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dissertation entitled

MATHEMATICS ACHIEVEMENT AND SELF-ESTEEM AT SECONDARY SCHOOLS IN ZAIRE: THE EFFECTS OF PRINCIPALS' EMPHASIS ON INSTRUCTIONAL LEADERSHIP

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ABSTRACT

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A DISSERTATION submitted to Michigan State University in partial fulfiliment of the requirements for the degree of

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ABSTRACT

MATHEMATICS ACHIEVEMENT AND SELF-ESTEEM AT SECONDARY SCHOOLS IN ZAIRE: THE EFFECTS OF PRINCIPALS' EMPHASIS ON INSTRUCTIONAL LEADERSHIP

By

With the exception of Robert S. Prouty and 12 sciences option,

The purpose of this study was to examine how secondary school

principals in Zaire affect student outcomes by emphasizing instructional leadership. Outcomes examined include mathematics achievement and the development of student self-esteem. Principals' emphasis on instructional leadership was measured by the frequency of classroom supervision and faculty meetings, by the existence of explicit instructional objectives and by other indicators of involvement in the instructional process.

A total of 1017 students (Grades 8 and 12), along with their mathematics teachers and principals, participated in the main study. Students completed the Coopersmith Self Esteem Inventory (French) and a mathematics questionnaire (reliability coefficients of .45 and .83 respectively were obtained for these instruments). The teachers and principals were interviewed by the researcher.

Emphasis on instructional leadership was found to have a significant positive effect on mathematics achievement and significant but relatively small effects on self-esteem. The frequency of classroom supervision and the number of faculty meetings were found to be strongly associated with mathematics achievement and pass rates on the Grade 12 national examinations.

With the exception of students in the Grade 12 sciences option, textbooks were associated with greater mathematics achievement only for those students whose principals emphasize instructional leadership. The socioeconomic status of individual students did not significantly affect mathematics achievement or self-esteem, but classroom SES levels had a positive effect on mathematics

achievement.

Strategies used by principals to cope with a shortage of teachers and teaching materials include 1) hiring itinerant teachers, 2) a four-day work week for teachers, 3) increased personal teaching load, 4) increased study time for students and 5) solicitation of financial and material support from the community.

The writing of this dissertation often meant long hours mer from

Direct principal/teacher contacts appear to be the most important component of instructional leadership in Zaire; there is a need for research which examines this in greater detail. Research is needed also on the cost-effectiveness of potential pre-service and in-service training programs for principals and on how principals manage innovative approaches to instructional improvement in times of extreme resource scarcity.

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The writing of this dissertation often meant long hours away from home, but my wife, Diane, who will soon be working on one of her own, did her best to make sure that we were always in touch. One day, looking through my appointment calendar, I found the letters Ph. D. followed by a series of exclamation points in her distinctive style. When I called to thank her for the motivation, she laughed. "I guess it worked," she said, "but you read the message wrong. I was trying to remind you: PHONE DIANE!"...This dissertation is dedicated to you, Diane. Thanks for the patience and the motivation and especially, for always... keeping in touch.

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Introduction

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CHAPTER ONE

STATEMENT OF THE PROBLEM

It isn't easy for a principal in Zaire because... teachers feel as if they're on a trampoline. They bounce up and down, getting nowhere, and as soon as they can, they jump off.

-primary school inspector, Butembo

Introduction

In recent years, an increasing number of researchers have examined the question of school effectiveness. Their studies generally have concentrated on the relationship between student achievement and school inputs or processes. Most of the activity in this field has taken place in schools within the United States but there has been a growing interest among researchers in developing countries.

Although many of the effective schools studies have been criticized both on methodological and conceptual grounds, they have nevertheless produced remarkably similar findings. Ferhaps the most consistent of these is that the instructional leadership role of the principal is a key to school effectiveness (Averch, et al., 1971; Purkey & Smith, 1982; Good & Brophy, 1985; etc.).

The instructional leadership role of principals is one whose effect is generally achieved indirectly, through the mediation of teachers in the classroom. The present study represents an attempt to determine the relationship between principals' emphasis on instructional leadership and school effectiveness in a country where teachers are among the lowest paid in the world and where teacher turnover is high. The field work was conducted in Zaire, in the Lubero Region of the province of Kivu. It was carried out in French, the language of all post-primary schooling in the country. A major difference from most previous studies in the effective schools tradition is that effectiveness was defined in terms of both a cognitive student outcome (mathematics achievement) and a non-cognitive student outcome (development of self-esteem).

Need for this Research

This research responds to several gaps in the current effective schools literature: 1) it seeks to broaden the definition of effectiveness by including outcomes other than purely cognitive ones; 2) it explores the implications of effective schools research for educational administration in a developing country; and 3) it provides an empirical description of the relationship between instructional leadership and student outcomes.

enfigured a near to though the concernes as a

Although effective schools researchers have consistently highlighted the importance of administrative and instructional leadership, other researchers have emphasized the nonrationality of schools as organizations (March & Olsen, 1976; Weick, 1976; Wise, 1979; etc.). They have pointed to the "loosely coupled" nature of

schools, indicating a weak link between educational administration and student outcomes and suggesting that instructional leadership is an inappropriate focus for secondary school principals, since instruction at that level is a 'soft' technology, best left in the hands of teachers.

Part of the reason for these differing perceptions of reality has been the use of different definitions of school effectiveness and different measures of school outcomes. The effective schools research tradition typically has adopted a definition of school effectiveness based on student academic achievement as measured by standardized tests. Principal effectiveness has generally been defined and measured in a similar fashion (Huff, et al., 1982). Even where other measures are used (superintendent's ratings, parent and teacher satisfaction, etc.), there is only rarely any indication that student outcomes other than academic achievement have been considered. Researchers examining schools as non-rational organizations, on the other hand, have considered a much broader array of school outcomes.

Several reviews of the literature call attention to the lack of

In their review of effectiveness studies, Purkey and Smith (1983) have suggested a need to look at other outcomes of schooling. Cuban (1984) would expand the definition of effectiveness to include: "sharing, learning to make decisions, developing self-esteem, and acquiring higher-level thinking skills and aesthetic sense." Good and Brophy (1985) add their voices to the chorus, stating flatly that "we need...more basic research on other important outcomes of schooling" (p.599). Finally, Rowan, Dwyer & Bossert (1982) urge the

"development of a multidimensional view of school effectiveness" which would include the development of self-esteem and other outcomes (although, interestingly, a 1982 study of principal succession effects by Rowan uses only student academic achievement to measure the effect principals have).

There is, at present, little literature on effective schools per ge in developing countries, and virtually none on principal effectiveness, yet the related studies have shared the tendency toward a narrow definition of success (Simmons & Alexander, 1978). Simmons and Alexander have suggested that one of the greatest weaknesses of much of the available research in developing countries has been the exclusive concern with simple cognitive outcomes such as those typically associated with examination scores. They argue for an approach which would "examine multiple schooling outputs. Academic achievement, drop-out rate, modernity, motivation, self-esteem should be treated as simultaneously determined outputs."

Several reviews of the literature call attention to the lack of studies of effective secondary schools (Purkey & Smith, 1982; Manasse, 1985). Most of the work which has been done is on the elementary level. Yet secondary schools differ in important ways from elementary schools and a great deal of research is needed to show which dimensions, if any, of the effective elementary schools research may be applicable to secondary schools. Studies by Rutter et al. (1979) and by Coleman et al. (1981) do indicate that this concept is worth pursuing on the secondary level. Rutter, in

particular, shows that secondary schools sharing similar demographic characteristics differ in important ways as to student outcomes. His study is one of the few to look beyond cognitive outcomes and his finding that there appears to be a causal link between certain inputs and given outcomes points up the need for further research in this area this study was explorately to not only a sugar to especial

Many of these comments are directed to definitions of effective schools rather than to definitions of effective principals. This is because effective principals generally have been seen as those who run effective schools, even though it is widely recognized that many factors can intervene between the actions of the principal and any measure of school effectiveness (Manasse, 1985, p. 440). This means, of course, that any incompleteness in the definition of effective schooling will make the relationship between the principal's activities and school success, or effectiveness, even harder to trace the Second International track as an and

Statement of the Problem

The problem which the researcher addressed is that of the relationship between the emphasis which secondary school principals in Zaire place on instructional leadership, and two outcomes of schooling: mathematics achievement and student self-esteem.

Statement of Purpose of four loss of the

The specific purpose of this study was to examine the instructional leadership of secondary school principals in Zaire in

relationship to both mathematics achievement and the development of student self-esteem. Specific components of this leadership were identified and described. Correlations between factors associated with these variables were examined.

This study was exploratory in nature; it sought to identify constructs which could be of value in future studies of educational administration in general and of instructional leadership in particular. It included second year (Grade 8) and sixth year (Grade 12) students from fifteen secondary schools in the Lubero Region of the Kivu Province of Zaire (see page seven for map showing school district studied and location of sample schools).

Each student was asked to complete the 25-item Coopersmith Self Esteem Instrument (translated by the researcher into French) and items derived from the cross-national pool of mathematics questions from the Second International Study of Mathematics conducted by the International Association for the Evaluation of Educational Achievement (Chang & Ruzicka, 1985). Students responded to mathematics questions translated by the researcher into French from the IEA study. Principals were interviewed by the researcher. These interviews were structured around a fifteen-item questionnaire which was administered orally and which was followed by a more open-ended format. The entire interview process varied considerably in length, lasting from one to four hours. The mathematics teachers at the schools were also interviewed, as were all three primary school inspectors and both secondary school inspectors, who provided valuable information about schools and schooling in the district.



Map of Butembo School District

There is lighted but growing evideers to indicate that the socioeconomic status (Rowan, 1982) and shet factors associated with offectiveness in these schools may differ challeger 6 Murphy, 1985). The affective schools repartments in particular have emphasized equity concerns related to the quality of schooling for low socioeconomic status students. It is far from clear, however, to

inspectors and both secondary school inspectors, who provided valuable information about schools and schooling in the district.

Importance of the Research

A number of studies have documented the economic returns of education in developing countries (Psacharopoulos, 1973; Psacharopoulos & Woodhall, 1985). These economic benefits may be attributable to both cognitive and non-cognitive behavioral changes (Colclough, 1980; Eisemon, 1985), yet studies in developing countries have dealt almost exclusively with cognitive outcomes. This study, emphasizing a cognitive and a non-cognitive outcome, will begin filling this void in the literature.

policiation to other settings (busch out, 1934). This study

Many researchers have concluded that the relative importance of school effects is far greater in most developing countries than in the more industrialized countries (Heyneman & Loxley, 1983; Colclough, 1980; Currie, 1977). This places an even greater burden on researchers in developing nations to examine outcomes of schooling and those processes and inputs which affect them.

() have pointed out that an explania on best scoved a

There is limited but growing evidence to indicate that the importance of principal leadership is greater for schools with lower socioeconomic status (Rowan, 1982) and that factors associated with effectiveness in these schools may differ (Hallinger & Murphy, 1985). The effective schools researchers in particular have emphasized equity concerns related to the quality of schooling for low socioeconomic status students. It is far from clear, however, to what extent findings pertaining to socioeconomic status in developed countries will hold true for developing countries.

Positive self-esteem has been shown in Western studies to facilitate the development of mature career attitudes, leading to improved academic and work achievement (Crook, et al., 1984). Most studies have supported the hypothesis that a low but relatively consistent positive relationship exists between self-esteem measures and measures of academic achievement (Hansford & Hattle, 1982). It is uncertain to what extent these findings can be generalized to Third World settings. Much of the current work on research utilization suggests that research never has direct, unambiguous application to other settings (Buschmann, 1984). This study and others like it should help clarify to what extent these Western studies will be applicable to the Zairian context.

picking up axtra pipe

At present, the relationship between specific instructional leadership variables and outcomes of schooling is unclear. Yet a number of commentators (Cuban, 1983; Steers, 1975; Rowan et al., 1983;) have pointed out that an emphasis on test scores means that there is a trade-off occurring somewhere (see Elmore, 1982, for a more complete discussion of the issue of trade-offs). Something else must be de-emphasized, whether deliberately or not. This study should help provide both the emphasis and the information needed for educators in Zaire to ensure that trade-offs are both meaningful and desirable.

General Uses and Limitations

This is an exploratory research study which has been somewhat developmental in nature. Although the original research design has generally been followed, several variables were encountered during the interview process and consequently received close attention in the latter stages of the study but none at the beginning. An example is the pattern of itinerant teachers which was discovered part way through the study. A significant number of schools share teachers for key subjects. Although this was not a major part of the study, it did shape the later teacher interviews. A second example is the practice among principals in some of the larger schools of naming a proviseur to be responsible for classroom visits and other instructional matters. The government stopped paying the salary of the proviseurs in 1984 but in the course of the study it was learned that many schools had made internal adjustments, with teachers picking up extra classes so that the position of proviseur could be maintained. Consequently, the study design was changed to include informal interviews with proviseurs.

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The major limitations faced by the researcher follow from the restrictions in design which are necessarily imposed by a study of an exploratory nature. The instruments used in measuring key variables, for instance, were selected to minimize cultural distortion but had not been previously tested in Zaire. Reliability coefficients for the self-esteem measurements in particular were found to be relatively low (.40 and .49 for Grade 8 and Grade 12 respectively).

