


A STUDY OF THE RELATIONSHIP BETWEEN SELECTED
SCHOOL CHARACTERISTICS AND GEOGRAPHY ACHIEVEMENT
OF GRADE TEN PUPILS IN THE NORTHERN PROVINCE
OF ZAMBIA.

BY

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DECLARATION

I solemnly declare that this dissertation represents my own work and that it has not previously been submitted for a degree at this or another university.

Signed --- J/KS -----

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A P P R O V A L

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A B S T R A C T

Pupil academic achievement could be influenced by many factors. Some of the factors could be pupil-based, teacher-based, home-based, and school-based. Knowledge of the influence of such variables on pupil achievement could be essential and beneficial to the educational system.

In industrialised societies, findings of many studies indicated the significance of out-of-school factors in influencing achievement. However, that might not necessarily follow so in Africa because of cultural differences between African and Western societies. Some research done in the developing world indicated contradictory results. Therefore, generalisation of findings of work done in Western societies might not be wise.

This study was prompted by the variations in school examination results between schools and provinces. Such a situation could be unhealthy for the nation, socially and politically, as it might lead to problems arising from over-representation and under-representation of certain schools at higher levels of education.

The present study attempted to find out the relationship between teacher characteristics, class size, and instructional resources, and pupil academic achievement in geography at Grade ten level in Northern Province of Zambia. The study tested two null hypotheses. Null hypothesis one was that, there is no relationship between Grade ten pupil academic achievement in geography and selected school characteristics, namely:

- i) Teacher Characteristics,
- ii) Class Size,
- iii) Instructional resources.

Null hypothesis two was that, there is no difference between high achievers, moderate achievers, and low achievers in geography at Grade ten level of secondary education.

Evidence was collected to test the null hypotheses at .05 level of significance.

A sample of 300 Grade 11 pupils and another of teachers of geography who taught Grade ten in 1984, took part in the exercise. Stratified random sampling was used to select eight schools out of 14 schools in the province. The schools consisted of two girls' schools, two co-educational schools and four boys' schools. Random numbers were used to select 80 from girls' schools, 80 from co-educational schools and 140 from boys' schools. Teachers of geography were selected if they taught Grade ten pupils in 1984. The sample of pupils was divided between high achievers, moderate achievers, and low achievers based on geography results in Grade ten. Pupils who obtained grades one and two constituted high achievers. Moderate achievers were pupils who obtained grade three. Low achievers were pupils who obtained grades four and fail.

Ordinal data were collected for both selected school characteristics and achievement in geography. Data on selected school characteristics were obtained by using a structured questionnaire consisting of Part I and Part II for teachers and pupils respectively. The researcher also observed teachers at work in order to elicit information which was required in the

lesson observation check-list. Data on achievement were supplied by pupils.

Bearing in mind that variance in achievement could be due to variations in the home backgrounds of pupils, and that some pupils might be more able than others, there was need to control these factors. Selection of pupils with comparable home backgrounds helped to neutralize the home factor. Selection of pupils with equivalent ability based on Grade seven examination results helped to neutralize the intelligence factor.

When all the data were collected, the Friedman test was applied to determine whether or not column ranks differed significantly. Null hypothesis one was rejected, while null hypothesis two was accepted. Results seemed to indicate that pupil academic achievement was dependent on the school characteristics. Secondly, the results showed that there was no significant difference between high achievers, moderate achievers, and low achievers.

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

In this study, the author depended in part, on his personal experiences as a teacher in the Northern Province of Zambia. Secondly, the author wishes to thank pupils and staff of the secondary schools which provided the data for the pilot study and final study. In addition, he wishes to record his indebtedness to Professor E.K. Waddimba of the Educational Research Bureau of the University of Zambia who supervised the study.

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DEDICATIONS

Dedicated to my Mother
and late Father.

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STATEMENT OF THE PROBLEM

Introduction

Pupil academic achievement as a complex variable could speculatively be a function of many different factors. The possibility of clusters of variables which are pupil-based, teacher-based, home-based and school-based, might be difficult to rule out. Singly or interactively, knowledge of the influence of such variables on pupil achievement sounds essential for fulfilment of pupil self-actualization. Whether pupil achievement is viewed cognitively, affectively and by psychomotor domains, separately or interactively, knowledge of the extent of influence by these variables might be beneficial to the educational system. Some studies investigated the question of which factor, whether home or school, had a greater influence on pupil academic achievement (Hamilton, 1981:43). Other studies advocated the need to study both factor's simultaneously (Johnstone and Jiyono, 1983). This study was designed to investigate similar trends and contribute to this body of knowledge in Zambia, with regard to selected school characteristics versus Grade ten pupil achievement in geography. The rest of Chapter One includes the problem, purpose of the study, hypotheses, implication of the hypotheses, assumptions, significance of the study, limitations, definition of terms and organization of the study.

The Problem

Academic achievement as an aspect of learning should deserve due consideration in the educational arena. An analysis of school examinations results at any level of education in Zambia might reveal a trend of marked differences in achievement between schools



and provinces. The magnitude of the problem is partially illustrated in Appendix (A). The appendix illustrates pass and fail percentage in geography of Grade ten pupils in Northern Province from 1978 to 1982. The period from 1978 to 1982 was chosen to illustrate the problem because during that period, schools in Northern Province recorded many fails at that level of secondary education.

Such a trend might lead to social and political queries arising from over-representation and under-representation of certain schools and/or provinces at higher levels of education. Another concern might be the extent of optimal self-actualization of pupils and how that could be affected by school characteristics.

Apparently, some pupils might be at an advantage or disadvantage depending on the school one attended. Such a trend warrants investigation and a study in that direction might show correlations of the differences.

Many studies conducted in industrialized societies seem to have reached a consensus as to the significant influence of the out-of-school factors on achievement. However, the cultural differences between Western and African societies and also the contradictory nature of the results of some researches done in Africa (Cooksey, 1981; Heyneman, 1976 a; 1979), would make it advisable to study the problem in other sociological environments.

The disparities which emerge from Appendix (A) could be a result of various factors. This study was designed to find out the extent to which the selected school characteristics were related to pupil academic achievement in geography at

Grade ten level between schools in Northern Province of Zambia. Some other characteristics which might be related to pupil achievement in geography are beyond the scope of this study.

Purpose of the Study

The apparent trend of geography results in secondary schools in Zambia shows high rates of failure in some schools and also differences in pass percentage between schools (Appendix A). Since academic achievement could be influenced by many factors most of which are concerned with the environments with which the child interacts, the purpose of this study was to investigate the relationship between selected school characteristics and achievement in geography at Grade ten level in Northern Province of Zambia. The study mainly investigated the relationship of pupil geography achievement to the following characteristics:

- i) Teacher characteristics.
- ii) Class size.
- iii) Instructional resources.

School characteristics is a wide field. Some of the variables which might require attention could be school tradition, discipline, sex differences, location of the school, vocational aspirations and some others. As regards between schools differences, the author, from years of teaching at three schools in the Northern Province, observed that teacher characteristics, class size and instructional resources seemed to cause much concern among teachers. While at Grade 12 examinations marking sessions where the author serves as Team Leader for History Paper One, teachers from different provinces had strong feelings about these three characteristics. Grade ten pupils were chosen for

this study because at the time when research was done, that was the end of Junior Secondary School at which pupils wrote terminal examinations for selection to Senior Secondary School (Grade 11), and certification. These were some of the reasons why the author decided to conduct research on the three variables, in Northern Province. The study was expected to reveal whether or not pupil achievement in geography differed under the three conditions studied. In other words, do the conditions influence achievement significantly?

On the other hand, the study attempted to find out whether or not high achievers, moderate achievers and low achievers differed significantly. Whereas pupils were treated as one population, if these categories of achievers differed significantly, then that would imply that pupils, really, did not appear to belong to the same population.

Hypotheses

As a guide to the research, the study had the following null hypotheses (Ho one & two) tested at .05 level of significance. The alternative hypotheses (H_1 one & two) were also stated below the null hypotheses. The null hypotheses arose from the author's thesis that achievement in any school subject area could be a function of various variables including those for this study.

Ho One: There is no relationship between Grade ten pupil academic achievement in geography and selected school characteristics namely:

- i) Teacher characteristics.
- ii) Class Size.
- iii) Instructional resources.

H₁ One: There is a relationship between the selected school characteristics and Grade ten pupil academic achievement in geography at .05 level of significance.

H₀ Two: There is no difference between high achievers, moderate achievers, and low achievers in geography at Grade ten level of secondary education tested at .05 level of significance, in terms of (a) teacher characteristics, (b) class size, (c) instructional resources.

H₁ Two: There is a difference between high achievers, moderate achievers and low achievers in geography at Grade ten level of secondary education tested at .05 level of significance in terms of (a) teacher characteristics, (b) class size, (c) instructional resources.

Implication of the Hypotheses

The acceptance of the null hypothesis one would mean that the selected school characteristics were not significantly related to pupil academic achievement in geography. The correlation might not be there singly as per characteristic but might be there interactively. However, the hypothesis would be rejected if school characteristics were found to be correlated with achievement in geography. The implication in this case would be that, the selected school characteristics had an influence on pupil geography achievement. The influence of the characteristics might even be stronger singly or interactively if they interacted with other characteristics. By manipulating certain school characteristics, pupil achievement in geography might vary.

Acceptance of null hypothesis two was supposed to mean that, matched according to teacher characteristics, class size, and instructional resources, under conditions of high achievers, moderate achievers and low achievers, the pupils came from the same population. In other words the conditions of high achievers, moderate achievers and low achievers did not affect scores.

That being the case, high achievers, moderate achievers and low achievers came from the same population despite teacher characteristics, class size, and instructional resources.

Rejection of null hypothesis two was supposed to mean that the conditions high achievers, moderate achievers and low achievers determined or influenced the scores. Therefore, the pupils would appear to come from different populations.

Assumptions

Some of the assumptions behind this study are that, apparently in Zambia academic achievement might be a reflection of the various environmental factors in total and per characteristic. Such characteristics might affect a child's academic achievement. The school which a child attends and the characteristics of the school should be conducive to learning. A school could negatively or positively influence the child's achievement. These and other assumptions necessitated identifying and determining the extent of the influence of any characteristic on achievement. School characteristics might not influence school curricula uniformly. Pupils could be differentially influenced by each one of the school characteristics. There might be also other non-school variables which could influence pupil academic achievement. School quality could therefore be indicated by an appropriate and comprehensive measure of the influence of school characteristics.

