in n-Ach scores between girls from poor schools and those from good schools.

The information appearing in Table 4.6 (a) shows that this hypothesis was supported ( $p < 0.10$ ) meaning that girls from both types of schools were equally achievement motivated at least at the time when they took the n-Ach test.

#### 5.2.8 Hypothesis 1.5.8

This hypothesis maintains that there is no significant difference in n-Ach scores between boys from poor schools and those from good schools.

This hypothesis was also supported by the data obtained as shown in Table 4.6 (a) in which  $p < 0.05$ . This means that boys from both poor and good schools portrayed relatively equal achievement motivation levels.

#### 5.2.9 Hypothesis 1.5.9

According to this hypothesis, there is no significant difference in academic performance between boys and girls in general.

The results for the study showed that boys and girls performed approximately equal academically. Thus the hypothesis was retained. This finding is in line with the general observation that boys and girls perform at about the same level at the E.A.C.E.<sup>3</sup>

#### 5.3.0 Hypothesis 1.6.0

This hypothesis proposes that there is significant difference in academic performance between pupils from poor schools and those from good schools.

However, this hypothesis was rejected on the basis of the results obtained (see Table 4.6 (b)). Thus boys and girls from "poor" schools performed equally well in the end-of-term tests for 1979 with their counterparts from "good" schools.

#### 5.3.1 Hypothesis 1.6.1

The position of this hypothesis is that there is significant difference in academic performance between girls from poor schools and those from good schools.

The comparison of academic performance means for both groups of girls did not yield a significant value ( $p < 0.10$ ). Therefore the hypothesis was not supported.

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<sup>3</sup> Each year, the Ministry of Higher Education releases the EACE results for the previous year. Normally there is roughly the same percentage of boys' and girls' schools in the top, middle and upper levels of performance.

Table 4.6 (b) shows the t-test value for this comparison which implies that girls from "poor" schools performed equally well academically with their counterparts in "good" schools.

### 5.3.2 Hypothesis 1.6.2

According to this hypothesis, there is significant difference in academic performance between boys from poor schools and those from good schools.

Again this hypothesis was rejected on the basis of the insignificant t-value contained in Table 4.6 (b). The result indicates that boys from "poor" schools did just as well academically as the boys from "good" schools thereby rendering the term "poor" and "good" a misnomer as it were.

## 5.4 Implications in Education

The results of the present study facilitate the advancement of a number of educational implications. These implications include those described below.

### 5.4.1 Implications for Teacher Trainers

In the study 40.7% of the subjects obtained positive n-Ach scores (i.e scores above zero); the rest (50.3%) scored zero in the n-Ach test. Further, the positive scores were rather low (2-24%). From the fact that the positive n-Ach scores were quite low, it would appear



necessary that teachers in teacher training institutions should be trained in the art of attaining self excellence i.e. in achievement motivation. Once out into the world as practitioners, these teachers would then be expected to encourage their secondary school pupils to have the spirit of self excellence which would presumably spur them to greater aspirations and probably successes.

It would therefore be the concern of teachers not to concentrate on merely raising temporary achievement motivation in their pupils so as to get them interested in their lessons but to aim at developing a long-term need to achieve in these pupils. This suggests among other things that the use of intrinsic rewards instead of extrinsic rewards would have to be emphasised.

#### 5.4.2 Implications for Curriculum Developers

If the above suggestion was accepted then it would imply that it would be a duty of the curriculum developers to design the necessary n-Ach strategies that would help raise more permanent achievement motive among our high school boys and girls.

So much has been written in the present secondary school curriculum about the exact knowledge and skills to be acquired without adequate regard to achievement motivation among the recipients of the various bits of knowledge and skills. This study suggests that techniques

of raising achievement motivation in pupils be mentioned wherever appropriate in the secondary school curriculum.