The design of the study was also necessarily limited in scope. For instance, while the vital importance of teachers in determining student outcomes was recognized, the researcher did not attempt to control for differences among teachers (other than academic preparation and years of experience). This means that the explanatory power of the model is not as great as it would otherwise have been. Similarly, instructional leadership includes working with parent groups to enhance parent participation in the learning process and working with teachers and students to establish a climate of security, commitment, and cooperation within the school. These functions of principals are dealt with, but not at length.

is always problematic. In this study, the level of editation of both

Instructional leadership is a complex component of educational administration and the researcher does not claim to do entire justice to that complexity. Rather, an attempt was made to show simply that an emphasis on instructional leadership does have a statistically measurable effect on important student outcomes and that this effect is independent of student background variables. An in-depth treatment of the mechanisms through which this effect occurs is not within the scope of this study.

Although a large number of student organization much charlen

Since schools from only one region were tested, with students largely from one ethnic group (the Nande), the results may reflect an inherent cultural bias and thus not be applicable directly to other ethnic groups. Ethnicity may be related to instructional leadership, self-esteem, or achievement, or to the interactions among them. The language of early primary schooling (in this case, Swahili) also may affect the variables studied, or at least the measurement of them. Language also may have affected student comprehension of the test, particularly for the second-year students, some of whom had not attained a high level of French mastery.

have way the difficulty of constalling for differences in the

The research took place in a largely rural area (although it included one rural town of over 100,000 inhabitants). Its applicability to urban settings, while certainly very possible, will need to be tested with further research.

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Socioeconomic status is another variable the measurement of which is always problematic. In this study, the level of education of both the father and the mother were measured, with the mother's education ultimately serving as a proxy for socioeconomic status. A further estimate of socioeconomic status was made by counting the number of students wearing watches in each classroom. Still, it is hard to be certain that either of these methods provided an entirely adequate measurement.

yrie. A number of review of the effective advects statement bet

There are other limitations which result from the study design. Although a large number of student responses were obtained, the sample size of principals was low. This made the attainment of statistical significance difficult for correlations with various facets of instructional leadership. Also, since the study was cross-sectional rather than longitudinal, it was not possible to make causal inferences based on changes over time. There was, however, an attempt to determine stability of academic achievement over time by

examining school records and in particular, state examination results from 1983 to 1986.

idely practiced, must certainly affect both achievement an

Other limitations are clear. Perhaps the most significant of these was the difficulty of controlling for differences in the academic level of students admitted to the various schools. Two procedures were followed in order to account for this variation. First, a panel of expert witnesses was asked to rank the schools in terms of academic intake (this panel consisted of three long-time elementary school inspectors and one secondary school inspector, all of whom have visited the schools in the sample area many times). Second, principals and teachers were questioned about entrance requirements. A ranking based on these interviews was devised.

d inputs and their correlations till a load array of cognitive an

A further limitation of this study is that findings may not be generalizable to other than full six-year secondary schools. The study design did not include vocational schools, primary schools, or schools following a four-year cycle, rather than a full six-year cycle. A number of reviews of the effective schools research have pointed out that what is applicable to secondary schools may not necessarily be applicable to other kinds of schools (Cuban, 1983; Firestone & Herriott, 1982; Manasse, 1985).

he attempt to provide primary as

Finally, a further confounding variable difficult to accurately measure is the level to which principals or teachers engage in what has come to be known as the system of <u>matabishi</u>. This refers to the giving of financial favors or other bribes in order to gain admission

or advancement. Corruption has become a way of life in much of Zaire (see, for example, Vansina, 1982) and, in those schools where it is widely practiced, must certainly affect both achievement and self-esteem (Gould & Amaro-Reyes, 1983). Some information about this practice has been collected, but a great deal of uncertainty remains.

in the following: When secondary websel principals in Zaire

In spite of these limitations (and perhaps partially because of them), the study should be of considerable value to researchers and educators dealing with rural populations in developing countries. The baseline information provided should give insight into the nature of instructional leadership where resources are scarce and teacher salaries low; it suggests areas of fruitful research for the future and should give an impetus to further studies into school processes and inputs and their correlations with a broad array of cognitive and non-cognitive outcomes.

hav are listed in more meeter response to chapters This

On a more personal level, the researcher plans to use the present study as a pilot for a subsequent longitudinal study investigating the complex nature of effective instructional leadership under conditions of resource scarcity. An attempt will be made here to identify variables and constructs for this further research.

The attempt to provide primary and secondary schooling has demanded great efforts on the part of national governments in developing countries (for some idea of the magnitude of these efforts, see Williams, 1984), including that of Zaire, and the

information gathered here will help provide guidelines for the more

effective use of the scarce resources required.

Are there differences among schools as to the levels of student self-esteem?

Research Questions differences along principals as to the emphasis

The ultimate question for which answers were sought in this study is the following: When secondary school principals in Zaire emphasize instructional leadership, does this lead to the attainment of desired student outcomes? In order to get at this larger question, it is necessary to answer many others: Do principals, in fact, differ in the emphasis which they place on instructional leadership? What are the current levels of student outcomes? What is the effect of socioeconomic status? age? gender? type of program followed? etc.

Are there significant differences in class sizes?

The research questions asked are stated here in general form. They are listed in more precise research terms in Chapters Three and Four. These questions are grouped into three categories: 1) those that deal with school level variables; 2) those that deal with classroom level variables; and 3) those that deal with student level variables. Note that each question supposes an "Are there...? If so..." format. That is, each question asks: Are there any differences here? Each further implies: If so, what are they? What do they correlate with? etc.

SCHOOL LEVEL QUESTIONS

- 1. Are there differences among schools as to academic intake?
- Are there differences among schools as to socioeconomic status?

- 3. Are there differences among schools as to mathematics achievement?
- 4. Are there differences among schools as to the levels of student self-esteem?
 - 5. Are there differences among principals as to the emphasis which is placed on instructional leadership?
 - 6. Among principals who emphasize instructional leadership, are there differences in how this leadership is exercised?
 - 7. Are there differences among schools as to academic stability?
 - 8. Are there differences among schools as to the physical quality of the buildings?

CLASSROOM LEVEL QUESTIONS

- Are there differences in mathematics achievement and levels of self-esteem between classes following the sciences curriculum and classes following the humanities curriculum?
 - 2. Are there differences between eighth-grade and twelfth-grade scores for mathematics achievement and self-esteem?
 - 3. Are there significant differences in class sizes?

STUDENT LEVEL OUESTIONS

- 1. What is the distribution across students of socioeconomic status?
- 2. What is the gender distribution?
- 3. What is the age distribution?
- 4. Which students possess textbooks?
- 5. How many years do students spend at the same school?

Hypotheses

The hypotheses are stated here in general form. They are stated in statistical form in Chapters Three and Four. Since this was an exploratory study, there is a larger number of minor hypotheses than would be the case if more were known about principals and student outcomes in Zaire. The minor hypotheses were designed to determine whether there are important confounding variables which may affect the major hypotheses.

MAJOR HYPOTHESES

- 1. The emphasis which principals place on instructional leadership affects student mathematics achievement.
 - 2. The emphasis which principals place on instructional leadership affects the development of student self-esteem.
 - 3. Principals' effect on mathematics achievement is independent of the academic ability of students enrolling at the school.

MINOR HYPOTHESES

- The emphasis which principals place on instructional leadership has an effect on students which grows stronger the clonger the student is at the school.
- 5. Students who have textbooks tend to have higher mathematics achievement.
- The student's socioeconomic status does not affect her/his level of mathematics achievement.
- The student's socioeconomic status does not affect his/her level of self-esteem.
- The socioeconomic level of the school does not affect the student's level of mathematics achievement.
- The socioeconomic level of the school does not affect the student's level of self-esteem.
 - 10. Mathematics achievement is positively related to self-esteem.
 - Schools where students have higher self-esteem scores have done better on state examinations over the past four years than have other schools.
 - 12. Schools where students have higher mathematics scores have done better on state examinations over the past four years than have other schools.
 - Males have higher levels of mathematics achievement than do females.
 - 14. Males have higher levels of self-esteem than do females.

Definition of Terms

1. Self-esteem

-The value judgment a person makes about her/himself (Coopersmith, 1967). It is defined operationally as the score obtained on the 25-item adult version of the Coopersmith Self Esteem Inventory, with a higher score indicating greater self-esteem.

2. Principal effectiveness

-An effective principal, for purposes of this study, is defined as one whose school is found to be effective.

3. School effectiveness

-The attainment of outcome levels beyond the norm for schools with given demographic variables. Schools whose students score significantly higher than the mean for both mathematics achievement and self-esteem, with student intake in terms of academic achievement held constant, will be considered to be effective. Effective schools should also show evidence of stability as indicated by state examination scores for the past four years.

4. Socioeconomic status

-This is defined operationally as the educational level of the mother. A second measure has been obtained by observing the percentage of students wearing watches.

5. Student intake (academic)

-The academic achievement level of students when first enrolling at a school. It has been measured in two ways: 1) by asking an expert panel consisting of three elementary school inspectors and one secondary school inspector to rank the schools as to academic intake; 2) by obtaining admissions criteria from principals and determining which schools apply a more selective criteria.

6. Emphasis on instructional leadership

-This is a composite ranking of the principals determined largely by principals' and teachers' responses to questions dealing with eight components of instructional leadership: supervision of instruction, faculty meetings, instructional objectives, teaching involvement, awareness of the mathematics curriculum, stated emphasis on instructional leadership, the purchasing and use of resources for instructional purposes, and the degree to which a climate conducive to learning has been established.

7. Stability of effectiveness

-This is the amount of variation in academic achievement at a given school over the last four years. It has been measured by comparing the state examination scores of the Grade 12 students from 1983 to 1986.

8. Student tenure

-The length of time a student has spent at his/ her current school.

9. Schools as non-rational organizations

-This expression is used to characterize the models of schooling put forth over the last decade in which the rational bureaucratic structure described by Weber (1947) does not prevail. In particular, it is used to describe the organizational models suggested by Hanson (1975, 1976), March & Olsen (1979), Weick (1976), Sedlak et al. (1986), Wise (1979), Meyer & Rowan (1978) and Powell et al. (1985).

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CHAPTER TWO

The review of the REVIEW OF THE LITERATURE of the review of the

So...Why are you doing this anyway?...Has anyone ever studied this sort of thing before?" -student, School 7

Introduction to the educational systems is double to the set

Over the course of the past decade, researchers have advanced a number of different theories of schools as organizations. Many of these have emphasized the lack of fit between the activities of school administrators and teachers and the stated goals and objectives of their schools. In this sense, they may be characterized as theories of schools as non-rational organizations. This, of course, stands in sharp apposition to the classical Weberian treatment of schools as rational bureaucracies, a paradigm dominating the research literature since its publication in English in 1947.

The recent growth of the body of literature known as effective schools research has been understood by many to offer a counterweight to the non-rational paradigms and a return to an approach more consistent with Weber (and indeed, Dewey). This is particularly true in its treatment of the principal as an instructional leader, responsible for and capable of significantly affecting student achievement. The effective schools literature, essentially, holds that principals can work with teachers to create a school climate favorable to learning regardless of socioeconomic and other

background variables. It is a positivistic approach rejecting the inevitability of the processes described in much of the non-rational literature.

The ongoing debate between these contrasting points of view has been largely conducted in the Western world but is of vital importance to the educational systems in developing countries as well. Many of the questions raised (especially those dealing with such key issues as access, equity and quality) are matters of even more pressing concern for planners, policy makers and researchers dealing with the development of educational systems in Third World countries. These countries have demonstrated an astonishing level of commitment to education, investing prodigious efforts over the past ten to fifteen years toward the provision of universal primary education and continuing to struggle with the expansion of secondary and tertiary education.

This review of the literature is divided into two parts. Part I examines the role of the principal within the context of recent theory dealing with schools as organizations. An emphasis is placed on the effective schools research and on the principal as an instructional leader. The perspective of research and researchers from developing countries is included and the importance of giving simultaneous consideration to the multiple outcomes of schooling is defended. The current literature dealing with the development of student self-esteem is examined briefly as representative of the literature dealing with the non-cognitive outcomes of schooling.
Some of the pitfalls in the application of Western research to developing countries are also briefly considered, along with the potential benefits of such research. Part II presents an overview of the Zairian educational context and current educational concerns in Zaire. Studies which have been conducted in developing countries and which deal with concepts related to the effective schools literature are presented. A final section synthesizes what has been learned from the literature. Part I

THE ROLE OF THE PRINCIPAL

Schools as non-rational organizations

Weber (1947) described organizations as rational bureaucracies in which administrators exercise control based on access to superior technical knowledge. Authority was seen as deriving from the notion that organizational norms may legitimately be established and members of the organization legitimately be required to obey the rules and conventions established in order for organizational goals to be reached. Rational bureaucracies were presented as impersonal in nature, dominated by a spirit of formality.

Corwin (1974) summarized this approach as one in which organizations are seen to "serve as means for realizing group Under the assumptions of this model, he suggested, "any goals". departures from rationality can be attributed to rational mistakes, ignorance, or miscalculation" (p. 253). This model assumes that organizations have clear goals and that administrators will have the information required to make the decisions needed to achieve these This rational model dominated research into schools as goals. organizations throughout the 50s and 60s and continues to exert a wide influence, particularly in those models which equate management with decision-making (see, for example, Griffiths, 1958; Simon, 1971). The rational model is also receiving renewed attention

because of the flurry of interest in creating computer simulations of educational decision-making processes (c.f. Wholeben, 1985).

has long been recognized, however, that this model of It organizations as rational bureaucracies represents a considerable oversimplification (see, for example, Udy, 1959). Researchers in years have increasingly challenged its applicability to recent schools, proposing a number of alternative models, most of which may be characterized as viewing schools as essentially non-rational organizations (i.e., organizations for which the ideal-type Weberian rational bureaucracy model is inadequate). Already in 1947, Parsons saw a conflict between the roles of technical expertise and hierarchy in Weber's model. More recently, Hanson (1975, 1976) has pursued this question, positing the existence of two interacting spheres-one in which the technical experts (i.e., the teachers) exercise their autonomy in classroom management and curriculum and one in which the administrators wield their power through the hierarchical structuring of the school organization.