Significance of the Study

The significance of the study, lay in the hope to establish the role of the school environment in determining academic

achievement of pupils. The study was also geared towards finding out the factors related to the differences between schools. While Zambia continues to devise ways of improving the educational system, this study might provide some guidelines in devising the needed adjustments within the school situation or improvement of the educational system. Apart from some characteristics being influential or not, reasons could be probed, why and how that state of affairs existed. In the long run, improvement of the school system might result in improvement of emerging generations.

Limitations of the Study

A longitudinal study would have been preferred for such type of research. That would have facilitated a study of achievement of the same cohort under different school situations. However, such a study was not possible because of limitation of time. Secondly, the limited resources prevented consideration of a sampling strategy including more schools and provinces. Nevertheless, a scientific sampling procedure was strictly observed in drawing up the required sample out of seven boys' schools of which six were boarding and one was day, four girls' boarding schools and three co-educational boarding schools for the study in Northern Province of Zambia.

Definition of Terms

Academic achievement: In this study, academic achievement refers to the scholarly performance of a pupil at school by grades in Grade ten public examinations of the Ministry of General Education and Culture in conjunction with the Zambia Examinations Council.

School characteristics; also referred to as school factors: School characteristics in this study, refers to the socio-cultural, academic and professional elements found in the school environment.

Home background: The term home background, in this study, designates the socio-cultural and socio-economic aspects of a pupil's family.

Teacher characteristics: Teacher's qualification and professional classroom behaviour or performance were the aspects of teacher characteristics included in this study.

Class Size: The number of pupils taught by one teacher per class confined to a single room constituted what class size meant in this study.

Instructional resources: The teaching materials found and used in the school to facilitate teaching and learning were categorised as instructional resources.

Junior Secondary: The first three years of secondary education in Zambia whose terminal point was Grade ten until 1984 when Grade nine became the terminal point. In 1984, both Grade ten and Grade nine pupils wrote terminal examinations for selection to senior secondary and certification.

Organisation of the Study

Chapter One of the dissertation comprises the statement of the problem, constituting the appropriate components. The review of related literature constitutes Chapter Two. Chapter Three comprises a discussion of the research procedure and methodology. Results were presented and discussed in Chapter Four. In Chapter Five, the summary, conclusion and recommendations were presented.

CHAPTER 2

REVIEW OF LITERATURE

Bearing in mind that many factors are likely to affect pupil academic achievement in general, this study was confined to the influence of three selected variables. Some related literature was reviewed and grouped under school factors, teacher characteristics, class size, instructional resources and out-of-school factors. Previous findings on how each one of the factors influenced various curricula are discussed below. Some literature on the effect on achievement of grouping pupils homogeneously is also discussed below.

School Factors

School related factors within and between schools as contributors to student performance was one of the major focuses of educational research (Guttance, 1980). One of the attractions to researchers was presumed to be the apparent differences in school achievement results. Shaycoft, cited by Dyer (1968), found statistically significant variations among schools. The Coleman report (Dyer, 1968:44), attested to the significant influence of the school on achievement. The report suggested however, that;

The best way to find out what schools are doing to pupils is to observe the pupils before and after the schools have had a chance to influence the way they think, feel and act. A true definition of achievement must rest ultimately on measures of change.

In this study, pupil academic achievement was deemed to be the desired change.

The rationale of some of the studies was to try to get to the root of the relationship between academic achievement and school characteristics. The apparent between school differences in geography achievement in Zambia (Appendix A), attracted the author to study the phenomenon as stated above by Cuttance (1980).

A complex of school related factors which might be expected to have an immediate and direct impact on educational progress and success was believed to exist (Wiseman, 1964). Aspects such as emphasis on examinations, qualified staff, good teaching and favourable conditions of the school, study habits of pupils, attitude to and interest in specific subjects coupled with vocational aspirations, and instructional resources in the school and many others, were found to be interactively or singly potent school factors (Hamilton, 1981).

Cuttance (1980), cited research reports which showed school influence to account for about one third as much influence as non-school factors in overall cognitive outcomes. School related characteristics like peer group influence, aspirations and achievement levels were found to have influence on achievement by Cramer, Alexander and Campbel, Hall and Butterworth, Duncan (Cuttance, 1980). The foregoing school factors plus many others might have an influence on pupil achievement in Zambia. The findings of the study were expected

to reveal the extent and nature of relationship.

Teacher Characteristics

Teacher characteristics as a variable of school background could be an important influence on academic achievement of pupils. Factors like teacher qualification, number of years of teaching experience, verbal ability of the teacher, teacher competence (knowledge of the subject matter) lesson preparation, punctuality for lessons and absence from work, turnover ratio of teachers and many others could be important factors influencing achievement. Teacher qualification and number of years of teaching experience could determine the teacher's knowledge of the subject matter and also the handling of material and pupils under different situations of learning.

Some researchers found these characteristics to exert some influence on academic achievement (Thomas^x, 1962; Hamushek^k, 1968; Plowden[^], 1966; Katzman[^], 1968; Guthrie^x, 1970; Cuttance[✓], 1980); Goodman (Dyer[✓], 1968:43), found "teacher experience to be the school characteristic most strongly associated with pupil performance". Bidwell and Kasarda (1980), also found teacher experience to have a moderate additive effect on academic achievement. However, Hamushek (Cuttance, 1980:269), "observed that^a the effect of this variable was constant after initial experience was gained". Similar results were found for teacher qualification.

Another important factor might be the teacher's classroom behaviour on which the quality of the teaching

process could depend. Factors like verbal ability of the teacher, clarity of the teacher's presentation of lesson material, variability of teacher's classroom activity and catering for individual differences among pupils, pupil-teacher interaction, good questioning technique, relaxed and positive class discipline were deemed to be quite important (Sifuna, 1974; Guttance, 1980; Manson, 1973). In order for effective learning to occur, what might be needed is "a teacher with an experienced outlook and adaptable turn of mind" (Burt, 1961:116). Such a teacher could teach through pupil activities thus leading to a pupil-centred lesson.

The importance of the teacher's classroom questioning technique was emphasised by Manson (1973). His observation was that, learning could be enhanced when a teacher asked provocative questions which stimulated interest and prompted discussion. Good questions should promote thinking and expedite problem solving. Taba and Elzey (Manson, 1973), found teacher's questions to have substantial influence on student's thinking. They observed that:

The questions teachers ask set the limits within which students can operate and the expectations regarding the level of cognitive operations. Questions are the carriers of whatever new cognitive system is emerging. Some questions function as invitations to heighten the performance of certain cognitive operations while leaving the content and the direction of those operations open. Such questions invite invention, discovery and the creative

use of previous knowledge. Others control and limit both the control and nature of cognitive operations.

Questions used in the classroom should therefore require more than remembering information in approximately the same form in which it was learned.

Teachers exhibit quite a variety of competence in both subject matter and methods of teaching. One of the teacher's tasks might be the development of the pupils' awareness of each other and use of each other as resources. The teacher as a geographer should also act as a resource person. In relation to methods of teaching, Bauer (1976:116), observed that:

There is not just one way of teaching and the task of the teacher is to find the relevant method and form of presentation for each topic. The teacher must find the best didactic way to present the material, to find the way that is most likely to be beneficial in the educational process. This presupposes that the teacher knows the material well and is able in a manner of speaking to draw from the "well" of knowledge and is able to conceive ideas for handling the material.

A teacher therefore, who does not thoroughly understand the subject might have very little to give to the pupils. Similarly, poor methods of teaching might have negative influence on the achievement of pupils (Bloom, 1974).

The learning process might not only be influenced by incompetence and poor teaching methods, but also by other

factors. Communication could be an important factor. Speech defect or poor command of the language of instruction could be an influential factor when much of classroom instruction was oral. If a teacher were at loss for words, such a teacher could have difficulty in conveying the message. The quality of the teacher's spoken English (language of communication) was found to be the most outstanding measured factor of significance (Heyneman, 1976 b). Other researchers also found verbal ability of the teacher to be a factor of significance in influencing academic achievement of pupils (Evans, 1959); Coleman, Hamushek, Bowles, Guthrie (Cuttance, 1980). Burt (1961), reported that the teacher's reading backwardness could spread to other subjects. This seems to imply, therefore, that the teacher should have a sound background knowledge of the subject and good command of the language of instruction for effective teaching to occur.

The teaching load which might be a direct result of staffing conditions in the school could be an important variable of school background under teacher characteristics and could affect achievement in several ways. In a school where teachers were overloaded, their lesson planning might be affected. Overloading, coupled with high staff turn-over ratio could lead to frustration. High staff turn-over could be a problem because pupils would be exposed to teachers with different styles of learning within short periods of time.

(Evans, 1959). Furthermore, Evans observed that, a teacher who was continuously absent from work whether because of ill-health or some other reasons could be a liability. Such a teacher might not be effectively imparting to the pupils much of what they needed to know in the course.

In any learning situation, the relationship which might exist between teacher and pupil could be of important bearing on academic achievement. Much seems to depend on mutual understanding between the two parties. To this effect, Evans (1959), observed that pupils should be seen as "fellow workers, not as material in the hands of the craftsman". Nevertheless, success might seem to depend quite as much on the school situation as on teacher's own qualities.

In Zambia like anywhere else, the variables cited in the literature might be influencing pupil academic achievement. The study was designed to answer this question of influence of teacher characteristics on achievement in geography.

Class Size

Class size as a determinant of pupil academic achievement in school has been a subject of research in recent years. Many researchers both in the developed and developing countries have tried to correlate class size and achievement at primary and secondary school levels. However, their findings varied.