#### 5.5 Suggestions for Further Study

From the research design and the data obtained in the present study a number of suggestions can be made that may be considered in subsequent studies. These include the following:

1. The study can be repeated to cover a larger sample covering not only government secondary schools but also private schools and harambee schools.<sup>4</sup>
2. In an attempt to get 'truer' results, it would be advisable to use marks from a common examination for all the subjects instead of separate end-of-term marks. It would also be advisable to use a standardized achievement motivation test.
3. In the light of the results obtained in the present study it is conceivable to launch a nation wide project on achievement motivation among secondary school pupils. In this endeavour, the researcher may start off by measuring the subjects' initial n-Ach levels then raise their motivation then measure their n-Ach levels once more. Academic tests can also be

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<sup>4</sup>Harambee schools are those secondary schools started and run on self-help basis by members of the community in a given locality. Private secondary schools are the secondary schools owned and run by individual persons.

administered at both stages of n-Ach measurement. The ensuing correlations between n-Ach and academic performance would then give a more comprehensive observation than was the case for the present study. Primary schools, primary teachers' colleges as well as the university may be included in such a national n-Ach survey.

4. In order to obtain a better and clearer picture of the personality of the subjects in question, it would be advisable to include other related variables such as self-concept and socio-economic status in the investigation. This would provide information on how the subjects view themselves vis-avis achievement motivation as well as give information on the socio-economic background of the subjects showing various n-Ach levels.