It was Bidwell (1965), however, who moved the debate in a substantively different direction with his seminal work, The School as a Formal Organization. This chapter, which presents for the first time the concept of "structural looseness", anticipates the later work of Karl Weick (1976) and others. According to Bidwell, schools differ from other organizations primarily in the high degree of autonomy which is granted both to teachers and to the administrative personnel. This phenomenon has altered the structure of school systems, lessening the degree of control which administrators maintain over the outputs and countering bureaucratic mechanisms of control. The ultimate effect of this tendency toward a more professional basis for teaching (and indeed, administration), suggested Bidwell, is that coordination of school activities becomes highly problematic and schools become characterized by structural looseness.

While Bidwell recognized the inadequacy of the bureaucratic model to fully explain the organization of the school, he nevertheless continued to view schools as stable organizations with strong and readily defined boundaries. The 'garbage can model' (Cohen, March & Olsen, 1972; March & Olsen, 1979), on the other hand, rejected the rational bureaucratic model altogether and proposed a model based on 'organized anarchy'. In this model, the way in which administrators make choices was explained by the metaphor of a garbage can into which various problems and solutions are tossed by various participants at various times.

> It is clear that the garbage can process does not do a particularly good job of resolving problems. But it does enable choices to be made and problems sometimes to be resolved even when the organization is plagued with goal ambiguity and conflict, with poorly understood problems that wander in and out of the system, with a variable environment, and with decision makers who may have other things on their minds." (March & Olsen, 1979, p. 36)

The 'garbage can model' was extended by Weick (1976) in what has become the dominant organizational model of schooling up to the present time. Weick presented schools as loosely coupled

In this perspective, schools may exhibit many of the organizations. formal properties of the Weberian rational bureaucracy, with a structure, a strict division of labor and a hierarchical preponderance of formalized procedures, but there is only a weak link activities of administrators and ultimate student between the This model stresses the existence of stable subassemblies outcomes. which maintain their own identity and are only marginally controlled by administrators (for a more extended discussion of loose coupling, see Gamoran & Dreeben [1985] and Tyler [1985]).

While some researchers have suggested that elementary schools can be broadly characterized by the rational bureaucracy model and secondary schools by the anarchy model (Firestone & Herriott, 1982), most recent organizational theorists have questioned the adequacy of the rational bureaucracy model for any educational setting, remaining much closer to Weick than to Weber. Bidwell (1977) himself has turned away from the concept of the school as a closed system and now places a much greater emphasis on environmental influences on schools. He suggests that schools are indeed loosely coupled because of the diffuse nature of the technology of instruction. He does not, however, understand loose coupling in the same sense as Weick. Unlike Weick, he believes that while administrative activities and roles are strongly responsive to surrounding events, instructional activities and roles are also strongly responsive to surrounding events: difficulty he perceives is that administrative the activities and instructional activities are not surrounded by the same events and hence there can exist only a loose coupling between administration and instruction.

Other recent theories have dealt with the ways in which school administrators and policy makers continue to be guided by the model, to the detriment of the school rational bureaucratic organization and the accomplishment of school objectives. Wise (1979) describes schools as characterized by hyperrationalization. This means that procedures and rules are imposed on the basis of apparent logic, but do not have the effect of achieving conformity to organizational norms. Meyer and Rowan (1978, 1983) present a similar phenomenon, which they term institutionalized ritual. as characteristic of schools. They see schools as responding to the confidence which the public places in the rites of certification organizations characterized by a meaningful rather than as relationship between their proclaimed goals and their instructional practices.

Yet other theorists have described the school organization as a place where conflicting objectives place the various actors into what are frequently contradictory roles. Powell et al. (1985) present the image of a shopping mall to describe what goes on in high schools, with schools providing opportunities for students but leaving them with the sole responsibility for choice and involvement. Principals are generally treated as irrelevant to the learning process since teachers and students arrive at understandings ("treaties") as to what must be accomplished in order to graduate. This theme of tacit

understandings between teachers and students is further expanded by Sedlak et al. (1986) who argue that many organizational policies have had the unintended consequence of perpetuating the "bargain" to avoid or minimize academic content, and that the ability of individual schools to create a learning environment is severely affected by social, political and financial forces beyond their control. Because of this, efforts by individual principals to increase content and tighten the organization are seen as relatively incapable of bringing about meaningful change.

It is against this backdrop of theories which dominate the current research literature that the emergence of a distinct body of literature known as the effective schools research has been hailed by welcome affirmation of the ability of individual many as а practitioners and individual schools to effect significant change. The effective schools research holds, in general, that significant between-school differences in both equity and quality of schooling do exist, that these differences are independent of funding levels, and that effective schools can and do find ways of addressing both the equity and the quality concerns. This literature holds further that factors leading to a greater degree of success in these two areas can be identified and duplicated by other schools. Emphasis is placed on the instructional leadership role of the principal, who is seen as the key player in the process of innovation and change (c.f. Lezotte et al., 1980). The development of the effective schools movement and its relationship to prevailing theories of schools as organizations is discussed below.

Effective schools research

The beginnings of the effective schools research can be traced to the early 1970's. The first studies came largely as a response to the widely-circulated Coleman Report (Coleman et al., 1966) and the later Jencks report (Jencks et al., 1972).

The Coleman Report was essentially an input-output study and suggested that differences in school inputs do not lead to differences in school outcomes.

Schools bring little influence to bear on a child's achievement that is independent of his background and social context...Inequalities imposed general on and peer children by their home, neighborhood environment are carried along to become the inequalities with which they confront adult life at the end of school. p. 325

The implication is clear: it does not really matter what teachers and administrators do since it is the ethnic and socioeconomic mix of students which ultimately determines achievement.

The findings of the Coleman Report have been widely challenged on the basis of flawed methodology and design, as well as a tendency to extrapolate beyond the data. (Early critics include Armour, 1972; Bowles & Levin, 1968; Cain & Watts, 1970; Hanushek & Kain, 1972: and many others. More recent critics include Raudenbush & Bryk [1986].) In spite of the critics, however, the basic premise of the Coleman Report--that differences among schools account for a minimal proportion of the variation in student achievement and that

socioeconomic background is all-important--continued to gain currency in many quarters throughout the early 1970's and indeed, continues to wield a considerable influence right up to the present time. (See Edmonds, 1978, for one perspective on why this is so.)

G. Weber (1971) was one of the first to directly attempt to show, in contrast to the Coleman findings, that schools could indeed result in high achievement for students from low socioeconomic backgrounds. Using an outlier (i.e. schools 'lying out' further from the mean than would normally be anticipated) design, he identified, among others, five constructs which appeared to account for this: <u>strong principal</u> <u>leadership</u>, <u>high expectations</u>, <u>an orderly atmosphere</u>, <u>a focus on</u> <u>achievement</u>, <u>and regular testing</u>. The Weber study, though marred by numerous methodological and conceptual flaws, is noteworthy because of the continued importance of the major constructs identified. These soon became the 'big five' of the effectiveness movement and continue to appear regularly throughout the literature.

A second study which followed the outlier design used by Weber was published in 1974 by the Office of Education Performance Review of New York. In this study, an effective inner-city school was compared to one which was not effective. The purpose of this case study was to determine which factors appeared to account for the differences in student outcomes for the two schools. The results are given here as typical of much of the early research in this field:

the differences in student performance in these two schools seemed to be attributed to factors under the schools' control;

administrative behavior, policies, and practices in the schools appeared to have a significant impact on school effectiveness;

the more effective inner-city school was led by an administrative team which provided a good balance between both management and instructional skills;

the administrative team in the more effective school had developed a plan for dealing with the reading problem and had implemented the plan throughout the school

classroom reading instruction did not appear to differ between the two schools since classroom teachers in both schools had problems in teaching reading and assessing pupils' reading skills;

many professional personnel in the less effective school attributed children's reading problems to nonschool factors and were pessimistic about their ability to have an impact, creating an environment in which children failed because they were not expected to succeed. However, in the more effective school, teachers were less skeptical about their ability to have an impact on children;

children responded to unstimulating learning experiences predictably-- they were apathetic, disruptive or absent. p. vi, vii

The first methodologically rigorous, large-scale attempt to find effective schools was described in 1974 by Klitgaard and Hall. They defined effectiveness operationally as student performance on standardized and mathematics achievement tests. reading They analyzed 1969-70 and 1970-71 scores from Michigan 4th and 7th Grade students (representing ninety percent of the public schools in the state), 1960 high school data from Project Talent, and scores from Grades 2 through 6 from 1967-71 in New York City. They then checked to see if more schools were one standard deviation above the mean than would be expected by chance. Fifteen of 161 Michigan schools were above the mean six out of eight times (less than one would have

been expected by chance). They also investigated school districts in New York City and found 30 of 627 were one standard deviation above the mean five of eight times (less than four would have been expected by chance).

This study showed that certain schools do attain a greater degree of success than others in promoting student achievement. Since it compares schools with similar populations, it can further be assumed that there are schooling variables which somehow account for these differences. What those variables are, however, is not addressed. Further, the study offers no way to determine whether or not there are groups within schools which are achieving success while others are not. It gives only average achievement data for the schools. Finally, it tends to confirm rather then disconfirm the Coleman finding that school differences account for only a small part of the overall differences in student achievement, since only a small percentage of schools were found to be "effective" (an average of about five percent).

A number of outlier studies were conducted throughout the 1970's. Madden, Lawson and Sweet (1976) matched 42 elementary schools in California on the basis of pupil characteristics, with one high-achieving and one low-achieving school in each of 21 pairs. Brookover and Lezotte (1977) looked at six improving and two declining schools. Each of these studies was cross-sectional in nature and described findings similar to the 'big five' of Weber.

One of the more rigorous outlier studies was conducted by Brookover et al. (1979). The researchers studied Michigan fourth-grade and fifth-grade students at 61 majority-white and 30 majority-black schools. School input variables studied included the social composition of the student body, the school social structure and school climate. Outcome variables studied included student achievement, self-concept of academic ability and self-reliance.

The five factors defining school social structure were parent involvement, differentiation of student programs, openness of classroom organization, principal's time allocation and staff satisfaction with school structure. School climate was defined as the norms, expectations and beliefs of those involved in the school.

Academic achievement was measured according to mastery of reading and math objectives (from the Michigan School Assessment Test). Self-concept of academic ability and self-reliance were measured according to questionnaires specially developed for this purpose by the researchers.

Brookover and his colleagues provided a very complex view of how effective schools operate. Of key significance to their work was the concept of a school social system composed of three elements: social inputs, social structure, and social climate. Social inputs they defined as student body composition and personnel characteristics; social structure referred to class size, open classrooms, etc.; while social climate was defined as the norms and expectations about the

school held by staff and students. They found school social climate (and, to a lesser degree, school social structure) significantly related to student achievement, even when socioeconomic status was held constant.

Perhaps the best known of the effective schools researchers during this period was Ronald Edmonds. Working first in New York City and then with Brookover and Lezotte at Michigan State University, Edmonds soon became a leading spokesman for the effective schools movement. He argued vigorously that "all schools be held responsible for effectively teaching basic school skills to all children". (Edmonds, 1978; p. 31). He held further that "we can, whenever and wherever we choose, successfully teach all children whose schooling is of interest to us...Whether or not we do it must finally depend on how we feel about the fact that we haven't so far." (Edmonds, 1978; p. 35)

One of the most important studies which can be placed in the general framework of the effective schools tradition is the study of inner city secondary schools in London conducted by Rutter et al. (1979). The major findings of this study, which was longitudinal in nature, include the following: 1) secondary schools differed markedly as to the level of student outcomes; 2) student intake did not account entirely for outcome differences between schools; 3) variations in outcomes between schools were relatively stable over a period of five years; 4) schools whose students exhibited better levels of behavior also exhibited higher achievement; 5) differences

were not due to physical factors such as school size and building 6) differences between schools were related to their quality: characteristics as social institutions; 7) factors outside the teachers' immediate control also influenced outcomes; 8) academic admitted was related to a decrease in balance in students 9) there was a stronger relationship between outcomes delinguency; and the combined measure of overall school process than with any individual process variables; 10) the association between school processes and outcomes appears to be at least partially causal in nature.

A number of objections have been raised to the effective schools studies. One of the most important concerns the outlier design which many of these studies have employed (Purkey & Smith, 1983; Rowan et al., 1983). Follow-up studies have frequently failed to show consistent gains in achievement over a number of years at schools identified as effective for the purposes of one study or another. In other words, the statistically predictable pattern of regression toward the mean has occurred in virtually every sample of outlier schools studied. Weber (1971), for instance, found upon return to his original schools several years later that only one of them continued to be effective.

The failure to show stability of school effects is a more serious problem than has generally been acknowledged, for it means that long-term educational planning based on the effective schools research is not empirically defensible at present. Although this has

not stopped educational planners in this country from moving forward with school improvement projects based frequently on intuition (for a defense of this position, see Lezotte, 1986), educational planners in developing countries are unlikely to embrace the effective schools concepts with the same enthusiasm. In the wake of the failure of vocationalization and other expensive approaches to live up to their seeming promise (Foster, 1965; Urevbu, 1984; Chapman & Windham, 1985; Psacharopoulos, 1986), there is a growing skepticism of Western educational models and a concern about being used as little more than a research laboratory for unproven and frequently unworkable educational theories (Salmi, 1984; see also Kagia, 1986).