Several factors might determine the sizes of groups under instruction at a given time. The factors might range from the nature of the subject, ability levels of pupils, capacities of available class rooms and many others (Johnson & Scriven, 1967). Classrooms should be designed "to facilitate communication and inter-personal relations of a specified nature..." (Maxson, 1975:177). The classroom might be viewed not only as a site for pupils' learning but also as a bound space where teachers are gathered with large numbers of children over long periods of time, Maxson (Dreeben, 1973:459). Both teachers and pupils should find a means of performing assigned tasks within the classroom. For example, the pupil, to work at assigned tasks and the teacher, to explore and supervise pupils' work. The classroom should therefore be of the size which could allow these activities of teacher and pupil to take place.

Popular opinion among teachers assumed that small class size was more conducive to superior achievement and that large classes were exhausting, a cause of frustration and reason for pupils' failure in school. In contrast, research evidence showed inconsistent and low order correlation between class size and achievement (Cuttance, 1980; Marklund, 1963; Fleming, 1959). Johnson and Scriven (1967), also found inconsistent and low order correlation between class size and achievement gains in English and Mathematics among seventh and eighth grade pupils. In her study, (Byrne, 1975:1031), found out that overcrowding because of limited space led to

"inattention, poor discipline and lecture methods instead of pupil-centred integrated work or use of large equipment...". Under such conditions the very able and motivated children survived while the less able under achieved.

The author is of the opinion that class size should not be viewed in isolation but be associated with effective use of instructional resources. When effective use of instructional resources was hindered by limited space, then class size could be a contributory factor to low achievement.

Cuttance (1980) cited literature to the effect that small classes did not on their own necessarily lead to higher pupil performance (Davies, 1972; Wiseman, 1967; Little, 1971; Olsen, 1971; Goodlad, 1960; Reynolds, 1976; Rutter, 1979; McKenna and Pugh, 1964). What might be effective was probably radical changes in the present technology of teaching, coupled with changes in class size. In this connection, Ki Hyung Oh of the Institute of Education and Research, Yonsei University, Seoul has worked for over 10 years towards the solution of large classes and multi-grade problems in schools. His method of teaching large classes of 80 pupils was called Education Development Project (EDP) (Khatun, 1980:27). This method succeeded in producing good results.

Although there is a belief among teachers that large classes were exhausting and a source of frustration, some teachers might find large classes more interesting and stimulating. Moreover, it might be difficult to give a correct interpretation of what constitutes a large or small class because of diversity of opinion. Fleming (1959:38), suggested

that since class size did not significantly influence academic achievement, the secret of the difference between the success of one teacher should be looked for in something other than the mere size of the group under tuition. In Zambia, statistics of class size by level, subject area, teacher competence and pupil achievement would be useful.

• Instructional Resources

Instructional resources, sometimes called teaching aids, are presumed to help teachers to cope with specific teaching needs and situations. Selectively chosen and appropriately used, a teaching aid could enable the teacher to teach better. Audio-visuals might enable the teacher to convey to the class a degree and depth of comprehension which could be impossible to achieve through the spoken word or written word alone (Wales, 1967). On the contrary, if wrongly chosen or used, for example to fill up for the teacher's incompetence, such teaching aids would confuse pupils. In this light, therefore, the place of teaching aids or instructional resources in influencing academic achievement should be investigated. Bidwell and Kasarda (1980:407), observed that:

The control that schools have over the outcomes of schooling must occur either through the procedures by which they allot resources to their instructional units or through their influence over the way these resources are distributed within these units and used by the teachers and students...

Ki Hyoung Oh, whose studies for a period of over ten years produced the Education Development Project (EDP), strived to solve the problem of class size by use of appropriate resources. The secret of the success of the EDP method was evident from its use of instructional materials appropriate for large classes of 80 pupils (Khatun, 1980). Bidwell and Kasarda (1980), cited study reports which showed moderate to strong additive effects on academic achievement by such factors like teacher experience, counselling including textbooks which could be classified under instructional resources. Knowledge of availability, preparation and utilisation of instructional resources would be enlightening.

Out of School Factors

Contrary to the significant influence of the school on achievement, evidence from research conducted in industrialized societies of Europe and North America showed that socio-economic background was an important determinant of a child's academic achievement.

* Morgan (1980), found out that lower social class measures were systematically correlated to lower school achievement. The results suggested the importance of family background and other neighbourhood factors as predictors of academic achievement. In other earlier studies, similar results were obtained (Sharrock, 1968; Brown, 1969). Some researchers attested to the differential relationship of home factors to different kinds of achievement, for example in language, reading and mathematics (Marjoribanks, 1972; Iverson & Walberg, 1982).

While looking at the relationship between social class and academic performance in Cameroon, Cooksey (1981), cautioned researchers, working in the Third World, on the dangers of making wrong conclusions from their findings. Cooksey alleged that, although results might show high achievers from the least privileged, sub-cultural differentiation played an important role in the overall selection process to secondary schools. His results also showed the significant influence of social class on achievement.

A study done by Kapambwe (1980), in the Copperbelt of Zambia echoed the findings of researchers in the developed societies. Results showed the significant influence of socio-economic background on overall achievement of junior secondary school pupils.

However a study by Heyneman, (1976 a), in Uganda showed that there was no relationship between any measure of a child's socio-economic background and total academic achievement on the Ugandan National Primary Leaving Examination. In another study (1979), results showed success to be partly due to aspirations and equal opportunity for higher education which depended on performance. Heyneman alleged that a "blind examination" ensured less privileged children of an equal chance for success with privileged children. All children were aware of potentialities of hard work because of equal opportunities dependent on achievement.

To strike a balance, Johnstone and Jiyono (1983), claimed that both school and out-of-school factors and that schools,

homes and personal factors were all important. The only problem was that the degree of influence on achievement of out-of-school factors relative to school factors was not clearly established. If a full explanation of achievement levels was to be obtained, there was need to apparently combine both school and out-of-school factors. There might also be need to examine the relationship between home and school and how the two interact to influence children's academic achievement (Niles, 1981).

According to the reviewed literature, research findings agreed in some ways but also disagreed in other ways as to what might constitute the most important determinant factor of academic achievement of pupils. Apparently, much of the cited literature pointed to the differences between societies and the significance of the factor under study could depend on the sociological environment. This study tried to find out the correlation between the selected school characteristics and achievement in geography of Grade ten pupils in Northern Province of Zambia. The findings were expected to contribute to knowledge in the field of the role of the school in pupil academic achievement.

Grouping Pupils Homogeneously

Educationists in public schools have for many years recognised that pupils have a wide range of abilities, interests and degrees of motivation (Koontz, 1961). There is need to provide for the differences between the pupils. On many occasions school authorities have tried to cater for the differences by

grouping pupils according to achievement based on some criterion measurement.

Without such grouping of pupils homogeneously, the arguement was that effective learning might not occur. Slower pupils might prevent the faster pupils from advancing and achieving up to their optimum ability. On the other hand, it was felt that the slower pupils could benefit from the stimulation of the faster ones when pupils were grouped heterogeneously (French, 1960).

Most recent research however, suggested that grouping pupils homogeneously had little direct influence on pupil academic outcomes (Cuttance, 1980). Passow (Koontz, 1961), observed that there was no significant unanimity of findings in favour of homogeneous groups. Koontz's (1961) study also showed that homogeneous grouping of pupils did not produce significant results. The implication was that pupils grouped homogeneously on the basis of achievement or some other criterion measure did not differ significantly. This study, therefore, in addition to investigating the relationship between selected school characteristics and pupil academic achievement also tried to find out whether the matched groups of high achievers, moderate achievers and low achievers differed significantly, that is, whether or not the groups came from the same population.

CHAPTER 3

PROCEDURE AND METHODOLOGY

The various aspects of procedure are separately summarised below in connection with the problem, purpose of the study and hypotheses of the study stated in Chapter One.

Population

The population consisted of all pupils who were in Grade 11 in 1985, but were in Grade ten in 1984, and all teachers of geography in Northern Province of Zambia.

The rationale for selecting Grade ten was because that marked the end of a three year junior secondary school curriculum. The final examinations set by the Zambia Examinations Council, in conjunction with the Ministry of General Education and Culture, are important to the individual and to the education system in Zambia. Pupil achievement in Grade ten examinations is vital because that is the basis for selection to continue with one's education in Grade 11. Consequently, pupils, parents, teachers as well as the Ministry of General Education and Culture, attach great importance to Grade ten. At this stage, the cumulative influence of the selected school characteristics might show up. Grade 12 as another terminal stage would be difficult to trace the school leavers after being scattered for tertiary education, employment, among other destinations. Every year at the same time the whole of Zambia focuses attention on the Grade ten examinations since all pupils in Grade ten want those examinations, the results of which determine one's further education.

Sample

The sample consisted of 300 pupils. Another source of data were teachers of geography who taught Grade ten in 1984. The sample of pupils was considered to be of reasonable size to represent the province since stratified sampling procedures were applied.

Sampling Procedure

Stratified random sampling was used to select eight schools out of a total of 14 schools. The schools in the sample consisted of two Girls' schools out of a total of four schools, four Boys' schools out of a total of seven schools and two co-educational schools out of a total of three schools.

The sample of 300 pupils was randomly selected by using random numbers (Langley, 1970:43). Eighty girls came from Girls' schools, 140 boys came from Boys' schools and 80 girls and boys came from co-educational schools. Teachers of geography were selected if they were named to have taught Grade ten pupils in 1984.

The use of random numbers afforded every school and pupil in the population of an equal chance of being selected. The sample was then divided into high achievers, moderate achievers and low achievers. High achievers were pupils who obtained Grades I and II, moderate achievers were pupils who obtained Grade III while low achievers were pupils who obtained Grades IV and F in the Grade ten geography examinations in 1984 (Appendix B).

TABLE 1

SAMPLE OF SCHOOLS AND PUPILS

| NAME AND TYPE OF SCHOOL | SAMPLE SIZE |
|----------------------------|----------------|
| KASAMA GIRLS (BOARDING) | 40 |
| LWITIKILA GIRLS (BOARDING) | 40 |
| LUWINGU CO-ED (BOARDING) | 40 |
| NBALA CO-ED (BOARDING) | 40 |
| MPIKA BOYS (BOARDING) | 35 |
| ISOKA BOYS (BOARDING) | 35 |
| MUNGWI BOYS (BOARDING) | 35 |
| KASAMA BOYS (DAY) | 35 |
| TOTAL | 300 |

Type of Data Collected

The independent variables were selected school characteristics and the dependent variable was achievement in geography at Grade ten level in public examinations.