APPENDIX A

THE FIVE PICTURES USED IN THE MAIN STUDY

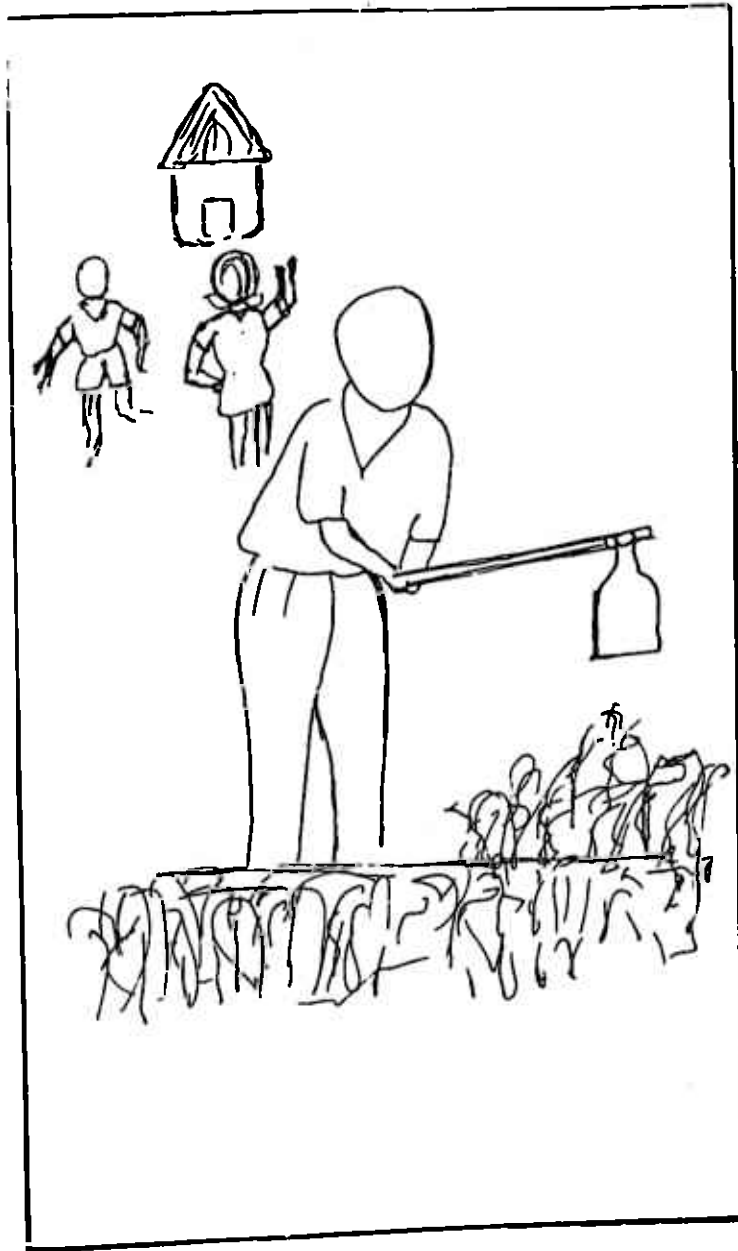
PICTURE 1



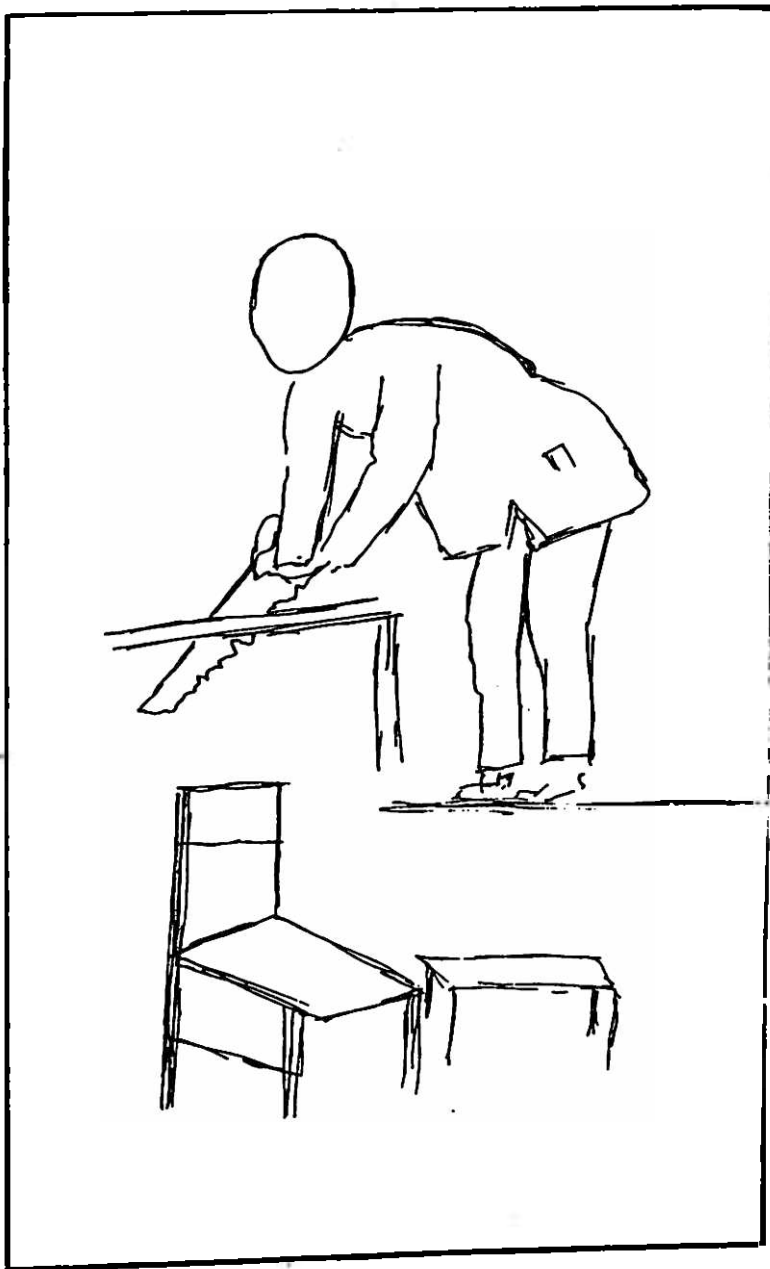
PICTURE 2



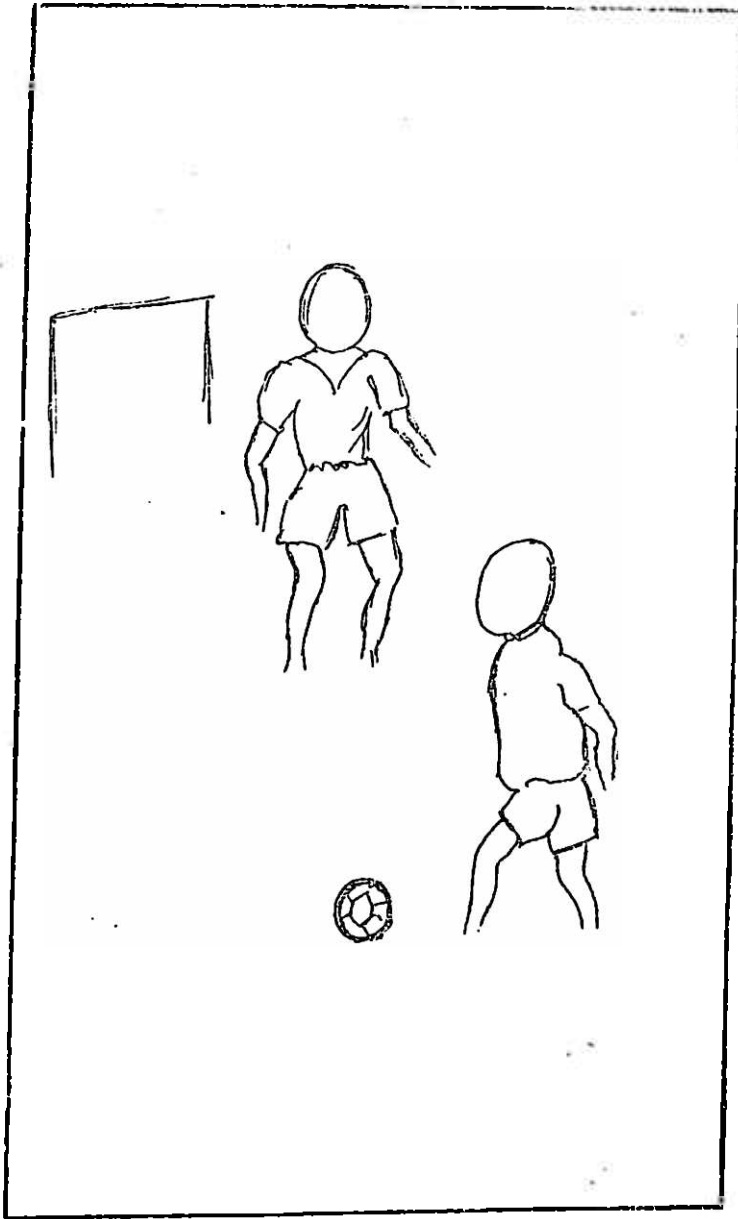
PICTURE 3



PICTURE 4



PICTURE 5





APPENDIX B

(i) n-Ach TEST INSTRUCTIONS FOR THE PILOT STUDY

I am interested in finding out the different kinds of imaginative stories you can write. To help me in this, I am going to show you some pictures, one at a time. Each picture will be shown to you for about twenty seconds. The picture will then be kept away and about four minutes allowed for you to write a story about it. Do not just describe the picture. Use the following questions to help you in making up your stories.

- (a) what might have happened before the scene in the picture?
- (b) what is happening? What is being felt?
- (c) what is likely to be the outcome? What will happen next?

Again do not merely answer the questions. Use them as a help or guide in writing your stories. Each story you write is acceptable. You are required to ensure that you have your code number and the number of each story on each sheet of paper you use.