A further difficulty of the effective schools studies has been a failure to control adequately for differences in student intake. This means that some of the variation in school quality observed may have been due to the composition of the student body, rather than to any differences in effects which the school itself may have had. Ralph and Fennessey (1983) discuss two important studies in which student intake appears to have been inadequately controlled.

An additional methodological problem is that there has been no real attempt to demonstrate causality. This has commonly been precluded by the cross-sectional nature of the studies, which have shown only the level of correlation between variables. This leaves unanswered questions such as whether high achievement may lead to a stronger leadership role for principals rather than the other way around.

Perhaps of even more concern is that the effective schools movement has generally adopted a very narrow definition of success (c.f. Rowan et al., 1983). Edmonds defined it in terms of minimum competency in basic skills as measured by scores on standardized tests of mathematics and reading. Weber and the 1974 study by the Office of Education Performance Review defined it in terms of scores above the norm on standardized reading tests. These narrow definitions have helped educators bring into focus what had frequently become very diffuse and unfocused programs, yet virtually everyone acknowledges that the role of schools is to accomplish far more than these definitions would indicate.

> The strength of current school effectiveness research is perhaps also its greatest weakness. The focus on one outcome dimension (student achievement) and the measure of that outcome through standardized test scores in the area of basic skills promotes a unidimensional view of school effectiveness. (Dede & Freiberg [1986], p. 78)

Unfortunately, while there is general agreement that an attempt must be made to take into account the multiple goals of schooling (Purkey & Smith, 1983; Cuban, 1984; Good & Brophy, 1985; Rowan et al., 1982), there is no consensus on how this is to be done, or on what the relative importance of these multiple goals really is.

In spite of methodological difficulties, however, the effective schools studies display a great deal of face validity and have proven to be remarkably consistent in nature (Purkey & Smith, 1983). In recent years, attempts have been made to overcome many of the methodological shortcomings and the Rutter study in particular, is meaningful causal inferences because of this able to make methodological rigor. This literature has done much to increase our understanding of schools as social organizations with the potential for a high degree of collaboration on shared goals and objectives and the establishment of shared norms and a shared culture. While recognizing the complexity of school processes and the role of school culture in shaping the learning opportunities of students, it has placed an emphasis on individual schools as the focus of change, thus a bottom-up approach to change consistent with the presenting literature on innovation and implementation. Berman and McLaughlin (1978), for instance, conclude in their study of federal funding for educational change that the success of innovations depends ultimately on the quality and commitment of local staff. Elmore (1978, 1984) argues persuasively that solutions require forming consistent expectations among people who have a stake in the outcome. His mapping" **a**pproach underlines "backward the importance of participation by those specific groups ultimately responsible for implementing policies. In the same vein, Purkey and Smith (1985) argue that effective policies are those which alter behavior at the delivery level (i.e., the school) and that this is best done from a bottom-up perspective. Goodlad (1984) adds his voice to the chorus. calling for site-based school improvement. The conclusion of these researchers is that local responsibility and sense of ownership must be maximized.

It is in this sense that the effective schools research offers the possibility of change in keeping with the findings (although not necessarily the conclusions) of current theories of schools as non-rational organizations. Loose coupling theories support the bottom-up approach, holding that top-down directives cannot control such critical factors as school climate and school processes.

this perspective allows As Elmore indicates, for the identification of the multiple objectives which exist at the implementation level (i.e., individual schools and classrooms) and for the development of strategies sensitive to the complexity of trading among these objectives. This approach also holds the potential for addressing the concerns of those who see schools as places where teachers and students, from the vantage point of differing objectives, strike various kinds of bargains in order to satisfy these objectives (Powell et al., 1985; Sedlak et al., 1986). The establishment of group norms based on consensus about valued outcomes can go a long way toward meeting these concerns, as can a recognition of and a sensitivity to the multiple objectives of schooling.

The effective schools movement has moved towards a recognition of the multiple objectives of schooling and away from a narrow academic definition of effectiveness in recent years (Lezotte, 1985). This evolution is in keeping with the findings of the non-rational theories of schooling. One area in which conclusions of the effective schools researchers differ consistently from the

conclusions of the non-rational theorists, however, has been that of the role of the principal. The single theme which resounds most loudly throughout the effective schools literature is that individual principals do make a difference--that they control enough of the parameters of the learning process through their role as instructional leader to significantly influence student outcomes.

> Principals have an important role in the school generally, and they have an especially important role in clarifying and changing a school's learning climate and the resulting instructional effectiveness. Principals represent the organizational authority of the school and in that regard, they symbolize what the school stands for, how it will operate, and what is important. The research on effective schools. effective educational innovations. and effective strategies for planning change all point to the principal as a singularly important person in the successful school system.

(Lezotte et al., 1980, p. 93)

It is to this role that the present review turns next.

The instructional leadership role of the principal

The principal's role in promoting instructional improvement is identified time and again in the current literature as the key to school improvement. Wellisch et al. (1978) found that administrators in schools where achievement was on the upswing 1) were more concerned with instruction; 2) communicated their views about instruction; 3) took responsibility for decision-making about instruction; and 4) coordinated instructional programs through regular discussing and reviewing of teacher performance and emphasizing academic standards. Other studies supporting strong principal roles in instructional leadership include Edmonds (1978), Irvine (1979), McLaughlin & Marsh (1978), Squires (1980), Goodlad (1984), Young (1986), and a host of others.

Research findings reported in the literature indicate that the influence of the principal can be both direct and indirect. Principals may exert an indirect influence by buffering the instructional process from discipline-related disruption (Thompson, 1967; Bossert, et al. 1982; Cohen, 1983), by shielding teachers from criticism through support of innovative projects (California State Department of Education, 1977); and by protecting the learning process from community opposition and the dysfunctional consequences of community apathy by fostering strong community support and involvement on an ongoing basis. (cf. Dove, 1980)

Principals do more than act as buffers, however. They may also exert a direct influence on learning through a number of different approaches. First, principals may be the crucial players in the establishment of a school climate in which teachers are encouraged and indeed, enabled, to give priority to instructional goals (Brookover, et al., 1979; Rowan et al., 1983; Berman & McLaughlin, This is accomplished by a variety of means, including symbol 1978). management (Manasse, 1985), defining a fair and effective evaluation system (McAndrew, 1981), and working through the bureaucratic and cultural linkages that govern teacher behavior (Firestone & Wilson, 1985). Principals may also influence student achievement by direct attention to the school curriculum and its relationship to student

outcomes--influencing what is and what is not emphasized (c.f. Spady, 1982, for a discussion of outcome-based instructional management using this approach; see also Bloom, 1980). Finally, principals affect student achievement by supervising and working to improve teacher instruction and methodology. Martin and Willower (1981) found that secondary school principals spent 17.4 percent of their time working directly or indirectly with teachers for instructional improvement (classroom visits, etc.). Bloom has suggested that effective and ineffective principals be compared on this sort of measure to determine to what extent instructional time-on-task may affect student outcomes.

Collaboration or prescription?

The ways in which an effective principal can and should exert direct influence on learning have remained a matter of considerable Hallinger and Murphy (1985) suggest that effective controversy. principals in lower SES schools are much more directive and prescriptive than effective principals in higher SES schools. Cohen (1981) wonders if unusually effective schools "are more tightly managed and more collectively committed to basic skills instruction". High and Achilles (1986) state that "principals should involve teachers only on important issues and should rely more on their legitimate authority" (p. 19). They see this authority as deriving in large part from the principal's instructional leadership expertise. Rutter et al. (1979) argue for a tight control by administrators of school processes.

There are, of course, a number of arguments which can and have been advanced in support of a more directive role for principals, particularly in developing countries. Teachers in these countries frequently do not have independent access to either the information or the materials needed for optimal professional growth. A solid educational background upon which to build is frequently missing.

Windham (1985) has suggested that with the overwhelming set of difficulties facing the teaching profession in sub-Saharan Africa, the most promising approach is some form of programmed teaching which places the important curriculum decisions in the hands of the experts. He sees this as one way to overcome teacher deficiencies in short order, contributing to the teacher's ultimate growth while at the same time providing the policymaking branch of government with a means of ensuring that its goals and objectives are being met.

This may be an approach, however, which locks teachers in developing countries into a position of increasing dependency on external materials and imported technology (not to mention high-priced Western consultants). Most researchers and practitioners place a high value on teacher autonomy in the classroom and have consistently questioned the appropriateness of any activities on the part of principals which would tend to diminish that autonomy. McLaughlin and Marsh (1978), reporting on findings of the Rand change agent study, conclude that "principals need to give clear messages that teachers may take responsibility for their own professional growth" (p. 92). Hurst (1981), using Third World examples, argues

that augmented, rather than diminished, teacher participation is essential. He suggests that teachers can and will respond to innovation if they perceive it to be appropriate. He calls for a much more collaborative approach, with administrators working with strengthen the institutionalization of teachers in order to Erickson (1984) supports this position, arguing innovations. an anthropological perspective that teacher forcefully from involvement in all aspects of the learning process is the sine qua non of success. He concludes that the prevailing tendency to control the ways teachers teach restricts students' access to knowledge and creates a separation between what goes on at the school and what goes on in the society in which the child lives.

Firestone and Wilson (1985) describe the principal's role in this context as one of establishing bureaucratic and cultural linkages with teachers in order to improve instruction. Bureaucratic linkages, such as supervision, procedures and so on, "establish constraints on and opportunities for how teachers teach". Cultural linkages refer to the organizational ethos--shared beliefs and meanings. The principal may use these cultural linkages to influence how teachers think about what activities they should undertake.

The heterogeneity of teachers as a group points up the need for consensus as to instructional goals and it may well be that effective principals learn to adjust their administrative style and the use they make of these linkages according to the particular needs and abilities of the individual teachers with whom they work. Ideally,

this will be achieved within a framework which respects the autonomy teachers need for growth, avoiding a mechanistic view of teachers and the teaching profession.

Self-esteem

This section does not purport to be a comprehensive overview of the research relating to self-esteem. Such a task, if possible at all, would be far beyond the scope of the present study. The purpose of this section is rather to explain the inclusion of self-esteem as a dependent variable in the study and to show the major emphases of recent research in this area.

Elmore (1984) and many others have discussed the nature of choosing among objectives as a process of trade-offs. Focusing on one objective implies that less attention will be given to another. This raises the possibility that valued outcomes will not be achieved if not given priority, or at least explicit attention. It also means that the price to be paid for gains in one area may be that of accepting loss or at least no gain in another area. This is frequently the choice which policymakers in developing countries must face in terms of equity and quality (c.f. Behrman & Birdsall, 1983).

Recognizing this dilemma, a number of educators have expressed concern that the exclusive attention often accorded to academic achievement in the effective schools research may lead to losses in terms of other valued student outcomes. Self-esteem is one of these "other" valued student outcomes seen as meriting particular attention

(Rowan et al., 1983; Purkey & Smith, 1983). The value which is generally accorded to self-esteem by educators can be seen by the high level of continuing research interest in the topic, yet there has been little attempt to see in what ways a deliberate focus on academic achievement affects the development of student self-esteem. Educators have generally assumed automatically that achievement is strongly related to higher self-regard, yet the literature on self-esteem does not provide a clear verdict about this. Most studies do appear to find a positive relationship, but there is a remarkable variation in the strength of the relationships found, depending often on the particular instrument used. The few African studies which have been conducted also report positive findings. (1973), for instance, found a significant positive Mwaniki relationship between self-concept and academic achievement in a sample of Kenyan students, but only for a restricted subset of the components measured (mental ability and school subjects). His results and the results of many similar studies must be considered as ambiguous at best. Perhaps one of the most remarkable aspects of the self-esteem research is that in spite of the tremendous body of literature, we really do not know what effect schooling in general has on student self-esteem.

Morse (1964) was one of the first to ask whether or not schools did in fact lead to the development of self-esteem. Using the Coopersmith Self Esteem Inventories, he found that for many of the items, the longer the students remained in school, the lower their level of self-esteem. He reported that "whatever else we have done,

we have communicated a sense of personal failure to many of our pupils" (page 27; c.f. Glasser, 1969). More recently, Wylie (1979) has questioned the relationship between self-concept and achievement, suggesting a number of reasons for which this relationship may not be as obvious as had been previously believed.

In an attempt to find answers in the apparently contradictory research literature, Hansford and Hattie (1982) conducted a meta-analysis on the relationship between achievement and self-concept. They included studies representing a total sample size of 202,823 persons. Over three-fourths of the correlations reported in the studies came from the U.S. literature.

Meta-analysis is an inexact science at best but that of Hansford and Hattie provides an intelligent discussion of its own weaknesses and does not claim to provide the final word. While cautiously reporting the finding of a low, positive correlation (averaging approximately .21), they point out that higher quality studies which report reliability coefficients tend to report relatively low correlations. The relationship between achievement test reliability and correlation was -.32.

One reason that the relationship between achievement and self-esteem appears somewhat ambiguous may be that the process of achieving is as important to the development of self-esteem as the end product of that process. It may be also that certain modes of learning do not lead to increased self-esteem while others do.

Nimnicht et al. (1969) explain the concept of the "responsive environment" as a way to encourage the development of self-esteem. This is an environment which accords a great deal of autonomy to children, within a general framework of reasonable limitations established by the school. It may be that other learning environments lead to cognitive improvement without contributing to the development of self-esteem.