The data on geography achievement were ordinal. Each pupil's grade was a combination of marks obtained in Papers I and II of the Grade ten geography examinations. Paper I consisted of 40 multiple-choice questions marked out of 40 per cent. All questions in this paper were to be answered. Paper II consisted of questions divided into three sections. Pupils were required to answer four questions, at least one question from each section. Paper II was marked out of 60 per cent. Many of the questions in this paper were of the short answer or short essay type.

The grade which a child could get ranged from one to four constituting pass, or F constituting fail (Appendix B). The grades were then classified under the categories of high achievers, moderaterate achievers or low achievers.

The data on school characteristics were also ordinal. They were derived from composite scores as averages based on a five-point Likert-type scale in questionnaire items per characteristic. The scores included points scored by each teacher from lesson observation ratings by the researcher. On every item in the teacher observation check-list, a teacher scored one mark if the criterion existed.

Construction of Research Instruments

The questionnaire was constructed after the researcher had discussions with colleagues, the researcher's supervisor and the inspector of geography in the Ministry of General Education and Culture. Discussions were centred on factors which might affect pupil performance in general. The researcher's own teaching experience at three different schools in the Northern Province also acted as a guide in the construction of the questionnaire. Findings from related literature were also utilised. Since the study involved selected school characteristics, the researcher constructed the questionnaire for collecting information from teachers and pupils. The Likert-type scale was used. The responses were arranged so that choices ranged from the most favourable to the least. Respondents were required to respond by putting

a tick (✓) in the box below the most appropriate of the responses.

The inspector of geography, Ministry of General Education and Culture supplied the check-list which is used during inspection visits to secondary schools. The check-list is a comprehensive guideline to what the inspector might look for during lesson observation (Appendix D). Although this method might have a certain element of error, observation affords the chance to record behaviour as it occurs (Jahoda, Deutsch & Cook, 1966). There might also be a possibility of people under observation to try to create a particular impression, but even so it is probably more difficult for them to alter what they do or say in a real life situation. Subjective procedures are often applied to the scoring of essay tests and have proved to be quite reliable, according to Ross and Stanely (Togerson, 1960). After all, checklists are common practice of assessment in many studies (Borich and Madden, 1977).

Scoring Procedure

The questionnaire which was in two parts, Part I for teachers of geography and Part II for pupils, contained a Likert-type scale. This measured the various aspects of selected school characteristics investigated in the study. A numerical score on a five-point scale was used on each item for both parts of the questionnaire. A response which had the most favourable condition for learning received the highest score:

| | |
|-----------|---|
| Always | 5 |
| Usually | 4 |
| Sometimes | 3 |
| Rarely | 2 |
| Never | 1 |

In some instances the score was reversed. As example, items four, six, seven and 12 in Part II of the questionnaire had their scoring reversed:

| | |
|-----------|---|
| Always | 1 |
| Usually | 2 |
| Sometimes | 3 |
| Rarely | 4 |
| Never | 5 |

Regarding items which had only three responses, a five-point scale was employed as well. The most favourable was awarded five-points, the second most favourable was awarded three points and the least favourable was awarded one point. A one-point scoring system was used for the lesson observation check-list if the criterion existed.

Scores from Part I of the questionnaire, the lesson observation check-list and the appropriate section of Part II of the questionnaire constituted school variable, teacher characteristics. Where more than one teachers taught the class, an average of the teachers' scores was taken. A composite score was calculated and there after an average was computed for the selected school characteristic. Averages for the other selected school characteristics were computed from the composite scores of the appropriate sections in the questionnaire.

Collection of Data

The whole field work took about one month. The field work started with a visit to the Ministry of General Education and Culture Regional Offices in Kasama, for permission to visit selected schools in the Northern Province. At each school selected pupils took about one hour to fill in the questionnaire. Teachers completed the questionnaire during their free time. All the filled in questionnaires were then collected by the researcher. Most teachers of geography did not object to being observed while teaching. However, there were some who expressed slight reservations.

Several questionnaires were discarded because the respondents did not fill in all the required information. In all, 85.7 per cent of the questionnaires were used.

Control of Extraneous Factors

Control of extraneous factors was necessitated by the fact that, variance in achievement could be due to variations in home background and that some pupils might be more able than others. The influence of the home background was neutralized by selecting pupils of similar home background. A measure of the pupil's home background was estimated by the parents' education, occupation, approximate income and size of the family. The information could be found on every pupil's school confidential personal file. Considering that all schools, except one in the province

are boarding, the influence of the home might be limited, according to Hamilton (1981), who suggested that a good school could compensate for the inadequacies of the home.

The intelligence factor was controlled by selecting pupils of matched ability based on Grade Seven composite examinations which are written at the end of seven years of primary education. The Grade Seven examinations combine the purposes of both selection and certification. The selection function of the examinations is paramount because only about 20 per cent of the candidates are selected to proceed to secondary school (Ming, 1976; see Appendix E). The Grade Seven examinations are highly competitive and important in Zambia due to lack of universal access to secondary education. Only the most promising pupils are selected to join secondary schools. The examinations consist of papers in English, Social Studies, Science, Mathematics, Verbal Reasoning (Special Paper One) and Non-Verbal Reasoning (Special Paper Two). The examinations consist of multiple-choice questions only. Selection is based on the total of the standard scores (Mean 100 and SD 15), for all the subjects (Ming, 1976).

The secondary school selection examinations should be reliable and should have predictive validity. The scores in the examinations should be related to the pupils' later performance in secondary school (Psychological Service, 1970). A number of studies were carried out to determine the

validity of the Grade Seven examinations (Psychological Service, 1971; Ming, 1973 a ; Ming, 1973 b ; Sharma, 1974; see Appendix F).

Research evidence in other parts of the world indicated the importance of intelligence tests in predicting future performance of a child Wall, Shonell & Willard, Kemp, Lynn (Kapanbwe, 1980); Pidgeon, Vernon (Ming, 1976).

In view of what has been stated, there was an assumption that given the similar home background and equivalent abilities of the pupils in the sample, variance in performance could not be attributed to discrepancies in the home or the child's abilities, but to variations in the selected school characteristics of teacher characteristics, class size, and instructional resources.

Pilot Study

The pilot study was conducted at three secondary schools, Munali Boys, Kabulonga Boys and Kabulonga Girls in Lusaka. The schools were chosen for the pilot study because of their easy accessibility and similarities with some of the schools under study in the Northern Province of Zambia.

The pilot study was mainly to investigate weaknesses in the questionnaire items. Some items were abandoned because the response to them proved untrustworthy; others were rephrased to rectify weaknesses. The reliability of the

questionnaire was computed by using a generalised formula called coefficient alpha α (Cronbach, 1951; Novick & Lewis, 1967):

$$\alpha = \frac{n}{n-1} \left(1 - \frac{\sum s_j^2}{s_x^2} \right)$$

Where,

n = the number of items in the questionnaire.

s_j^2 = the variance of a single item.

\sum = summation of variance overall the questionnaire items.

s_x^2 = the variance of the total questionnaire.

Coefficient alpha was recommended for Likert-type and essay-type questions where a respondent's score on each item could take on a range of values, that is, not scored dichotomously.

Any research based on measurement should be concerned with the accuracy or dependability or what is often referred to as reliability of measurement. A reliability coefficient demonstrates whether or not the question designer was correct in expecting a certain collection of items to yield interpretable statements about individual differences (Cronbach, 1951:297). The reliability coefficient computed for this questionnaire was .69. The coefficient was considered to be high enough for the questionnaire to yield reliable results.

Data Analysis

The main analyses were based on the two null hypotheses.

The first one was to find out whether or not achievement differed under the three conditions of teacher characteristics, class size and instructional resources. This analysis was intended to find out whether or not achievement was independent of these conditions. The second analysis was to find out whether or not high achievers, moderate achievers, and low achievers differed significantly. In other words, if treated as conditions of learning, would these determine or influence the scores?

In accordance with the problem, purpose of the study, hypotheses and type of data, the appropriate statistical test was Friedman's Two-way Analysis of Variance by Ranks described by Siegel (1956:166). This tool tests or determines whether or not the scores or column rank totals depend on conditions. That means, whether or not the column rank totals differ significantly. The tool determines whether or not "k" samples exhibit significant different frequencies of success or whether or not scores depend on conditions (Siegel, 1956:166).

In this method, the data are ordinal and in a two-way table of "N" rows and "k" columns. Rows represent the various subjects or matched sets of subjects. Columns represent various conditions. In this study, rows represented the categories of pupils divided between high achievers, moderate achievers and low achievers. Columns represented selected school characteristics of teacher characteristics, class size and instructional resources.

The composite scores averages are ranked. The scores in each row are ranked separately. With "k" conditions being studied the ranks in any row range from one to "k". The composite score average per column are also ranked separately. The test determines whether or not the different columns of ranks came from the same population. The rank totals for columns would be about equal if subjects' scores were independent of conditions. Otherwise rank totals for columns would vary. For purpose of computation, the formula below was used;

$$\chi^2_r = \left[\frac{12}{Nk(k+1)} \sum_{j=1}^k (R_j)^2 \right] - 3N(k+1)$$

Where N = Number of rows

k = Number of Columns

R_j = Sum of ranks in jth column

$\sum_{j=1}^k$ = Directs one to sum the squares of the sums of ranks over all "k" conditions.

If "k" and "N" are large Table "C" in Siegel (1956:249) should be consulted. If the value computed is equal to or greater than that in Table "C" at a particular level of significance with degrees of freedom (df) = k - 1, the implication is that mean ranks differ significantly. If so then, size of scores depends on conditions under which scores were obtained. Therefore, the null hypothesis (H₀) is rejected at that level of significance. When the number of rows or columns is less than minimum, use Table "N" (Siegel, 1956:280-281).

Table "N" gives exact probabilities associated with values as large as an observed χ^2 for $k = 3$, $N = 2$ to 9 and for $k = 4$, $N = 2$ to 4." If the probability is equal to or less than α , then reject the null hypothesis (H_0). Since the two-way table was a three by three, " k " and " N " were each equal to three. Table "N" was used.