(ii) n-Ach INSTRUCTIONS USED IN THE MAIN STUDY

I am interested in finding out what imaginative stories you can write based on some pictures. To help me in this, I am going to give each one of you a booklet

containing five pictures labelled Picture 1, Picture 2, Picture 3, Picture 4 and Picture 5. On receiving your booklet please write your Name, School, Form and Date in the space provided. Each one of you will be given a number. Write this number in the space provided at the top of the booklet.

You will be allowed about twenty seconds to look at each picture then allowed about four minutes to write a story about it. We shall take one picture at a time starting with Picture 1 moving on till we reach Picture 5.

Do not just describe the picture. Use the following questions as a guide in making up your stories.

- (a) what might have happened before the scene in the picture?
- (b) what is happening now?
- (c) what is likely to happen next?

Remember not to merely answer these questions. Use them as a help covering each of the three periods - past, present and future.

There is no good or bad story. All stories will be acceptable. This is not an examination but just a way of finding out what type of creative stories you can write based on some pictures.

I will inform you when to move on to the next picture.

APPENDIX C

n-Ach STORY SCORING SYSTEM USED IN THIS STUDY

PUPIL NO.	STORY NO.	UI	TI	AI	N	I	Ga <sup>+</sup>	Ga <sup>-</sup>	Bp	BW	H	G <sup>+</sup>	G <sup>-</sup>	Ach Th	n-Ach Scores

KEY

POINTS

- UI - Unrelated Imagery
- TI - Task-related Imagery
- AI - Achievement Imagery
- N - Need
- I - Instrumental Activity
- Ga<sup>+</sup> - Positive goal Anticipation
- Ga<sup>-</sup> - Negative goal Anticipation
- Bp - Personal blocks
- Bw - wordly blocks external to self
- H - help from others (Nurturent press)
- G<sup>+</sup> - positive emotion
- G<sup>-</sup> - negative emotion
- Ach Th - Achievement Thema

APPENDIX D

ILLUSTRATIVE STORIES

1. Pupil No. 249

STORY FOR PICTURE 5

"Peter is a young boy of 10yrs of age. He lives with his parents, two sisters and a famous football player brother.

When he was a standard three, he dreamt of being a famous footballer like his brother. He started practising with his friends and asked his brother to teach him some of his styles in football kicking drilling etc.

Even though his brother had a heavy schedule for work and for the football club he still spared some time to teach Peter the things he was interested in.

Peter caught the tricks quickly and is now the best player in his school team. He is nearly as good as his famous brother and is very proud of it.

When he grows up, I'm sure he'll be the best player in town."

2. Pupil No. 41

STORY FOR PICTURE 2

"School life is very interesting once you are used to it. Eliza found this only too short a time ago and here she was now trying to show how good it is for her it had been while she was at school. She used to being very happy when doing so. Today she was writing a novel which she was sure was to win the 1st prize in the competition of 'Novel-writing by school girls.'

She had been writing it too hard but at last she found it hard to tell anybody about it because it was last among the good ones."

3. Pupil No. 165

STORY FOR PICTURE 2

"I got an information from my father last year whereby I was told to go to a certain school and then I transferred from my former school. First when I entered the class for the first time I was told by the English teacher to write a composition concerning my former school.

Then I went to my cube and sat down thinking deeply how to express my ideas. Anyway I was terrified by the whole issue but for a short period I recalled the way to tackle my composition. I wrote it quietly and when I finished I took it to the teacher.

The teacher was very tough because by the first time he showed me toughness. So if I had to ignore doing that he could have punished me."

4. Pupil No. 205

STORY FOR PICTURE 3

"It is after lunch. The little children have come from school and when they arrive home, they find their mother has cooked food for them. They eat and then go out to play.

After lunch the father goes to the garden and is now doing some cultivation in his small piece of land.

After cultivating or digging the small piece of land he will plant some maize and beans so that when the rains come they will grow."