The question which surfaces from the above discussion is whether instructional leadership promotes the sort of climate in which self-esteem will flourish. As has already been noted, some researchers (Hallinger & Murphy, 1985) have suggested that effective principals in lower socioeconomic environments tend to be more directive and prescriptive. Many researchers report that children in lower SES environments appear to exhibit lower self-esteem (see Rio, 1979, for a review of this literature). If this is true, it may be that techniques used to promote effectiveness for these students, when effectiveness is defined in purely academic terms, may actually lower effectiveness when measures of self-worth are included.

Part II

EDUCATION IN ZAIRE

Introduction

The development of education in Zaire has been greatly influenced by the turbulent history of the country over the past century. From 1885 until 1908, it existed as the personal fiefdom of King Leopold II of Belgium. The levels of cruelty and exploitation attained by his agents during this period attracted increasingly wide attention until finally the other colonial powers, in spite of their remarkably high tolerance for this sort of thing, were compelled to take action. Leopold was forced to relinquish his personal claim to the Congo Free State, which then became a Belgian colony known as the Belgian Congo.

The Belgians, who themselves possessed almost no natural resources of any importance, soon established the Shaba (former Katanga) region as a major producer of copper and other minerals. Important supplies of industrial and gem-quality diamonds were also found in the Kasai region of the country.

With the emphasis on mining a few select areas, little attention was given by the Belgians to developing the infrastructure of the country. Few roads were built and only the most rudimentary system of communication was installed. The work of education in the Congo was largely left to the religious missions, with the Catholic church receiving the lion's share of such financial assistance as was available. Emphasis was placed on primary education to the virtual exclusion of all further schooling. Incredibly, by the time of independence, from a population of some 14 million, only sixteen individuals had graduated from college in the country (this total does not include Catholic seminarians).

The of education still have important colonial patterns ramifications for Zaire today. Although secondary and post-secondary education have expanded rapidly since independence in 1960, the lack of qualified personnel is a persistent problem in Zairian schools. Many primary schools in the interior cannot count a single high school graduate among the teaching staff and most secondary schools have few, if any, college graduates teaching. Typically, most of the upper secondary school classes are taught by those with 'graduat' status (two or three years of college). The lower secondary school grades are frequently taught by secondary school graduates with no post-secondary training. There is no training program for principals.

The conditions of schooling in the Kivu region, like those in most of rural Zaire, are generally very rudimentary. Primary students use cardboard 'slates' upon which they write either with a small stylus or a chalk-like rock. Mud-and-stick buildings with thatched roofs are common. There is, however, a wide variation in

school building quality, often on the basis of school sponsorship
(Youdi, 1972).

Schools in Zaire can be placed in five general categories on the basis of sponsorship: Catholic, Protestant, Kimbanguist, Moslem and government. (The Kimbanguist church is an indigenous church founded by Simon Kimbangu and enjoying special official recognition within Zaire.) The Catholic church sponsors the largest educational system while various Protestant school systems tend to be regionally important. The government of Zaire does not recognize the Protestant organizations individually but has created an umbrella organization, the Church of Christ in Zaire (generally referred to by the acronym ECZ--Eglise du Christ au Zaire.)

The Zairian context

Zaire is a country of some 2.3 million square kilometers and as many as 250 different ethnic groups, most with their own language. It has Africa's most important system of inland waterways, although navigation is seriously hampered by a number of rapids and falls. These rapids and falls give Zaire the greatest hydroelectric potential in the world, more than one billion kilowatts. The huge Inga-Shaba project, recently completed, is one of the largest in the world, yet only a relatively small portion of the country will share in the electricity generated. Before Inga-Shaba was completed, the Shaba province with its mining industry consumed about 75 percent of the electricity produced, the region around the capital city (Kinshasa) consumed about 23 percent and the rest of the country competed for the remaining 2 percent (Gran, 1979). With the exception of the Kasai region, this situation will change very little as the Inga-Shaba project is implemented.

Zaire has faced a steady economic deterioration for a full decade The downturn can be dated from mid-1974, although it and more. resulted in part from the Zairianization measures of 1973 (Gran, These were designed to remove all foreigners from the 1979). commercial and agricultural sectors of the Zairian economy and to replace them with nationals. It was done with virtually no advance planning and resulted in widespread economic disruption. This worsened when, between April and December of 1974, the price of copper plummeted from \$3370 per metric ton to \$1350. At the same time, the price and production of cobalt and other minerals declined The production of diamonds of gem quality, for instance, rapidly. fell from 117 million carats annually at the beginning of the decade to only 305,000 annually by 1976 (Kaplan, 1979).

Two external factors aggravated the situation. The oil crisis of 1973 resulted in greatly increasing expenditures of foreign exchange and the Angolan Civil War resulted in the closing of the Benguela railroad, Zaire's most important route for the exporting of goods and minerals from Shaba province. The zaire, the official unit of currency, dropped from an official value of \$2.00 in 1976 to \$.018 in June, 1986. Zaire is belatedly making a concerted effort to bring about economic reform and has been cited recently as a prime example of a country willing to make the hard decisions necessary for reform, but so far its economic position has not improved. The net outflow of capital in 1985 and 1986 has exceeded \$200 million annually (Farnsworth, 1986). Widespread mismanagement and corruption, along with the devastating debt service charges, make any immediate economic turnaround unlikely.

Much of the country is dependent on subsistence farming for a livelihood. It has been estimated that upwards of 75% of the population, following agricultural pursuits, subsists on between \$25 and \$50 a year. Teacher salaries reflect the economic situation. As of June, 1986, monthly salaries for teachers who had completed college were 1173 zaires, or about \$20. Monthly salaries for teachers who only possessed the secondary school diploma were 796 zaires, or about \$15. Principals received up to 3396 zaires, or about \$50 monthly. Because of the cost of purchasing food and clothing, it is not possible for teachers with families to live off these salaries alone. They must, and do, supplement their salaries in one way or another.

In 1970, 20% of the annual national budget of Zaire was going for education. In the boom year of 1973, when copper prices were skyrocketing, the budget prepared for 1974 included only about 16 percent for education, but as the economy declined the percentage taken up by education grew rapidly. By 1976, it was back over 21 percent. A year later, it was up to almost 24 percent and by 1978, a crippling 31 percent (Varon, 1979). This was not because more money was being allotted to education but because the overall budget was

shrinking so fast. Funding for education was not close to keeping pace with inflation. Between 1979 and 1986, the salary of a teacher with a high school diploma went from 180 zaires to 800 zaires. Had it kept pace with inflation, it would have gone to over 3000 zaires.

Studies of schooling in Zaire

Because of the tremendous variation in the Zairian context over the past fifteen years, studies of schooling in Zaire during this period must be categorized as pre-1974 or post-1974. Studies conducted before 1974 can certainly cast light on current problems and possibilities but they must nevertheless be handled with care because of the fundamental differences in the era which they represent.

In addition to the economic factors discussed above, the effect of nationalization on education merits specific attention. In 1974, the program by which individual church organizations held primary responsibility for running the schools was abolished. The national government, on paper at least, assumed control of all schools. In actual practice, however, many of the rural schools, such as those of the Kivu province, were not immediately affected by the change. Within two years, following a period of tremendous confusion, the churches were again assigned responsibility for administering those schools which they had earlier sponsored, although the government teacher and administrator salaries. continued to pay This arrangement has remained intact until the present time, although a policy announced in the spring of 1986 would provide for three

categories of schools: 1) entirely directed and funded by the state; 2) 75 percent state-directed, 25 percent church-directed, with the churches required to pay 25 percent of salary expenses; and 3) 100 percent privately funded and privately run. Although this plan was officially scheduled for implementation in September, 1986, a conversation held in November, 1986 with Zaire's Secretary of Technical Education indicates that this plan had not yet been implemented at that date.

A relatively early study of influences on academic achievement in Zaire presents the effects of school sponsorship as it was practiced at that time. This study of 25 secondary schools was conducted by Youdi in 1970 and found school sponsorship to be the most important determinant of student success.

It is this one characteristic which primarily determines the internal culture of the institution and upon which most other factors seem to depend--the quality and nationality of teachers, the composition of the student body in terms of quality, religious affiliation and sex of pupils, the administrative style and teacher-student interaction, the origin of imported educational equipment, and even the architecture of school buildings. pp. 53,54

Youdi found that the Protestant students scored higher on tests of modernity of attitudes, individualism and activism, but that the Catholic students scored higher on the French and mathematics tests which he administered. He attributed the variation in outcomes to the apparently differing "internal culture" of the school systems. Youdi's study provides strong evidence of the unequal access to schooling which existed prior to 1974.

A study by Sheline, Papagiannis and Grant (1984), in spite of its publication date, must be classified as belonging with the earlier studies since it examines data collected by Youdi in 1974. These data were based both on national examinations and university entrance Unlike Youdi. Sheline et al. entered school examinations. sponsorship last into their regression analyses. Entering personal and socio-economic background variables first into the analysis, they found that these variables accounted for 25 to 28 percent of the explained variance. Like Youdi, they found that students attending schools sponsored by the Catholic church tended to achieve greater success, followed closely by the Protestant-sponsored academic schools and distantly by the government and Kimbanguist schools. These differences in achievement level are striking. Catholic schools were found to average approximately 55 percent on the national examinations; Protestant and government-sponsored schools averaged approximately 50 percent, while the Kimbanguist schools averaged about 44 percent. From 3 to 6.5 percent of explained variance is found attributable to sponsorship.

Sheline and her colleagues suggest that the sponsorship, or charter, effect found in this study can be explained in terms of the differential ability of the schools to control access to future status. They hold that students in the higher status schools (i.e.,

Catholic, then Protestant) believe that they will be accorded higher status upon graduation and are thus motivated to study harder.

It is contended that the perception of social power has an effect on the motivation of students, and influences how well students will do on examinations. The higher the social power perceived, the more likely students will study harder since the status rewards are perceived to be higher and are highly desirable. p. 25

It is unfortunate that this study utilizes data from 1974, a period of time when the nature of school sponsorship was quite unlike what it is now (see above discussion of the changes which occurred at the time of nationalization). In addition, the researchers acknowledge their difficulty in controlling for all of those factors which may have been confounded with school sponsorship. While they cite student IQ, years of teaching experience and expenditure per pupil as examples of factors which were not included and which could have an intervening effect, it seems more reasonable to be concerned about the absence in this study of any discussion of the possible importance of variables such as teaching methodology, principals' leadership emphases, discipline patterns, time on task and other process variables which could be confounded with school sponsorship. Of more interest to the current study than the findings relating to sponsorship is the finding that a relatively high percentage of variation in student achievement levels is attributable to socioeconomic status.
The question of socioeconomic status and its effect on schooling in developing countries is currently the center of a great deal of Heyneman (1976, 1980), Currie (1979) and Heyneman spirited debate. and Loxley (1982) have argued that socioeconomic factors have only a minimal effect on learning in the sub-Saharan African countries. hold that schooling, on the other hand, accounts for a They dramatically higher percentage of learning in sub-Saharan Africa than it does in most developing countries. Simmons and Alexander disagree, as do Cooksey (1981) and Lanzas and Kingston (1981). Cooksey suggests that much of the confusion is due to selection In other words, the lower SES students are generally effects. eliminated early from the process of schooling which means that those who manage to remain in school are of above-average ability. He concludes that "levels of parental education and the use of French in the home were closely related to class background and are almost invariably associated with performance variations" (p. 417). His results, however, indicate that the effect of parental education is negligeable except for the upper secondary levels.

Lanzas and Kingston (1981) offer a different perspective as to the relationship between socioeconomic status and achievement. They suggest that the problem is a lack of research attention to the different nature of family status in sub-Saharan Africa. Their study of English achievement in Zaire argues that children of the same father may have quite different statuses. The residential disruption which occurs when students are forced by circumstances to move in with various relatives is seen as having a significant impact on

learning. They argue that this finding means that a more sophisticated measure of socioeconomic status is needed. Test scores on English performance are found related to family status only among the residentially stable students.

The Lanzas and Kingston study appears to overemphasize the degree to which polygamy exists in much of Zaire. Their explanation of the nature of family relationships appears simplistic, as when they state that "survey questions designed to elicit information about the paternal father...would have little meaning for students" (p. 432). It is also unclear to what extent the correlation found for the residentially stable students (.293) is independent of other effects and to what extent English scores can be taken as a proxy for overally academic achievement. The sample size of residentially stable students in this study is very small (n=104), but the study does, nevertheless, underline difficulty of transferring the constructs from one cultural setting to another. It also the need for increasingly sophisticated models of demonstrates socioeconomic background.

Several studies in recent years have examined the relative importance of the educational system in Zaire. A study by Mukweso et 702 male employees of 15 large-scale al. (1984) interviewed enterprises located in Kinshasa and developed a path model illustrating the occupational attainment process. The authors conclude that "the effect of years of schooling on occupational attainment has remained as powerful and as strikingly constant after

independence as it was before. The regression coefficients of .523 (preindependence) and .566 (postindependence) ...have proven to be remarkably consistent with findings in other nations as well. Education is an important factor in occupational attainment in Zaire now, and it was so before independence too." (page 65)

The sample used to arrive at this conclusion was far from representative and the results reported must be interpreted with considerable caution. Nevertheless the strength of the correlation between education and occupational attainment is striking. It is little wonder that education in Zaire remains highly prized and continues to be the object of considerable sacrifice, both on the part of governments and individuals.