CHAPTER 4

RESULTS AND DISCUSSION

In order to accomplish the purpose of the study and test the related hypotheses, the statistical test used was Friedman Two-Way Analysis of Variance by Ranks which was discussed in Chapter Three. The results and pertinent discussion are presented below.

RESULTS

In Table 2 the results are summarised in a three by three two-way format. Each average score (AS), derived from composite scores per characteristic was ranked by rows (RR) and by columns (CR). The ranks were then summed up (Rj), by columns and by rows.

TABLE 2. AVERAGE COMPOSITE SCORES OF HIGH ACHIEVERS, MODERATE ACHIEVERS AND LOW ACHIEVERS UNDER THREE SELECTED SCHOOL CHARACTERISTICS

| | TEACHER CHARACTERISTICS | | | CLASS SIZE | | | INSTRUCTIONAL RESOURCES | | | Rj |
|--------------------|-------------------------|-------|------|------------|-------|------|-------------------------|-------|------|----|
| | (RR) | AS | (CR) | (RR) | AS | (CR) | (RR) | AS | (CR) | |
| HIGH ACHIEVERS | 3 | 32.44 | 3 | 2 | 27.31 | 2 | 1 | 17.58 | 3 | 8 |
| MODERATE ACHIEVERS | 3 | 31.00 | 2 | 2 | 27.75 | 3 | 1 | 17.05 | 2 | 7 |
| LOW ACHIEVERS | 3 | 30.06 | 1 | 2 | 25.10 | 1 | 1 | 15.26 | 1 | 3 |
| Rj | 9 | | | 6 | | | 3 | | | |

Null Hypothesis One

The first null hypothesis stated that there is no relationship between Grade ten pupil academic achievement in geography and selected school characteristics tested at .05 level of significance. The computed value of X_r^2 for the data in Table 2 was 6.0. In this study, the number of selected school characteristics was three ($k = 3$) and the number of matched groups of pupils was three ($N = 3$). The probability of occurrence under the null hypothesis of $X_r^2 \geq 6.0$ may be determined by turning to Table N which gives the exact probability associated with values as large as an observed X_r^2 for $k = 3$ (Siegel, 1956:280). Table N shows that the probability associated with $X_r^2 \geq 6.0$ when $k = 3$ and $N = 3$ is $p = .028$. Since $p = .028$ is less than $\alpha = .05$, the null hypothesis was rejected, that there is no relationship between Grade ten pupil academic achievement and selected school characteristics. The implication is that, the subjects' scores were not independent of the selected school characteristics. The alternative hypothesis one was accepted, that there is a relationship between selected school characteristics and pupil academic achievement in geography at Grade ten level.

Null Hypothesis Two

Using Table 2 data for null hypothesis two, formula

$$X_r^2 = \left[\frac{12}{Nk(k+1)} \sum_{j=1}^k R_j^2 \right] - 3N(k+1),$$

the calculated X_r^2 was 4.67. Using Table N in (Siegel, 1956:280), the probability associated with $X_r^2 \geq 4.67$ when $k = 3$ and $N = 3$ is $p = .194$. Since $p = .194$ is greater than $\alpha = .05$, the null hypothesis that there is

no difference between high achievers, moderate achievers, and low achievers in geography at Grade ten level of secondary education was accepted. The implication is that the difference between high achievers, moderate achievers, and low achievers was not significant. Therefore, the groups came from the same population.

Null hypothesis one was rejected while null hypothesis two was accepted. Using Friedman Two-Way Analysis of Variance by Ranks, the results of the study indicated that there was a relationship between the selected school characteristics and pupil academic achievement in geography at Grade ten level in Northern Province of Zambia, during the period studied. High achievers, moderate achievers and low achievers did not differ significantly.

DISCUSSION OF RESULTS

The differences between the matched groups of pupils on the three selected school characteristics were found to be significant. The results implied that school quality might be an important factor influencing academic achievement of pupils in geography. Singly, each of the selected school characteristic was found to be potent as a factor influencing pupil academic achievement in geography since rank totals per column differed.

Teacher Characteristics

Among high achievers, teachers scored a higher average (32.44), than among moderate achievers (31.00), or low achievers (30.06) Table 2. Many aspects of the teacher of geography

were measured (Appendix C & D). The scores were combined to constitute teacher quality. Teachers who scored less than others were supposed to be of lower calibre. They might not have been effective in classroom performance. Effective teachers were supposedly those who accumulated more points.

An estimate of teacher quality was found by tapping information on teacher qualification, number of years teaching experience and professional behaviour of the teacher. Interactively, the characteristics of the teacher influenced pupil geography achievement positively or negatively. However, some teacher characteristics could be singled out. Whereas teachers with more years of teaching were supposed to be better experienced for teaching purposes, observation showed that teachers with longer teaching experience hardly planned their lessons. Many teachers walked into the classroom with a copy of notes on the topic being learnt. The notes constituted the lesson plan. Without planning the teacher might not present the lesson well and as a result learning could be affected. Some components of the topic which might require emphasis could be less emphasised and the teacher might not evaluate the teaching at the end of the lesson. Apparently, lesson planning receives much emphasis during the training of teachers and therefore failure to implement it might have drastic results.

Out of 20 teachers who filled in the questionnaire only three teachers had readily available lesson plans and

always planned their lessons. Others rarely or never planned their lessons. Many factors could have contributed to this state of affairs. Apart from long teaching experience to which some teachers attributed their failure to plan lessons, the staffing situation in some schools might have also contributed. Many teachers of geography taught other subjects as well. Average overall load was 30 periods per week. In addition to teaching, some teachers were involved in extra-curricula activities like sport, clubs, housing system, school discipline, careers and many others. Under such circumstances teachers could hardly have time to sit down and plan what to teach on the following day. Meyneman (1976b) also found this practice among Ugandan primary school teachers.

What is learned in class could be understood better if supplemented with practical experience. Visits by pupils to places of educational interest outside the school could stimulate pupils in various ways and provide the required practical experience. Pupils might also realise that geography was related to life. Confinement to one area could make pupils think that geography had no link to what happened in the world. In this study, observation was that few teachers took their pupils to areas of educational interest. On the item which measured the use of field trips as part of the lesson, the following responses were given by pupils:

TABLE 3

USE OF FIELD TRIPS AS PART OF THE LESSON - IN
PERCENTAGES

| | ALWAYS | USUALLY | SOMETIMES | RARELY | NEVER |
|-----------------------|--------|---------|-----------|--------|-------|
| HIGH ACHIEVERS | 0 | 2.2 | 25.0 | 20.6 | 52.2 |
| MODERATE ACHIEVERS | 2.5 | 2.9 | 27.0 | 2.7 | 64.9 |
| LOW ACHIEVERS | 1.9 | 3.8 | 19.2 | 3.8 | 71.2 |

Although there is provision for local area study in the Zambia Junior Secondary School Geography Syllabus, observation showed that the majority of teachers were not enthusiastic about field trips. Probably they did not have "tools" with which to carry out an inquiry of such nature. However, field trips should be considered an important component in the teaching of geography.

Class Size

Class size as a factor influencing pupil academic achievement in geography at Grade ten level, showed that small class size was conducive to superior attainment. Although average composite score was highest among moderate achievers (27.75), the score for high achievers (27.31) was higher than the score for low achievers (25.10) Table 2. In the final analysis, small class size proved its superiority over large class size in influencing achievement. Although some researchers found class size to be of negligible influence

(Cuttance, 1980; Marklund, 1963; Fleming, 1959), this variable could affect many aspects of the learning process.

An overcrowded classroom might affect teacher movement.

According to Maxson (Dreeben, 1973)... "both teachers and pupils should find a means of performing assigned tasks within the classroom..., the pupil to work at assigned tasks and the teacher to explore and supervise pupils' work". In an overcrowded classroom such a task would be difficult for the teacher to accomplish. The pupil might not have enough working room and therefore might not perform the work satisfactorily. An overcrowded classroom might be difficult for the teacher to manage. This could lead to a decline in discipline, break in personal contact between teacher and pupils who might need immediate assistance. Presentation of lesson material might be impaired and the teacher could be afraid to give homework regularly because of the amount of work involved when marking. Large class size might affect use and distribution of instructional material. In this study, findings showed that at some schools books were issued on sharing basis because size of class caused shortage of textbooks. The normal practice when budgeting is to allocate money according to size of school based on the number of classes whereby each class should contain a certain number of pupils. If the size of class goes beyond that number, shortage of instructional materials becomes inevitable, and this was observed in the study.

Observations on this study revealed that when one book was shared by more than one pupils, each pupil could not use the book effectively. The negative influence of large class size on achievement as was revealed in the study might be minimised by the

availability of appropriate resources for teaching such large classes. This view is supported by the EDP's success which was based on the use of appropriate instructional resources for large classes (Khatun, 1980). Unfortunately in this study, in some schools appropriate instructional resources necessary for large classes were not available. If this trend prevails in many secondary schools then overcrowding may have adverse results on achievement. As could be observed from the results of this study, low achievers were in larger classes than moderate achievers and high achievers. If the contrary happened, pupils' success in schools with large classes could be attributed to pupil determination and hard work with the full knowledge that passing examinations was key to further education and probably a good job. That kind of attitude by pupils might be encouraged by favourable teacher characteristics.

Instructional Resources

A high estimate of availability of instructional resources was indicated by high achievers (17.58), followed by moderate achievers (17.05), and then low achievers (15.26). The resources ranged from audio-visual materials including charts, instruments and books. Nine items in the questionnaire measured this characteristic. At any school what might be important is not mere availability of such resources, but their appropriate use. According to (Wales, 1967:24)... "if wrongly chosen or used ..., such teaching aids would confuse pupils".

During the author's visits to some schools in Northern Province, his observation was that, although books were available in some schools they were in bad shape. At some schools only the teacher and may be a few pupils had books. The commonest practice was for the teacher to have a set of about 40 prescribed books which

the teacher carried to every class. Under such circumstances, the teacher might find it difficult to give homework based on the textbook. Moreover, most books in schools were about ten to 15 years out of date.