5. Pupil No. 85

STORY FOR PICTURE 4

"It's only through hard work that we achieve whatever one wants. For example if it's a teacher he has to make sure that he teaches in the most appreciable manner. If it's a carpenter he has to make the best thing like tables, chairs and stools so that he will get as many customers as possible.

The problem comes if there is lack of capital for buying the material because one now is sure that the rest of his life will be miserable and he will live a failure. Failure is the worst enemy of man!"

6. Pupil No. 266

STORY FOR PICTURE 1

"It was on Sunday morning when Mr. Kamau was sleeping he had a call, he ran and go to the door to look what was happening. When he reach to the do he found nothing he went and se done he start talking to his wife his wife was called Jane because his wife was sick, he said they was noboby nucking on the door will you please go and look what had happen to Mr. John may be he is sick Kamau said will are with Mr. John and he was not seek do you think that that call was talking nonessen."



APPENDIX F

MEANS AND STANDARD DEVIATIONS OF SCHOOL SUBJECTS RAW SCORES FOR ALL SUBJECTS COVERED IN THE MAIN SURVEY

SCHOOL	MATHEMATICS	BIOLOGY	GEOGRAPHY	ENGLISH	
S	50.20	74.40	46.10	55.40	M
	18.40	9.50	11.20	6.10	SD
	41	40	41	41	N
T	34.98	45.40	48.13	44.43	M
	13.25	7.63	5.81	5.42	SD
	42	42	31	42	N
U	59.28	55.84	58.74	60.00	M
	12.69	9.17	7.19	6.05	SD
	32	31	31	32	N
V	55.30	48.80	66.57	61.27	M
	13.94	8.43	6.93	6.82	SD
	30	30	23	30	N
W	55.71	66.84	60.78	53.31	M
	13.66	9.90	13.03	9.98	SD
	38	38	36	39	N



SCHOOL	MATHEMATICS	BIOLOGY	GEOGRAPHY	ENGLISH	
X	31.00	47.30	45.59	52.68	M
	20.57	14.90	12.95	14.28	SD
	37	37	37	37	N
Y	15.90	18.85	27.54	43.95	M
	9.48	7.59	12.92	8.54	SD
	39	39	39	39	N
Z	29.28	32.98	35.71	43.93	M
	19.64	15.49	16.17	12.68	SD
	40	40	38	40	N

Legend

M = Mean

SD = Standard Deviation

N = Total Number of Cases

APPENDIX G

LINEAR CORRELATION\*

(a) BETWEEN n-ACH AND SCHOOL SUBJECTS

(b) AMONG SCHOOL SUBJECTS

(a)

(i) n-ACH VS MATHS

$$\begin{array}{ll} \sum X^2 = 6876 & \sum XY = 38204 \\ \sum Y^2 = 313800 & M_X = 6.46 \\ M_Y = 49.85 & N = 121 \end{array}$$

$$r = -0.16$$

(ii) n-ACH VS BIOLOGY

$$\begin{array}{ll} \sum X^2 = 6876 & \sum XY_1 = 39322 \\ \sum Y_1^2 = 321193 & M_X = 6.46 \\ M_{Y_1} = 50.70 & N = 121 \end{array}$$

$$r = -0.07$$

(iii) n-ACH VS GEOGRAPHY

$$\begin{array}{ll} \sum X^2 = 5860 & \sum XY_2 = 34174 \\ \sum Y_2^2 = 294257 & M_X = 6.29 \\ M_{Y_2} = 50.94 & N = 109 \end{array}$$

$$r = -0.18$$

(iv) n-ACH VS ENGLISH

$$\begin{array}{ll} \sum X^2 = 6912 & \sum XY_3 = 39808 \\ \sum Y_3^2 = 325844 & M_x = 6.46 \\ MY_3 = 50.72 & N = 122 \\ & r = -0.04 \end{array}$$

(b)