In spite of the important role which education in Zaire continues to play, a number of writers speak despairingly of current trends. They foresee a failure to maintain current levels and suggest that there has already been a dramatic dropping in the overall educational level of the schools. Apumbi-Lomema (1984) presents a typical analysis:

> La situation de l'enseignment primaire n'est pas brillante. Le niveau est manifestement en baisse. L'explosion demographique cree un grave probleme de scolarisation. (The outlook for primary education is not good. The level is clearly dropping. The demographic explosion is creating grave problems for schooling.) p. 34

In a situation such as that described, where resources are drying up and the overall level of schooling is dropping, it could be

supposed that the literature would be replete with references about cope with the difficult seeking to how administrators are However, the literature remains silent on this circumstances. is no indication that questions of Indeed. there topic. instructional leadership of any nature have received explicit attention in studies of Zairian education. Meunier and Ketelslegers (1985), writing for the Zairian education journal, Educateur, in 1985, discuss the importance of detailed educational objectives; this article includes a fairly comprehensive presentation of Bloom's taxonomy of educational objectives. Nothing is said about the role of the principal in helping teachers focus these objectives on the instructional goals of the school, however, and there is nothing else in the literature to suggest that this is generally considered to be an integral part of the principal's job.

Summary

The image of schools as loosely coupled organizations is generally accepted throughout the research literature, but there is considerable debate as to the leadership role of the principal and the degree to which it is possible, or even desirable, to tighten up these links, particularly at the secondary level. Within the effective schools literature and the literature on implementation, there is wide acceptance of the key role of the principal in defining and helping achieve a consensus on the objectives of schooling. There is acknowledgment of the multiple objectives of schooling as well, but little evidence is presented to show that other than

academic objectives are being measured or monitored on a regular basis.

Equity and quality issues are very much at the forefront of discussion in developing countries. After a period of rapid expansion at the primary level, there is concern about whether or not current levels of funding can be maintained and considerable discussion about how to expand secondary education without sacrificing quality. The social demand for education remains high.

In Zaire, tremendous efforts have been made to provide education throughout the country, but access to education appears unequally The economic and political crises which the country has distributed. funding for education but education has faced have reduced nevertheless maintained its role as an important determinant of Socioeconomic factors employment. appear to be important determinants of the quality of schooling which a student will receive in Zaire and of subsequent outcome levels. Questions of management and efficiency have received little attention in the Zairian research literature.

CHAPTER THREE

METHODOLOGY

I spend half of my time at each school. Every Tuesday and Thursday, I leave home at 4:00 in the morning and I walk until 8:00 or 8:30 to get to (School 5). I head back home again at 4:00 and get in around 7:30 ...It's nothing, really...Where I was principal before, I used to walk 101 kilometers once a month to pick up the salaries. -principal, School 5

Introduction

Educational researchers in Zaire, like the educators themselves, face a number of frustrating constraints. Many school sites are remote and transportation is always a problem. Respondents are often difficult to locate since, as the above illustration indicates, there are frequently extraordinary demands made upon their time and energies. This is particularly true for the principals.

While these constraints undoubtedly give the researcher a more complete understanding of the context in which schooling occurs, they also pose unique methodological difficulties. These difficulties and others of a more general nature are dealt with in this chapter, which is divided into five sections: 1) site location and characteristics, 2) population and sampling frame, 3) research hypotheses, 4) data collection instruments, and 5) data collection procedures.

Site location and characteristics

This study was conducted in the Kivu province of Zaire, the largest and most populous French-speaking country in Africa. The described are all located in the Butembo district schools This is a district straddling the (sous-division) of north Kivu. equator and characterized by remarkable geographical diversity. It is bounded to the east by the Virunga National Park and the former Lake Edward (currently known locally both as Lake Idi Amin Dada and This lake, together with the snow-clad Ruwenzori as Lake Virunga). Mountains to the northeast, forms part of the border between Zaire and Uganda. To the north and northeast, the Butembo district is bounded by the Ituri Forest and to the south and southeast by the great savannahs which form the plain of the Rwindi River (see Figure 1-1 on page 7).

The climate depends largely on the altitude, which ranges from a low of three thousand feet along the lake to a high of sixteen thousand feet in the Ruwenzori Mountains. Most of the area is between six and eight thousand feet of altitude. The temperature at eight thousand feet rarely exceeds seventy degrees during the day and remains considerably lower when there is rain. The temperature in some of the more lowlying parts of the district frequently exceeds ninety degrees during the early part of the afternoon.

entire district is very hilly and heavily cultivated. The Principal crops are bananas, Irish potatoes, sweet potatoes, wheat, corn, beans, cassava, coffee, pineapples, papaya, and peanuts, but there is a high degree of local variation according to climate. Well over ninety per cent of the area's inhabitants are engaged in some form of traditional agriculture, although there are five rural towns within the Butembo district. The largest of these, known as Butembo, has a population of approximately 100,000. It is a trading center with a busy commercial district running for approximately one mile along the dirt road which links the provincial capital of Bukavu 250 miles to the south with the city of Kisangani 650 miles to the north. Thirty-five miles north of Butembo is the town of Beni, an center with approximately 50,000 inhabitants. industrial The administrative center of the district is the town of Lubero, with 10,000 inhabitants, while the towns of Kayna and Kanyabayonga, each with another 7,000 or 8,000 inhabitants, lie to the extreme south and the smaller town of Oicha lies to the extreme north. The overall district population is estimated at around 500,000, although there are no accurate figures available.

The Butembo district is ethnically and linguistically homogeneous, populated almost entirely by the Nande. (Other than small communities in some of the larger cities and towns, there is no significant Nande population living in Zaire outside of the Butembo district.) With the exception of a few thousand Tutsi and Hutu, ten to twenty thousand Pere to the northwest and several hundred Mbuti in the Ituri Forest, there is no significant representation of any other

ethnic group. There are no six-year secondary schools serving the Pere people and only a two-grade mission school serving the Mbuti (also known as the Pygmies, a term which they consider insulting).

In addition to Nande, Swahili is widely spoken throughout the district, particularly in the towns. It is the language of most early primary schooling, although this varies somewhat. French is the language of the educated. This means that it is spoken much more widely by men than by women and much more by the younger than by the older generation. It is the official language of secondary education throughout the country, although within the Butembo district, a significant percentage of students in the first several years of secondary schooling have not yet attained a high degree of fluency. Surprisingly, although the Konjo people of nearby Uganda and the Nande form in reality a single ethnic group and speak the same language, there is virtually no English spoken in the Butembo district, even along the border.

Population and sampling frame

The population for this study consisted of principals, teachers and students at those schools in the Butembo district where the principals had assumed their current position no later than September, 1983. Since the study was performed during May and June of 1986, this means that for the schools studied, principals were completing at least their third full school year. Of exactly thirty secondary schools in the Butembo district offering full six-year programs, fourteen met this condition. All fourteen of these were

studied, as well as a fifteenth for reasons which are explained later. In each school, at least one Grade 8 and one Grade 12 class was studied. No other grade levels were included.

The reason for restricting the sample to schools where the principal had spent at least three years was to masimize the possibility of measuring the effect of the principals' emphasis on instructional leadership. It was reasoned that this effect could hardly be measured in schools where the principal had just arrived, or had not had time to establish him/herself. Rowan and Denk (1984) have indicated that the mere fact of changing principals tends to improvement in the academic success of schools create an characterized by students with low socioeconomic status. This is seen for the first two years, after which there is no more effect. A study of schools which includes new principals might, then, falsely report this "honeymoon" effect as an effect of the principal's emphasis on instructional leadership. Further, a carefully documented study of a school improvement project (Young, 1986) concludes that positive results from innovations implemented by school principals take about three years before becoming noticeable; other references in the literature (Rowan & Denk, 1984; Berman & McLaughlin, 1978) offer corroboration of this general time framework.

The sampling frame selected for the schools which met this criterion consisted of the principals, the eighth- and twelfth-grade students and the eighth- and twelfth-grade mathematics teachers. As noted previously, informal interviews with assistant principals

responsible for supervision and instruction were also conducted at several of the larger schools. There were several reasons for restricting the study to the eighth and twelfth grades. The first was strictly a question of time and money--it would have been too costly and too time-consuming to have tested all of the grades in each of the schools. The second reason was that this frame corresponds with Populations A and B of the Second International Study of Mathematics conducted by the International Association for the Evaluation of Educational Achievement (IEA) and thus permitted use of an IEA instrument already tested cross-nationally in both developed and developing countries, including French-speaking Belgium (the country whose mathematics curriculum has generally formed the pattern for the Zairian curriculum) and several African countries.

Secondary schools in Zaire are organized on the basis of early This means that after the first two years of specialization. secondary schooling (known as the cycle d'orientation, or orientation cycle) where the same national curriculum is followed at all schools throughout the country, students must choose an option with a specialized program. The schools in the Butembo district, both in the population and in the sample, offer a total of six different areas of emphasis (known within the country as sections). These are math/physics, biology/chemistry, teacher training (pedagogie generale), business, literary, and social work. For purposes of this study, these have been collapsed into two categories based on the two different mathematics curricula which are followed. These two categories are: 1) humanities, with two hours of mathematics each week at the Grade 12 level, and 2) sciences, with five hours of mathematics each week at the Grade 12 level. The sections which follow the humanities curriculum are: 1) teacher training, 2) literary, 3) business, and 4) social work. The sections which follow math/physics the sciences curriculum are: 1) and 2) Four of the secondary schools in the Butembo biology/chemistry. district offer two sections; two offer three. Of the schools in the sample selected, there are none offering three but there are four offering two. See Table 3-1 for a listing of schools according to the number of sections offered and Table 3-2 for a listing of schools according to section. Note again that this classification does not apply to the eighth-grade students, all of whom follow the same six-hour mathematics curriculum.

Table 3-1Schools by Number of Academic Programs Offered

<pre># of sections</pre>	Schools in population	Schools in sample
1	22	12
2	6	3
3	2	0

Table 3-2 Academic Programs

Section	Schools in population	Schools in sample
Math/Physics	10	2
Bio/Chem	6	3
Sciences (Total)	16	5
Teacher training	14	8
Business	6	3
Literary	3	1
Social Work	1	1
Humanities (Total)	24	13

A further distinction which must be made here is that of sponsorship. Under an arrangement established in early 1977, all teacher and administrator salaries are paid by the government, but the responsibility for administration, upkeep and construction is generally held by any of a number of religious organizations. This relationship is referred to as 'sponsorship' by a number of writers who have described it, including Youdi (1972) and Sheline (1979). There are also a number or schools for which the government assumes sole responsibility. (See Table 3-3 for a summary of schools in the population and sample listed by sponsorship.)

The government schools throughout the country have tended to be characterized by lower quality buildings and high administrator and staff turnover. This is certainly the case for the government-sponsored schools (referred to as official schools or as ecoles non-conventionnees within the country) in the Butembo district. Because of the high turnover rate, there are very few government-sponsored schools where principals have remained for three years and, in the sample, none at all in the towns. In order to have more representative sampling, one government-sponsored school located in a town was studied, even though the principal had not been present for three years. Results from this school are included only for those comparisons (such as correlations between mathematics achievement or self-esteem and academic intake, socioeconomic status, textbook availability and in-town/ out-of-town status) which do not deal with principals.

Table 3-3 Sponsorship of Schools

Sponsorship	<pre># of schools in population</pre>	<pre># of schools in sample</pre>
Catholic	9	5
СВК	6	3
CEBK	3	1
Government	8	4
Islamic	2	1
SDA	1	0
CECA	1	1

CBK- Kivu Baptist Community CBK- Kivu Baptist Church Community SDA- Seventh-day Adventist CECA- Heart of Africa Evangelical Community

Research hypotheses

The general hypotheses listed in Chapter One are relisted here in bold face, immediately followed by a restating in null hypothesis form.

MAJOR HYPOTHESES

- 1. The emphasis which principals place on instructional leadership affects student mathematics achievement.
- 2. The emphasis which principals place on instructional leadership affects the development of student self-esteem.
- Hypothesis 2₀: There is no significant correlation between principals' instructional leadership rankings and student self-esteem scores.
- 3. Principals' effect on mathematics achievement is independent of the academic ability of students enrolling at the school.
- Hypothesis 3₀: There is not a significant positive correlation between academic intake and principals' instructional leadership ranking.

MINOR HYPOTHESES

4. The emphasis which principals place on instructional leadership has an effect on students which grows stronger the longer the student is at the school.

Hypothesis 4₀: There is no significant interaction effect between principals' instructional leadership rating and student tenure.

- 5. Students who have textbooks tend to have higher mathematics achievement.
- Hypothesis 5₀: There is no significant correlation between possession of a textbook and mathematics achievement.
- 6. The student's socioeconomic status does not affect her/his level of mathematics achievement.
- Hypothesis 6₀: There is no significant correlation between a student's socioeconomic status and that student's mathematics achievement.
- 7. The student's socioeconomic status does not affect his/her level of self-esteem.
- Hypothesis 7₀: There is no significant correlation between a student's socioeconomic status and that student's level of self-esteem.
- 8. The socioeconomic level of the school does not affect the student's level of mathematics achievement.
- 9. The socioeconomic level of the school does not affect the student's level of self-esteem.
- Hypothesis 9₀: There is no significant correlation between the socioeconomic level of the school and students' level of self-esteem.
- 10. Mathematics achievement is positively related to self-esteem.

Hypothesis 10₀: There is not a significant positive correlation between mathematics achievement and self-esteem.