In the absence of sufficient prescribed books, pupils could supplement the classroom instruction by private study in the school library. The school library could be of tremendous value to the learning process. The library is a facility in the school which might not only provide resources but give each child the chance to use available resources to solve problems and to develop positive attitudes towards inquiry as a step in the learning process (Mungo, 1980).

Davies (Mungo, 1980), described the library as:

a learning laboratory where students come to work intensively with ideas. It should provide the students with facilities to achieve that depth, breadth and relevance in learning that will compensate for inadequate textbooks and classroom information.

Unfortunately, in some schools library rooms were converted into classrooms in order to accommodate the extra pupils as a result of over_enrolment. Similarly, the rooms permanently allocated to geography were turned into classrooms for the same reason. A permanent room allocated to geography could allow long duration display of teaching material for pupil reference.

Presence and use of library and geography rooms in the schools could be determined from the responses given by respondents in this study. On the item which inquired about the use of the library, the following responses were given:

TABLE 4

USE OF SCHOOL LIBRARY - IN PERCENTAGES

| | ALWAYS | USUALLY | SOMETIMES | RARELY | NEVER |
|-----------------------|--------|---------|-----------|--------|-------|
| HIGH ACHIEVERS | 39.2 | 21.7 | 8.5 | 8.8 | 21.8 |
| MODERATE ACHIEVERS | 28.4 | 38.4 | 2.5 | 10.2 | 20.5 |
| LOW ACHIEVERS | 30.3 | 30.3 | 6.1 | 24.2 | 18.1 |

Although more pupils in the sample were encouraged to use the school library a large number were not. It might be important therefore, to emphasise the value of the library in every school. A library in the school could be very useful.

On the item which measured availability and use of a permanent room allocated to geography, observation was that many schools did not have this facility. In response to whether or not geography lessons were conducted in the room allocated to the subject, the findings were as follows:

TABLE 5

AVAILABILITY AND USE OF PERMANENT GEOGRAPHY ROOM - IN PERCENTAGES

| | ALWAYS | USUALLY | SOMETIMES | RARELY | NEVER |
|-----------------------|--------|---------|-----------|--------|-------|
| HIGH ACHIEVERS | 17.4 | 8.7 | 21.7 | 4.3 | 47.9 |
| MODERATE ACHIEVERS | 14.2 | 8.5 | 11.4 | 11.4 | 54.5 |
| LOW ACHIEVERS | 6.9 | 6.9 | 7.3 | 6.5 | 72.4 |

There might be need for a permanent room allocated to geography in every school as that could allow long duration display of charts, pictures and other materials for pupil reference. Such a room could be the laboratory where pupils might perform experiments over many days.

Some topics might not end only with theoretical explanation during the lesson. Pupils might require practical experience when learning map reading skills, weather studies and many other topics. Pupils should sometimes physically handle the instruments used when collecting the data. They should also draw charts and keep records for practice. Analysis of responses on the items which measured active participation of pupils in weather studies showed that many pupils did not handle weather instruments. Pupils could not effectively understand the use and application of the knowledge acquired at school. Table 6 shows the responses to the item which measured pupil involvement in keeping weather records.

TABLE 6

PUPIL PARTICIPATION IN WEATHER STUDIES - IN PERCENTAGES

| | ALWAYS | USUALLY | SOMETIMES | RARELY | NEVER |
|--------------------|--------|---------|-----------|--------|-------|
| HIGH ACHIEVERS | 8.7 | 4.3 | 13.1 | 17.4 | 56.5 |
| MODERATE ACHIEVERS | 2.5 | 10.2 | 20.5 | 28.4 | 38.4 |
| LOW ACHIEVERS | 12.1 | 3.0 | 6.0 | 12.1 | 66.8 |

The findings showed that many schools in the Northern Province might not have weather instruments. Lessons on this topic probably ended with theoretical explanation only, thus denying pupils the much needed practical experience.

Viewed interactively, therefore, the three selected school characteristics were found to have an influence on geography achievement of Grade ten pupils in the Northern Province of Zambia. The findings seem to attest to what was found out by other researchers who found school-related factors to be of significance in varying degrees Shaycoft, Coleman (Dyer, 1968 ; Wiseman, 1964. ; Hamilton, 1981).

Implications could be that, the selected school characteristics affected pupil learning differently. Imposed as conditions, the pupil groups might not affect achievement. Whereas all groups could be in a non-graded classroom, teachers should consider individual differences per situation.

TABLE 7

NUMBER OF RESPONDENTS IN HIGH ACHIEVERS, MODERATE ACHIEVERS
AND LOW ACHIEVERS PER SCHOOL N = 257

| NAME OF SCHOOL | HIGH ACHIEVERS | MODERATE ACHIEVERS | LOW ACHIEVERS | TOTAL |
|-----------------|----------------|--------------------|---------------|-------|
| MUNGWI BOYS | 29 | 1 | 3 | 33 |
| KASAMA GIRLS | 9 | 10 | 6 | 25 |
| MPIKA BOYS | 33 | 1 | 1 | 35 |
| LUWINGU CO-ED | 20 | 5 | 6 | 31 |
| LWITIKILA GIRLS | 4 | 10 | 15 | 29 |
| MBALA CO-ED | 18 | 10 | 8 | 36 |
| KASAMA BOYS | 23 | 10 | 1 | 34 |
| ISOKA BOYS | 26 | 2 | 6 | 34 |

TABLE 8

% OF HIGH ACHIEVERS, MODERATE ACHIEVERS AND LOW ACHIEVERS
PER SCHOOL

| NAME OF SCHOOL | HIGH ACHIEVERS | MODERATE ACHIEVERS | LOW ACHIEVERS |
|-----------------|----------------|--------------------|---------------|
| MUNGWI BOYS | 87.77 | 3.03 | 9.09 |
| KASAMA GIRLS | 36.0 | 40.0 | 24.0 |
| MPIKA BOYS | 94.3 | 2.85 | 2.85 |
| LUWINGU CO-ED | 64.5 | 16.1 | 19.4 |
| LWITIKILA GIRLS | 13.8 | 34.5 | 51.7 |
| MBALA CO-ED | 50.0 | 27.8 | 22.2 |
| KASAMA BOYS | 67.7 | 29.4 | 2.9 |
| ISOKA BOYS | 76.5 | 5.9 | 17.6 |

TABLE 9

AVERAGE COMPOSITE SCORES OF HIGH ACHIEVERS, MODERATE ACHIEVERS AND LOW ACHIEVERS ON THREE SELECTED SCHOOL CHARACTERISTICS

| NAME OF SCHOOL | HIGH ACHIEVERS | MODERATE ACHIEVERS | LOW ACHIEVERS |
|-----------------|----------------|--------------------|---------------|
| MUNGWI BOYS | 8.9 | 8.9 | 6.9 |
| KASAMA GIRLS | 9.7 | 9.8 | 9.8 |
| MPIKA BOYS | 10.4 | 9.8 | 9.5 |
| LUWINGU CO-ED. | 10.3 | 9.6 | 8.6 |
| LWITIKILA GIRLS | 10.1 | 10.0 | 9.73 |
| MBALA CO-ED | 8.9 | 7.9 | 7.6 |
| KASAMA BOYS | 10.6 | 10.3 | 9.8 |
| ISOKA BOYS | 8.6 | 9.4 | 8.5 |

The differences within the same school could arise from differences between teachers who taught the pupils and the way they might have allocated and used instructional resources. Some teachers might be good and stimulating, while others might not. In some schools there might be high turnover of teachers and affecting some classes only. There might also be shortage of qualified teachers of geography. Teachers who are qualified to teach other subjects might be asked to assist while awaiting qualified staff to be posted to the school.

In schools where classes were large, some teachers might have found handling such classes difficult, thereby affecting performance of pupils. However, class size did not seem to give much problem.

A properly qualified teacher would find the choice, making and use of instructional resources valuable. In a school where good material was lacking, the imaginative teacher could improvise. When the teacher was of low calibre whether or not the school had sufficient instructional resources, achievement of pupils could be affected negatively unless other variables not considered in this study had a role to play. The subsequent Chapter outlines the summary and conclusions of the study.

CHAPTER 5

SUMMARY AND CONCLUSIONS

In Chapter Five an attempt was made to present a summary of the study. An attempt was also made to draw some conclusions and recommendations for further research. Each one of these took the form presented below.

SUMMARY

Pupil academic achievement as a variable could be a function of many different factors. Some of the factors could be pupil-based, teacher-based, home-based and school-based. Singly or interactively knowledge of the influence of such variables on pupil achievement could be essential. Such knowledge might be beneficial to the educational system.

This study was prompted by the variations in school examination results between schools and provinces. Such a situation could be unhealthy for the nation socially and politically as it could lead to problems arising from over-representation and under representation of certain schools at higher levels of education. Some children might be at a disadvantage or advantage depending on the school one attended.

In industrialised societies, findings of many studies indicated the significance of out-of-school factors in influencing achievement. However, that might not necessarily follow so in Africa because of cultural differences between African and Western societies. Some research done in the developing world indicated contradictory results (Cooksey, 1981;

Heyneman, 1976 a ; 1979). Therefore generalisation of findings of work done in Western societies would not be wise.

This study attempted to find out the relationship between teacher characteristics, class size, and instructional resources and pupil academic achievement in geography at Grade ten level in Northern Province of Zambia. Part of the rationale for this study was that, the author who taught at three different schools in the province observed that between schools differences seemed to cause much concern among teachers there. During professional gatherings, teachers from other provinces also expressed concern at this state of affairs in their own provinces.

The study tested two null hypotheses. Null hypothesis One was that, there is no relationship between Grade ten pupil academic achievement in geography and selected school characteristics, namely:

- i) Teacher characteristics.
- ii) Class size.
- iii) Instructional resources.

Null hypothesis two was that, there is no difference between high achievers, moderate achievers and low achievers in geography at Grade ten level of secondary education. Evidence was collected to test the null hypotheses at .05 level of significance.

A sample of 300 Grade 11 pupils and another of teachers of geography who taught Grade ten pupils in 1984, took part in



the exercise. Stratified random sampling was used to select eight schools out of 14 schools in the province. The schools consisted of two girls' schools, two co-educational schools and four boys' schools. Random numbers were used to select 80 from girls' schools, 80 from co-educational schools and 140 from boys' schools. Selection of teachers was based on whether or not they taught Grade ten pupils in 1984.