(i) MATHS VS BIOLOGY

$$\begin{array}{ll} \sum Y^2 = 313800 & \sum YY_1 = 312247 \\ \sum Y_1^2 = 321193 & MY = 49.85 \\ MY_1 = 50.70 & N = 121 \\ & r = 0.56 \end{array}$$

(ii) MATHS VS GEOGRAPHY

$$\begin{array}{ll} \sum Y^2 = 289338 & \sum YY_2 = 284716 \\ \sum Y_2^2 = 294257 & M_Y = 50.46 \\ M_{Y_2} = 50.94 & N = 109 \\ & r = 0.39 \end{array}$$

(iii) MATHS VS ENGLISH

$$\begin{array}{ll} \sum Y^2 = 313800 & \sum YY_3 = 310474 \\ \sum Y_3^2 = 325588 & M_Y = 49.85 \\ M_{Y_3} = 51.01 & N = 121 \\ & r = 0.24 \end{array}$$

(iv) BIOLOGY VS GEOGRAPHY

$$\begin{array}{ll} \sum Y_1^2 = 294097 & \sum Y_1 Y_2 = 289522 \\ \sum Y_2^2 = 294257 & M_{Y_1} = 51.15 \\ M_{Y_2} = 50.94 & N = 109 \end{array}$$

$$r = 0.55$$

(v) BIOLOGY VS ENGLISH

$$\begin{array}{ll} \sum Y_1^2 = 321193 & \sum Y_1 Y_3 = 317058 \\ \sum Y_3^2 = 325588 & M_{Y_1} = 50.70 \\ M_{Y_3} = 51.01 & N = 121 \end{array}$$

$$r = 0.39$$

(vi) GEOGRAPHY VS ENGLISH

$$\begin{array}{ll} \sum Y_2^2 = 294257 & \sum Y_2 Y_3 = 287408 \\ \sum Y_3^2 = 293886 & M_{Y_2} = 50.94 \\ M_{Y_3} = 51.10 & N = 109 \end{array}$$

$$r = 0.36$$

- 
- \*  
X = n-Ach scores  
Y = Maths Scores  
Y<sub>1</sub> = Biology Scores  
Y<sub>2</sub> = Geography Scores  
Y<sub>3</sub> = English Scores

APPENDIX H

STANDARD DEVIATIONS FOR THE VARIOUS SUBJECT GROUP COMPARISONS  
 APPEARING IN TABLE 4.6(b)

	SUBJECT GROUPS	STANDARD DEVIATIONS			
		MATHEMATICS	BIOLOGY	GEOGRAPHY	ENGLISH
1	Pupils from "poor" schools	10.63	9.13	10.42	10.68
	Pupils from "good" schools	10.22	9.16	9.98	9.15
2	All boys	10.99	9.39	10.71	10.62
	All girls	9.75	8.83	9.58	8.98
3	Girls from "poor" schools	10.86	9.44	9.83	9.20
	Girls from "good" schools	8.87	8.41	9.36	8.56
4	Boys from "poor" schools	10.31	8.77	10.82	11.45
	Boys from "good" schools	11.58	9.91	10.46	9.74

APPENDIX J

LIST OF SCHOOLS USED

NAME OF SCHOOL	SCHOOL CODE	SCHOOL CATEGORY	1978 EACE % PASS (DIV. 1 - 3)
Mangu High School	Q	g	88.2
Ruiru Sec. School	R	p	34.2
Kagumo High School	S	g	98.3
Ngandu Girls High School	T	g	100
Alliance Boys High School	U	g	100
Kenya High School	V	g	100
Masii Sec. School	W	p	39
Misyani Girls Sec. School	X	p	28
Senior Chief Koinange Girls Sec. School	Y	p	18
Kiambaa Boys School	Z	p	24

Legend

- p = "poor" school i.e school whose 1978 EACE % pass between Division I - III was 40% or less.
- g = "good" school i.e whose % pass for the same EACE exam as above between Div. I - III was 80% or higher.

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