- 11. Schools where students have higher self-esteem scores have done better on state examinations over the past four years than have other schools.
- Hypothesis 11₀: There is not a significant positive correlation between state examination results over the past four years and school self-esteem scores.
- 12. Schools where students have higher mathematics scores have done better on state examinations over the past four years than have other schools.
- Hypothesis 12₀: There is not a significant positive correlation between state examination results over the past four years and school mathematics achievement.
- 13. Males have higher levels of mathematics achievement than do females.
- Hypothesis 13₀: There is not a significant correlation between gender and mathematics achievement.
- 14. Males have higher levels of self-esteem than do females.
- Hypothesis 14₀: There is not a significant correlation between gender and self-esteem.

Data collection instruments

Three major data collection instruments were used in order to gather information about the above hypotheses: 1) the adult version of the Coopersmith Self-Esteem Inventories (a 25-item questionnaire), 2) an eighth-grade mathematics test derived from the Second Study of Mathematics of the International Association for the Evaluation of Educational Achievement (IEA), Population A, and 3) a twelfth-grade mathematics test derived from the Second Study of Mathematics of the International Association for the Evaluation of Educational Achievement, Population B. (For copies of all instruments used, see Appendix A.) A researcher-designed questionnaire was administered orally to the principals to provide direction to the interviews which were held. Demographic data were collected from students, teachers, Teachers also provided information about which of and principals. the math test items their students had studied that year or in previous years (referred to in the IEA studies as an Opportunity-to-Learn questionnaire). In addition, a considerable amount of information was written down in diary form during the on-site visits to the various schools. This record contains information about building quality, observed level of discipline and various SES indicators, along with a record of the data collection procedure.

Pilot testing of the instruments was conducted at one school site within the Butembo district, lasting for three days. This was a site where the principal was completing his first year and therefore was outside of the established sampling frame. The site was remote enough from other sites to prevent accidental contamination of Participating in this pilot testing were 41 eighth-grade results. students and 35 twelfth-grade students. The principal and six teachers also participated. The purpose of the pilot testing was 1) to test how long it would take students to complete the math and self-esteem questionnaires; 2) to ensure that all math questions were appropriate to the curriculum; 3) to ensure that all self-esteem questions were culturally appropriate; 4) to ensure that the French used in the math and self-esteem questionnaires was both locally correct and easily understandable; 5) to test the need for a Swahili

version of the self-esteem questionnaire for use with the eighth grade students; 6) to test the appropriateness of the questions designed for interviews with the principals; and 7) to ensure that teachers understood the instrument which they were asked to complete. Pilot testing resulted in several significant changes which are described below.

Instruments for collecting data from students

Each student was given a questionnaire consisting of 6 demographic questions, a 25-item self-esteem inventory, and either a 26- or a 30-item math test. (Eighth-grade students completed a 26-item math test while twelfth-grade students completed a 30-item math test.) These questionnaires underwent several changes as a result of pilot testing. In addition to minor corrections of French terminology, pilot testing resulted in a significant reduction in length. The eighth-grade questionnaire was reduced from 40 to 26 questions during this process. Six questions (41, 49, 51, 58, 67, and 69) were removed because they dealt with topics not introduced in the Zairian program until at least the ninth grade; eight questions (61, 62, 63, 64, 65, 66, 68, and 70) were removed to enable the students to complete the questionnaire within two hours. The twelfth-grade questionnaire was reduced from 34 to 30 questions because two questions (33 and 57) presented material not covered in the Zairian curriculum, while two others (37 and 46) presented material included only in the sciences curriculum.

The format of these tests also bears consideration. Students in Zaire are generally not accustomed to a multiple choice format, or to working with commercially prepared testing forms. This lack of familiarity may have caused inaccuracies of response, although this is not believed to have been a serious problem. While five or ten students in each classroom had difficulty completing the first two or three items, help was always provided by the researcher and none of the students indicated any further difficulty. Approximately twenty questions out of a total of over sixty thousand (for the entire sample) were filled out in an incorrect manner--two answers given for a single question or a number selected which was not a possible answer.

The French version of the self-esteem questionnaire did not However, during pilot-testing, many of the require changes. eighth-grade students were found to have difficulty understanding French and, because of this, a Swahili version of the questionnaire was developed. This was done in collaboration with the students and several of the teachers. The Swahili version was tested with both the eighth-grade and the twelfth-grade students and the decision was made to read each item of this questionnaire to all students, first in French and then in Swahili. In addition, several of the questions were given in Nande. The researcher speaks all three of these languages fluently and can vouch for the accuracy of the translations.

A short questionnaire asking for demographic data preceded the mathematics and self-esteem questionnaires. Students were asked to indicate age, gender, parents' education, the number of years they had attended their current school, and whether or not they were in possession of the mathematics textbook being used.

THE COOPERSMITH SELF ESTEEM INVENTORIES

The 25-item self-esteem test translated for use in this study is known as the adult form, or the short form. In a study of 103 college students (Bedeian et al. (1977), Kuder-Richardson reliability estimates of .74 for males and .71 for females were reported. Test-retest reliability estimates of .80 were found for males and .82 for females. Other studies (Kokenes, 1978; Johnson et al., 1983; Marsh et al., 1983) have confirmed the construct validity of the instrument.

Cautions have been raised about the use of self-concept measures across ethnic groups. Zirkel & Gable (1977), for instance, find a lack of reliability and validity data on self-concept measures, particularly when used with students who are from different ethnic groups. Rio (1981) found that a majority of studies dealing with self-concept in ethnic groups other than Anglo found significant differences in favor of white students. Bachman and O'Malley (1984) suggest that black-white differences in self-esteem scores could be affected by response style since blacks have tended to use the extreme categories on Likert-type scales more than whites. The use of a two-category scale such as that used in the present study was

found to eliminate this problem. Diaz (1984) investigated the reliability of the Coopersmith Self Esteem Inventories translated into Puerto Rican Spanish for a sample of 296 Puerto Rican high schools (96 attending a school in Connecticut and the rest attending school in Puerto Rico). He found a high degree of reliability (alpha - .858).

In this study, a Cronbach's alpha reliability coefficient of .49 was found for Grade 12 students and .41 for Grade 8 students. Since the data are in dichotomous form, Cronbach's alpha is equivalent to the Kuder-Richardson-20 reliability coefficient.

THE IEA SECOND INTERNATIONAL STUDY OF MATHEMATICS QUESTIONNAIRES

The 26-item mathematics achievement test used with the Grade 8 students was a translation of the 40-item Population A core test (with items eliminated according to the procedure described above). The 30-item mathematics achievement test used with the Grade 12 students was a translation of items selected from the 136-item Population B test according to their correspondence to the Zaire mathematics curriculum. In the IEA studies, Grade 8 students answered 75 questions while Grade 12 students answered 34 questions.

A Cronbach's alpha reliability coefficient of .80 was found for the sample of Grade 8 students in this study and a Cronbach's alpha of .85 was found for the sample of Grade 12 students.

Instruments for collecting data from principals

Principals were interviewed for an average of one to two hours. A 15-item questionnaire was administered orally at the beginning of this interview. (See Appendix A). The questionnaire was designed to obtain specific information regarding the emphasis which the principals placed on instructional leadership. The key items included for this purpose dealt with the number and nature of classroom visits, pedagogical committees (faculty meetings during which methodological issues are discussed and, at times, model lessons given), written instructional objectives, interactions with teachers, academic training, purchasing priorities, task priorities, and perceived role. Where assistant principals were interviewed, they were asked the same questions. In addition, principals were asked to provide data from school archives indicating attendance, retention, pass/fail rates, and state exam results for the previous three years. The document containing this information about students is known as the <u>Palmares</u> and is required of all principals. In most of the schools, it had been meticulously prepared. The only exceptions to this were three of the four government schools in the sample. In one of these, the <u>Palmares</u> was only available for one of the past three years -- the most recent one had not been prepared and a second one was lost. In two other government schools, the Palmares for one of the three years had been lost. In all cases, the researcher was obliged to hand copy the information from the <u>Palmares</u>--there were no extra copies and no facilities at any of the schools for making copies. Information regarding state examination

results for the 1985-86 school year was obtained by mail subsequent to its publishing in national newspapers.

The fifteen items listed in the questionnaire for the principals were intended only to frame the broad areas of interest for the interview and to bring a certain degree of structure. Within the general categories defined by these items, many further questions were asked. These included questions about teacher salaries, working conditions, building projects and corruption. Several principals also provided the researcher with copies of school rules (for teachers as well as students) and an assortment of other documents ranging from a statement of current needs to forms for classroom visits.

Based on the interviews with the principals (with the teacher interviews and, to a lesser degree, personal observations providing verification for several points) a scale was devised to rate the emphasis which principals place on instructional leadership. This scale included the following factors: 1) the number of annual classroom visits made by the principal (or by an individual delegated by the principal) for the purpose of evaluation or supervision of instruction; 2) the number of teachers' meetings held each year for the purpose of instructional improvement; 3) the degree to which school goals include explicit instructional objectives arrived at by consensus with teachers; 4) the principal's familiarity with and knowledge of the curriculum; 5) the degree to which the principal places a priority on purchases which will support instructional objectives, as determined in collaboration with teachers; 6) the degree to which the principal perceives his role as one of instructional leadership; 7) the existence in the school of an orderly climate in which students are free to pursue instructional goals without disruption; and 8) the extent to which the principal is personally engaged in teaching. (See Appendix D for a more complete explanation of how this scale was constructed.)

Instruments for collecting data from teachers

Formal interviews were conducted only with the math teachers at the schools visited, although there were many informal discussions with other teachers as well. The interviews conducted with the math were short, generally lasting from fifteen to twenty teachers Teachers were asked to provide general data on their minutes. educational background, their years of experience, and employment When it became apparent part way through the data patterns. collection process that many of these math teachers were giving courses at more than one school, specific questions regarding this process were included. In addition to the interview, teachers were asked to indicate for which of the test items their students had studied relevant material that year, for which of the items they had studied relevant material in previous years, and for which of the items they had never studied relevant material in class. This questionnaire was based on the similar Opportunity-to-Learn questionnaires used in the IEA studies. The sole purpose of this questionnaire was to provide a means to check the validity of the math questionnaires.

Data collection procedures

ACCESS TO THE SITE

The first step in the data collection process was to obtain permission from regional political and education authorities to conduct the study. This was accomplished in January, 1986, through correspondence with the responsible authorities. A letter of permission was prepared for signature and mailed along with an accompanying letter of explanation to contacts in the area who visited the authorities indicated and obtained the necessary signatures (see Appendix B for copies of this correspondence).

Procedures for the data collection process were developed in collaboration with the Michigan State University Committee for Research Involving Human Subjects (see Appendix C). They were to protect the anonymity of students, teachers, and designed principals participating in this research. In keeping with these guidelines, an answer sheet was used which made no provision for the names of respondents; students were specifically requested not to write their names on either the questionnaires or the answer sheets. Students were further instructed to place the questionnaires and answer sheets face down on the teacher's desk upon completion. These were not to be picked up by the researcher until all tests were returned. This procedure could not always be implemented, however, because in some classrooms there was no teacher's desk, while in others, because of cramped seating arrangements, it was not feasible for students to leave their position until all others in their row had also finished. In these cases, the researcher collected the

questionnaires and either held them face down or placed them face down on whatever convenient surface was available.

All students, teachers, and principals were told that they had the right not to participate in the study although there were none who availed themselves of this opportunity. Teachers and principals were guaranteed anonymity. School names were not used on any of the questionnaires or on any of the large manila envelopes in which questionnaires and interview notes were kept. Each school was assigned a number known only to the researcher and all materials for that school were kept in a separate envelope on which only that number appeared. These numbers have been changed for use in this dissertation.

Transportation

Transportation to the field was not easy; from the Zaire border town of Goma to the town 180 miles away which served as research headquarters, transportation was secured by standing at the side of the road and flagging down trucks as they passed. Various mechanical failures to one of these trucks caused further delays, as did a number of police checkpoints. From beginning to end, the initial trip to the research area required twenty-three hours of non-stop travel, including a good many hours atop a pile of vegetables on a small pickup, with a steady rain falling. This trip also featured a breath-taking face-to-face encounter with a pair of lions while going through a section of the Virunga National Park. (The male was stretched across the road; as the pickup with nervous researcher clutching desperately to several sacks of potatoes pulled slowly into the ditch to go around, the lion stood up and looked him straight in the eye from five feet away. This, thankfully, proved to be the only encounter with a recalcitrant authority on the entire trip.)

Transportation between research sites in the field, if far from simple, was nevertheless much less complicated than the process of getting to the area in the first place. This was due to the use of a motorcycle loaned by a friend for the duration of the study. A typical day meant getting on the road about 6:30 in order to reach the scheduled school for the 8:00 beginning of the school day. Where possible, arrangements were made in advance for the classroom visits and the interviews. At several of the more remote locations, this was not possible, however, and arrangements were made immediately upon arrival. In no instance was there anything other than the fullest cooperation offered. Principals, teachers and students alike took a genuine interest in the study and went out of their way to ensure its success. At several schools, entire classes remained one and sometimes two hours beyond the scheduled school closing time when questionnaires could not be administered earlier due to the previously scheduled classroom activities. At one school, twelfth-grade students volunteered to come to school on a Sunday when no other time was available because of exam scheduling. Every student in the class was present at this session.