The sample of pupils was divided between high achievers, moderate achievers and low achievers based on geography results in Grade ten. High achievers were pupils who got grades one and two, moderate achievers were pupils who got grade three and low achievers were pupils who got grades four and F (Appendix B).

Ordinal data were collected for both selected school characteristics and achievement in geography. Data on selected school characteristics were obtained by using a structured questionnaire consisting of Part I and Part II for teachers and pupils respectively (Appendix C). The researcher also observed teachers at work in order to elicit information which was required in the lesson observation check-list. Data on achievement were supplied by pupils.

Bearing in mind that variance in achievement could be due to variations in the home backgrounds of pupils and that some pupils might be more able than others, there was need to control certain extraneous factors. Selection of pupils with comparable home backgrounds helped to neutralize the influence of the home. Selection of pupils with equivalent ability based

on Grade seven examination results helped to control the intelligence factor. When all the data were collected, the Friedman test was applied to determine whether or not column ranks differed significantly. Null hypothesis^{one}/was rejected, while null hypothesis two was accepted. Results seemed to indicate that there was a relationship between the school characteristics studied and pupil academic achievement in geography at grade ten level in Northern Province of Zambia. Secondly, the results did not show a difference between high achievers, moderate achievers and low achievers.

CONCLUSIONS

The survey of literature suggested that research was not particularly successful in locating the aspects of school which could be responsible for variations in performance between schools. Apparently, the results failed to confirm hypotheses concerning the effectiveness of factors in schools which were supposed to be important aspects of the process of learning. There might be a possibility of not generalising the factors which were thought to be important as explanation for differences between pupils and between schools.

The findings of the present study showed that the three selected school characteristics were significant as factors influencing academic achievement of Grade ten pupils in geography. Despite previous findings which down played the role of the school, (Morgan, 1980; Sharrock, 1968; Brown, 1969; Kapambwe, 1980), the findings of this study tended to show that the school could play a vital part in influencing pupils' academic achievement in geography. The differences in achievement could be due, not to

the differences in intelligence but to the differences in the learning conditions of pupils. The implication could be that, although a child was intelligent, such a child's success might be affected if the learning environment was lacking and unstimulating.

The results of the present study attest to what some other researchers found out. However, apart from the selected school characteristics, there might be other factors within the school and outside the school which could be important influences on academic achievement of pupils in geography. The findings seemed to imply that pupils of comparable home background and equivalent intelligence could respond to learning differently when exposed to different conditions of learning. What might be important could be the society in which the schools being studied were found. That might be the cause of the variations in the findings of research cited in Chapter Two of this study.

Recommendations

On the basis of the findings of this study, the following recommendations were formulated, to ensure that,

1. Staffing satisfies equilibrium between supply and demand, meets continuity needs, all schools have equitable placement of quality and quantity of teachers according to school needs.
2. Appropriate inservice teacher education needs are catered for in policy, planning, budget, resources, and implementation.

3. Preservice teacher education Curriculum and instruction are geared to produce teachers whose characteristics effectively promote pupil academic achievement.
4. Teaching and learning processes comprise various methods, instructional resources, environmental infrastructures in accordance with theories on optimisation of self-actualisation.
5. Provision of supervisory requirements adequately catered for in the Inspectorate, Curriculum Development Centre, Regional and District levels, School and College levels.
6. Guidance and counselling services are improved to meet pupils' needs.
7. School Parent-Teachers Associations deliberately and systematically engage in activities which promote pupil academic achievement in addition to other objectives.
8. Over enrolment is avoided whereas the need for increasing access to secondary school still deserves due attention nation-wide.
9. Further research is conducted on school characteristics in general and in depth, research on particular characteristics.
10. Conduct comprehensive research on causes of pupil failure and seek solutions.
11. Conduct more comprehensive research on the role of the home in influencing school achievement.

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APPENDIX A: FORM III GEOGRAPHY RESULTS

| SCHOOL | 1978 | | 1979 | | 1980 | | 1981 | | 1982 | |
|-------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | PASS NO. % | FAIL NO. % | PASS NO. % | FAIL NO. % | PASS NO. % | FAIL NO. % | PASS NO. % | FAIL NO. % | PASS NO. % | FAIL NO. % |
| ISOKA | 143 66 | 73 34 | 207 85 | 36 15 | 173 72 | 66 28 | 185 75 | 61 25 | 225 80 | 55 20 |
| KASAMA GIRLS | 66 39 | 103 61 | 52 41 | 76 59 | 26 21 | 98 79 | 71 35 | 134 65 | 105 47 | 119 53 |
| LUBUSHI | 16 84 | 3 16 | 26 96 | 1 4 | 16 94 | 1 6 | 19 100 | 0 0 | 22 96 | 1 4 |
| KENNETH KAUNDA | 173 71 | 71 29 | 203 82 | 45 18 | 210 76 | 66 24 | 153 63 | 90 37 | 194 81 | 46 19 |
| LUVINGU | 128 58 | 92 42 | 140 63 | 83 37 | 127 53 | 111 47 | 136 55 | 110 45 | 191 65 | 101 35 |
| LWITIKILA | 27 23 | 88 77 | 80 70 | 35 30 | 64 56 | 50 44 | 86 70 | 36 30 | 82 72 | 32 28 |
| MBALA | 128 55 | 104 45 | 135 66 | 71 34 | 136 57 | 103 43 | 135 57 | 100 43 | 154 57 | 114 43 |
| KASAMA BOYS | 149 64 | 85 36 | 171 79 | 45 21 | 156 86 | 25 14 | 178 86 | 30 14 | 171 78 | 47 22 |
| MPOKOKOSO | 145 53 | 107 42 | 180 69 | 82 31 | 144 56 | 115 44 | 153 60 | 101 40 | 173 60 | 116 40 |
| MUNGWANI | 180 77 | 54 23 | 195 87 | 34 13 | 169 72 | 67 28 | 225 89 | 25 11 | 203 74 | 73 26 |
| ST. FRANCIS | 97 84 | 19 16 | 103 85 | 18 15 | 106 88 | 14 12 | 116 93 | 9 7 | 114 81 | 17 13 |
| CHITUBULA | 32 44 | 40 56 | 44 59 | 31 41 | 25 29 | 55 71 | 46 57 | 35 43 | 46 59 | 32 41 |
| MPIKA BOYS | 105 78 | 29 22 | 112 90 | 13 10 | 112 93 | 9 7 | 115 86 | 18 14 | 95 72 | 37 28 |

APPENDIX B

Grading Of Subject Passes and Description of Pass

| | | |
|-----------|-----------------|----------------|
| Grade I | (75% and above) | - Distinction. |
| Grade II | (60% - 74%) | - Credit. |
| Grade III | (50% - 59%) | - Good Pass. |
| Grade IV | (40% - 49%) | - Pass. |
| F | (39% and below) | - Fail. |

Source: Sharma, R 1974. The Grade VII Composite Examinations: A Critique. (Mimeograph) Lusaka, Ministry of Education.

APPENDIX C

PART I OF THE QUESTIONNAIRE

Name of Teacher _____

Name of School _____

1. Put a tick (✓) in one of the boxes below the item which explains your highest qualification. (TICK ONE).

| Degree Geography Major | Degree Geography Minor | Diploma Geography Major | Diploma Geography Minor | None of these |
|------------------------|------------------------|-------------------------|-------------------------|---------------|
| | | | | |

2. Put a (✓) in one of the boxes below the number(s) of years to show how long you have taught Geography. (TICK ONE)

| Over 10 Years | 6 - 10 Years | 0 - 5 Years |
|---------------|--------------|-------------|
| | | |

3. Put a (✓) in one of the boxes below the number(s) which show(s) your teaching load per week. (TICK ONE)

| Below 20 | 20 - 30 | Over 30 |
|----------|---------|---------|
| | | |

4. How often do you make lesson plans?(TICK ONE)

| Always | Usually | Sometimes | Rarely | Never |
|--------|---------|-----------|--------|-------|
| | | | | |

5. Do you find the topics easy to handle? (TICK ONE)

| Always | Usually | Sometimes | Rarely | Never |
|--------|---------|-----------|--------|-------|
| | | | | |

Thank you for your Co-operation

APPENDIX C

PART II OF THE QUESTIONNAIRE

Name of the School _____

Pupil's Grade in Geography in Grade 10 _____

Write the name(s) of the teacher(s) who taught you
Geography in Grade 10: (1) _____
(2) _____
(3) _____

INSTRUCTION

There are 40 statements below. Answer all of them. For each statement, please put a tick (✓) in only one of the boxes to estimate your judgement of the teachers of geography who taught you in Grade 10.

TEACHER CHARACTERISTICS

1. The teacher was punctual for the beginning of each lesson
(TICK ONE)

| | Always | Usually | Sometimes | Rarely | Never |
|---|--------|---------|-----------|--------|-------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

2. The teacher spoke fluently during the lesson (TICK ONE)

| | A | U | S | R | N |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

3. The teacher spoke in a clear voice (**TICK ONE**)

| | A | U | S | R | N |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

4. The teacher allowed pupils to walk out of the class without getting permission.

| | Never | Rarely | Sometimes | Usually | Always |
|---|-------|--------|-----------|---------|--------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

5. The teacher explained our school work so that we knew what was required. (**TICK ONE**).

| | Always | Usually | Sometimes | Rarely | Never |
|---|--------|---------|-----------|--------|-------|
| | A | U | S | R | N |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

6. Our teacher spoke in a way which discouraged questions. (**TICK ONE**)

| | Never | Rarely | Sometimes | Usually | Always |
|---|-------|--------|-----------|---------|--------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

7. The teacher shouted at pupils who gave wrong answers. (TICK ONE).

| | Never | Rarely | Sometimes | Usually | Always |
|---|-------|--------|-----------|---------|--------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

8. The teacher praised pupils who gave correct answers. (TICK ONE)

| | Always | Usually | Sometimes | Rarely | Never |
|---|--------|---------|-----------|--------|-------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

9. The teacher praised pupils who made an effort to answer questions. (TICK ONE)

| | A | U | S | R | N |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

10. The teacher welcomed questions from pupils during lesson time. (TICK ONE).

| | A | U | S | R | N |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

11. The teacher emphasised certain points of the lesson which were also summarised on the chalk board. (TICK ONE).

| | A | U | S | R | N |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

12. The teacher directed questions to the same pupils during lesson time. (TICK ONE).

| | Never | Rarely | Sometimes | Usually | Always |
|---|-------|--------|-----------|---------|--------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

13. The teacher urged pupils not to miss lessons. (TICK ONE).

| | Always | Usually | Sometimes | Rarely | Never |
|---|--------|---------|-----------|--------|-------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

14. The teacher encouraged pupils to investigate ideas on their own. (TICK ONE)

| | A | U | S | R | N |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

15. The teacher encouraged group discussion during lesson time. (TICK ONE).

| | Always | Usually | Sometimes | Rarely | Never |
|---|--------|---------|-----------|--------|-------|
| | A | U | S | R | N |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

16. The teacher involved pupils in group and individual projects as part of geography practicals. (TICK ONE).

| | A | U | S | R | N |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

17. The teacher encouraged pupils to make their own notes. (TICK ONE).

| | A | U | S | R | N |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

18. The teacher gave home work which helped pupils to understand the lessons. (TICK ONE).

| | A | U | S | R | N |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

19. After marking, the teacher returned homework to the pupils. (TICK ONE).

| | Always | Usually | Sometimes | Rarely | Never |
|---|--------|---------|-----------|--------|-------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

20. The teacher returned homework to pupils with comments for corrections to be made. (TICK ONE)

| | A | U | S | R | N |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

21. The teacher urged pupils to hand in their homework. (TICK ONE)

| | A | U | S | R | N |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

22. The teacher urged pupils to make the corrections. (TICK ONE)

| | A | U | S | R | N |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

23. The teacher took pupils to areas of educational importance (Field Trips). (TICK ONE)

| | Always | Usually | Sometimes | Rarely | Never |
|---|--------|---------|-----------|--------|-------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

24. The teacher was willing to attend to pupils' problems during school and after school hours. (TICK ONE).

| | A | U | S | R | N |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

25. The teacher gave advice on how to solve geographical problems. (TICK ONE).

| | Always | Usually | Sometimes | Rarely | Never |
|---|--------|---------|-----------|--------|-------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

26. The teacher reported for work. (TICK ONE)

| | A | U | S | R | N |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

27. The teacher ended the lesson when the signal to end the lesson was given. (TICK ONE)

| | Always | Usually | Sometimes | Rarely | Never |
|---|--------|---------|-----------|--------|-------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

28. Indicate with a tick (✓) in the appropriate box to show how many teachers taught you geography in Grade 10. (TICK ONE).

| One and the same teacher | Two teachers | Three Teachers | Four Teachers | Five Teachers |
|--------------------------|--------------|----------------|---------------|---------------|
| | | | | |

CLASS SIZE

29. Put a tick (✓) in the box below the figure which gives an estimate of the number of pupils who were in your class in Grade 10.

| Below 35 | 36 - 45 | Over 45 |
|----------|---------|---------|
| | | |

30. Every pupil had enough room to sit comfortably (TICK ONE)

| Always | Usually | Sometimes | Rarely | Never |
|--------|---------|-----------|--------|-------|
| | | | | |

31. The teacher moved freely in class to attend to pupil's individual problems. (TICK ONE)

| A | U | S | R | N |
|---|---|---|---|---|
| | | | | |

INSTRUCTIONAL RESOURCES

Put a tick (✓) in one of the boxes below each item to show your judgement of availability of teaching material in your school.

32. Geography lessons were conducted in the room allocated to geography. (TICK ONE)

| Always | Usually | Sometimes | Rarely | Never |
|--------|---------|-----------|--------|-------|
| | | | | |

33. There were enough textbooks for every one in the class. (TICK ONE).

| Always | Usually | Sometimes | Rarely | Never |
|--------|---------|-----------|--------|-------|
| | | | | |

34. The teacher used maps and pictures during lessons. (TICK ONE)

| Always | Usually | Sometimes | Rarely | Never |
|--------|---------|-----------|--------|-------|
| | | | | |

35. Every lesson was supplemented by films, film strips and slides. (TICK ONE)

| Always | Usually | Sometimes | Rarely | Never |
|--------|---------|-----------|--------|-------|
| | | | | |

36. Every pupil was encouraged to attend geography club meetings. (TICK ONE)

| Always | Usually | Sometimes | Rarely | Never |
|--------|---------|-----------|--------|-------|
| | | | | |

37. Our teacher(s) invited guests to come and talk to us about important happenings in our country and the world. (TICK ONE)

| Always | Usually | Sometimes | Rarely | Never |
|--------|---------|-----------|--------|-------|
| | | | | |

38. Our teacher encouraged us to read in the school library. (TICK ONE)

| Always | Usually | Sometimes | Rarely | Never |
|--------|---------|-----------|--------|-------|
| | | | | |

39. The school kept a daily weather record. (TICK ONE)

| Always | Usually | Sometimes | Rarely | Never |
|--------|---------|-----------|--------|-------|
| | | | | |

40. Pupils in my class were involved in keeping the school weather record. (TICK ONE)

| Always | Usually | Sometimes | Rarely | Never |
|--------|---------|-----------|--------|-------|
| | | | | |

Thank you for your co-operation.

APPENDIX D

THE UNIVERSITY OF ZAMBIA
SCHOOL OF EDUCATION
DEPARTMENT OF EDUCATION
MASTER OF EDUCATION PROGRAMME

Lesson Observation Report

I. GENERAL INFORMATION

Name of Teacher School
Number in Class Teachers Load.....
Lesson or Topic.....

II. OBJECTIVES

Learning

Facts.....
Skills.....
Concepts/ideas...
Behaviour/Attitudes...

III. SCHEME OF WORK SHOWING

Topic.....
Sub-topic.....
Number of Lessons per week...
Teaching Aids.....
Appropriateness of Topics...
Implementation of Scheme.....

IV. LESSON PLAN

On the spot and readily available
(a) Format-showing
Introduction.....
Teacher/pupil activity.....
Teaching Aids.....
Summary/Conclusion.....

V. TEACHING TECHNIQUES

(a) Introduction

Brief

Motivating (Arouse interest).....

(b) Presentation

Sequential (According to plan).....

Good application of Geographical ideas...

Good use of chalk board.....

Good use of maps, pictures, filmstrips etc...

Good questioning technique.....

Use of group work.....

Use of research/project.....

Correlation with other subjects.....

Re-emphasizing and revising
through pupil activity.....

Summary/conclusion.....

VI. THE TEACHER

Thorough knowledge of content.....

Effective use of voice and English language.....

Interest in individual pupils.....

Agreeable personality.....

Masterful handling of pupil questions.....

Masterful personality (Class Control).....

VII. THE PUPIL

Interested.....

Group Work.....

Individual work.....

Productive inter-pupil discussion.....

Note taking.....

Note making.....

VIII. RECORDS KEPT

Schemes of Work.....

Records of Work.....

Lesson Plans.....

Continuous Assessment.....

Source: INSPECTORATE - MINISTRY OF GENERAL EDUCATION AND CULTURE.
(MODIFIED TO SUIT RESEARCHER).

APPENDIX E

FORM I - SELECTION FIGURES FROM 1969 TO 1984

| YEAR OF GRADE VII EXAMINATION | NO. OF CANDIDATES | NO. SELECTED | PROGRESSION RATE (%) |
|-------------------------------|-------------------|--------------|----------------------|
| 1969 | 64 659 | 15 175 | 23.46% |
| 1970 | 67 222 | 15 793 | 23.49 |
| 1971 | 73 859 | 15 747 | 21.32 |
| 1972 | 80 506 | 17 570 | 21.82 |
| 1973 | 88 784 | 19 762 | 22.25 |
| 1974 | 97 685 | 20 868 | 21.36 |
| 1975 | 120 631 | 21 000 | 17.40 |
| 1976 | 119 000 | 21 961 | 18.45 |
| 1977 | 120 545 | 21 628 | 17.9 |
| 1978 | 127 738 | 21 762 | 17.1 |
| 1979 | 132 912 | 22 077 | 16.6 |
| 1980 | 143 699 | 22 021 | 15.34 |
| 1981 | 146 827 | 22 660 | 15.43 |
| 1982 | 157 801 | 25 938 | 17.00 |
| 1983 | 162 126 | 26 890 | 16.58 |
| 1984 | 176 680 | 38 163 | 21.6 |

Source: Psychological Service, July 1984.

SUMMARY OF RESEARCHES INTO THE PREDICTIVE VALUE OF GRADE VII EXAMINATIONS

| YEAR OF GRADE VII EXAMINATION | STUDY | SAMPLE N | CORRELATION OF GRADE VII RESULTS WITH CRITERION ¹ | | | | | | TOTAL |
|-------------------------------|-------------------------------|----------|--|-------|----------------|---------|-----------------|---------------------------------------|-------|
| | | | ENGLISH | MATHS | SOCIAL STUDIES | SCIENCE | SPECIAL PAPER I | SPECIAL PAPER II | |
| 1964 | Ming, 1973 a. | 700 | .17 | .24 | .. | .. | .. | .31 SP. I. ² .17 SP. II | .20 |
| 1967 | Psychological Service 1971 | 647 | .33 | .32 | .. | .. | .32 | .23 | .39 |
| 1968 | Ming, 1973b | 94 | .34 | .27 | .. | .. | .38 | .34 | .. |
| 1972 | Sharma, 1974 | 743 | .53 | .24 | .13 | .14 | .73 | .38 | .72 |

(JSSC)

1. The criterion in the 1973a and 1971 Studies was the Form II Junior Secondary School Leaving Certificate. For the 1973b Study, it was the Form III JSSSLC and for the 1974 Study, it was a specially constructed examination in English, Maths and Science administered in Form II.
2. 1964 Sp1a (Special Paper I) was of the matrices type and thus similar to the present Special Paper II. Sp1b was a test of spatial ability and not used for selection.

Sources: Ming, K. Teacher Estimates of Performance in Grade VII Composite Examinations - A Pilot Study. Psych. Service Report 1/1976 Min. of Ed. Insaka.