PRODECURES FOR COLLECTING DATA FROM STUDENTS

Anticipating average class sizes from forty to sixty in the eighth grade and from thirty-five to fifty in the twelfth grade, the the field with sixty-five eighth-grade researcher arrived in questionnaires and fifty-five twelfth-grade questionnaires. At each school, principals and teachers requested copies of the math questionnaire for use in working with students. At the first school, when such a request was made, it was granted since the researcher did not expect any more such requests. When it quickly became apparent, however, that similar requests could be expected at each school, principals were promised a copy of the questionnaire upon completion of the study. This was duly accomplished, with the remaining copies divided up and mailed to all of the schools in the sample on the researcher's last day in the field. By that time, the researcher was left with forty-nine eighth-grade questionnaires and forty-one twelfth-grade questionnaires. This was because the questionnaires were highly valued by students as well as well as teachers and Since at the first three or four schools, no careful principals. safeguards were initiated, several of the students turned in their answer sheet but kept the questionnaire.

At most schools, the questionnaires, answer sheets and scoring pencils were distributed one to a student. At four of the schools, due to the large size of the class, some of the eighth-grade students were constrained to share mathematics questionnaires. This also occurred at one school for some of the twelfth-grade students. It is difficult to say whether this resulted in an increased sharing of

answers but this did not appear to be the case. Students were asked to shield their answers from other students and, in general, were very careful to do so.

Even in the majority of schools where there were sufficient questionnaires for all students, conditions in most classrooms were such that students were commonly sitting four or more to a shared bench under extremely crowded conditions. Students were asked not to look at one another's answers and appeared accustomed to shielding On two occasions, however, virtually identical math their work. questionnaires were found to have been completed by students sitting adjacent to one another. This was never found to have occurred where students were constrained to work from the same questionnaire. In the last two schools where sharing was necessary, the researcher removed the staples from the questionnaires and had some of the students begin with the last questions and others with the first. This involved only twenty-five or thirty students in the total sample. There was never any shortage of the self-esteem questionnaires.

In each classroom, the instructions at the beginning of the questionnaire were read first and then approximately five minutes were taken explaining the use of the answer sheets and providing examples on the blackboard (where blackboards existed, that is). In almost all cases, students were using computer-coded answer sheets for the first time. There was typically very little confusion, however, and from the 1093 students participating in the pilot testing and the actual study, 1093 answer sheets were returned, all of which had been completed in a manner consistent with the instructions given.

A total of 1200 answer sheets and 1200 sharpened scoring pencils were taken to the field. Pupils were allowed to keep their pencils upon completion of the questionnaire. The announcement that this would be done was invariably met with applause and shouts of approval. This forty-dollar investment proved to be the wisest of the entire study, securing enthusiastic cooperation and undoubtedly improving considerably both the rate and the quality of cooperation with the objectives of the study.

In all but four of the schools, the researcher remained in the classroom while the questionnaires were completed, spending much of this time recording observations regarding demographic and school quality variables. In several schools, scheduling requirements meant that two classes had to complete the questionnaire at the same time. In these instances, teachers served as monitors while the researcher circulated from one room to another. In all instances, all verbal instructions were given only by the researcher.

The administration of the mathematics questionnaires differed from that used in the original IEA studies (for this reason and others, no attempt is made to compare results). Based on time requirements determined during pilot testing, eighth-grade students were allowed up to two hours to complete the math questionnaire; twelfth-grade students were allowed up to two-and-a-half hours. (The IEA studies allowed only fifty minutes for similar Grade 8 questionnaires.) Between five and ten students in the entire sample of schools rushed through the questionnaires in a perfunctory manner. No attempt was made to prevent this, as students had been told they were free to participate as they saw fit. One student was unable to complete his questionnaire due to an attack of malaria. An average of from one to two students per classroom were absent on the day of the testing.

The questions dealing with demographic data were completed first. They were read to the students and explained, both in French and in Swahili. The self-esteem questionnaire, which followed, was also read item by item to the students. Each item was read first in French and then in Swahili, although students had copies of the French version only. Several questions were also given in Nande, for ease of comprehension. An attempt was made to keep questions to a minimum during this period, but in each classroom, some questions were asked. All items were read twice and all students were given time to complete them. The self-esteem questionnaire generally took between twenty and twenty-five minutes to administer. Students completed the math questionnaire on their own; very few questions were asked.

Twelfth-grade students in particular showed great interest in the study and frequently remained after school hours to discuss the questionnaire and the answers to questions. It was the rule, rather than the exception, that the researcher spend from one to two hours fielding math questions, as well as questions about U.S. university life and so on. On one occasion, four hours were spent in this way.

PRODEDURES FOR COLLECTING DATA FROM TEACHERS AND PRINCIPALS

Completion of the student questionnaires generally required the entire school day (from 8:00 until 1:30) and commonly an hour or so Most of the teachers also answered questions about the content more. validity of the instrument (the Opportunity-To-Learn questionnaires) during this time. Teacher and principal interviews were conducted for the most part after school hours. In some cases, teacher and principal interviews were conducted several weeks after the school visit. As far as possible, these interviews took place either in the teacher's classroom or in the principal's office. This was not always possible, however, both because of scheduling difficulties and absenteeism. The problem was compounded by the fact that not all of the teachers and principals who were absent at the time of the initial visit could be located and interviewed before the school year ended. In a number of instances, this meant that teachers and principals had to be located and interviewed in their homes or at some other site. The local children proved to be very helpful in locating individuals. Three full days were spent in this way and ultimately all of the sample principals and 28 of 33 teachers were located and interviewed.

PROTECTION OF DATA

The motorcycle proved a convenient and economical means of transportation, providing access to many areas where the state of the road would have rendered access by car very difficult. Travel was by rain. however. complicated considerably at times and questionnaires and answer sheets were always wrapped in plastic to keep them dry. On one occasion, the researcher was the recipient of a gift of a dozen eggs, several of which broke in his backpack during a rainstorm. In spite of plastic wrapping, the resultant foamy mass penetrated almost everything. Fortunately, the day's answer sheets were still decipherable and the answers were hand copied later to other answer sheets. The questionnaires were largely undamaged. On several other occasions, sudden downpours resulted in time spent drying out around smoky fires in distant villages, but no data were ever lost.

Air travel to and from central Africa required two days' time each way. Questionnaires and answer sheets (which weighed a total of about fifty pounds) were always hand carried, while most clothing and personal effects were checked through. This resulted in some puzzled comments from airport security officials, but there were never any complications. Indeed, the entire data collection process was remarkably free of complications. A total of only 31 days was actually spent at the research site (from May 19 to June 19). The first day was spent paying courtesy visits to the various officals who had granted permission, collecting data about the schools in the sample from the Butembo district office, and renewing acquaintances with the inspectors. The next three days were spent pilot testing the instruments and a day was spent motorcycling from place to place making initial contacts with a number of the principals. Subsequent contacts with other principals, where it was possible at all to contact them prior to the actual data collection visit, were made while passing by on the way to other schools or in the evenings.

Three weeks were spent collecting data from the schools. An average of one school was visited each day from Monday through Friday (the researcher is a Seventh-day Adventist and, although schools were open Saturday mornings, made no visits at that time). Remarkable cooperation was offered by the principals, teachers and students. Since it was near the end of the school year (schools closed throughout the district on Saturday, June 21, even though the school year did not officially end until two weeks later), the researcher's visits began to conflict with school examination schedules during the last full week during which data were collected from students (June 8 through June 13). Students typically completed their school examinations before noon, however, and arrangements were made for them to complete the questionnaires after the day's examinations were This may have resulted in somewhat lower results due to over. fatigue for the last three schools. This was almost certainly the twelfth-grade case for School 15. students at where the questionnaires were completed Friday afternoon, and for students at School 13. where examinations lasted until 1:15 and the questionnaires as a consequence were not completed until about 4:30. These were the only two schools where students complained about being

tired, although even here they were very gracious about participating in the study. A number of students at School 15 did not complete all of the mathematics questions, however.

On only one day during the entire three-week period was it impossible to administer questionnaires to students and this was due largely to the amount of travel time to the research site (over five hours). In all, some twelve hundred miles were logged by motorcycle over this time and another four hundred by other means of transport. Average travel time was two hours per day. The equator was crossed exactly forty times during the study.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF THE DATA

Beautiful, beautiful scenery here. Dramatic patchwork hillsides of wheat, banana groves waving in wind. Ruwenzori Mountains clearly visible in distance, clouds lifting from snow-capped peaks. Sunny day, cumulus clouds drifting past, shadows racing up and down valleys and across fields. Only sounds--cry of a hawk somewhere and scratching of pencils on paper. Look out school window, life opens up. Look in, life closes in around you. Dirt floor. Mud walls in bad condition--top part crumbling. Benches here so close together that students in middle get out by Grass growing long inside sliding under. classroom along three walls. Good sign. Maybe growth is possible in here after all. -field notes, May 29

Introduction

This chapter presents summary statistics of the major variables, followed by the test results of the hypotheses under investigation. The hypotheses are restated in statistical form and the statistical procedures followed are described. Throughout this chapter, all hypotheses are tested at a significance level of .05. In addition to the statistical data, the final section of this chapter also presents qualitative data based on interviews, field notes and other observations.

Student outcomes

The mathematics achievement and self-esteem scores for the students at the fifteen schools in the sample are given in Appendix


Figure 4-1 Mathematics and Self-esteem, Grade 8



Figure 4-2 Mathematics and Self-esteem, Grade 12

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E, along with standard deviations and standard error. Figure 4-1 presents mathematics and self-esteem outcomes for the eighth-grade students. Figure 4-2 presents mathematics achievement and self-esteem scores for the twelfth-grade students. These are expressed as percentages of the total possible. Note that at several of the schools, more than one classroom was visited.

The mean score on the Grade 8 mathematics achievement instrument was 44.36 percent. The mean score on the self-esteem instrument was 56.88 percent. This compares with a mean score on the Grade 12 mathematics achievement instrument of 40.95 percent for the sciences option and 32.61 percent for the humanities option. Grade 12 self-esteem scores were 61.19 percent and 61.96 percent.

Principals' emphasis on instructional leadership

The scale used to rate principals on the basis of emphasis on instructional leadership is presented in Chapter Three. The figures used to derive the ratings are explained in much greater detail in Appendix D. Table 4-1 presents the results of this rating procedure. No ratings are provided at School 4, since the principal had not been at this school for a long enough period of time for this to have been meaningful.

Ta	able	24-1	
Ratings	of	Princip	als

Principal	1	2	3_	4	5	6	7	8	9	10	11	12	13	14	15
Visits	3	3	2	-	2	3	2	1	1	3	3	3	1	3	2
Objectives	s 2	2	2	-	1	2	1	1	1	1	1	1	1	2	1
Meetings	2	3	2	-	1	2	1	1	1	2	2	2	1	3	1
Knowledge	1	1	2	-	2	1	1	2	2	2	3	3	3	3	2
Purchasing	<u>z</u> 1	2	2	-	3	3	3	3	2	3	3	3	3	3	3
Role	2	3	3	_	2	2	2	2	2	2	2	2	2	3	2
Discipline	3	3	3	-	3	3	2	2	3	2	2	3	2	2	2
Teaching	1	2	1	-	2	3	2	3	1	3	3	3	1	2	1
Totals	15	19	17	-	17	20	14	15	13	18	19	20	14	21	14

Levels of parental education

In this study, the level of the mother's education is used as a proxy for socioeconomic status. Data about both the mother's and the father's educational level were obtained. A number of references throughout the literature, however, indicate that the level of the mother's education, which is usually considerably lower than the level of the father's education, provides a much more discriminating measure of socioeconomic status. Appendix F gives both the fathers' and the mothers' levels of education by school and by grade level. Figure 4-3 shows the level of education of the mothers of Grade 12 students.

The figures given below actually represent a slightly lower degree of precision than would appear at first glance. More precisely, they should be interpreted as follows: a score of 0 means that the average father or mother has had less than one year of schooling; a score of 3 indicates an average of two to four years of schooling; a score of 6, completion of primary school; a score of 9, completion of one to three years of secondary school; and a score of 12 indicates completion of secondary schooling. The figures show that at some schools, mothers average less than one year of schooling while at others the typical mother has completed primary school. Fathers average a considerably higher degree of education than mothers. Similarly, the parents of Grade 8 students average a higher degree of education than do the parents of Grade 12 students. This probably reflects the rapid expansion of primary education more than anything else, although with the great number of students who do not complete secondary schooling, one might have expected that those who do finish would tend to have higher socioeconomic status than those who do not.



Figure 4-3 Level of mothers' education

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Correlates of mathematics achievement and self-esteem

The following page presents a list of variables which are correlated with mathematics achievement and levels of student self-esteem. The Grade 8 list gives Pearson correlation coefficients while the Grade 12 list gives partial correlation coefficients which have been corrected for the differential effect of the option followed. A much fuller discussion and more precise statistical treatments are presented throughout the rest of the chapter.

A caveat is in order at this point, however. The list is given in this fashion for the sake of convenience to the reader but should not be taken as an endorsement of the "black box" approach (a discredited static model of school organization whereby discrete inputs are expected to produce predictable outcomes). The organizational processes of schooling are far more complex, with the effect of variables depending frequently on the mediating conditions which exist. Without an overall interpretive framework, the analysis of discrete variables will be of little value. An important thrust of this study has been the development of such a framework. Table 4-2Variables correlating with mathematics achievement and self-esteem

	<u>Mathe</u>	matics	<u>Self-</u>	<u>esteem</u>
<u>Variable</u>	Grade 8	Grade 12	<u>Grade 8</u>	<u>Grade 12</u>
Principals'emphasis on	.16***	.20***		
instructional leadership				
Classroom SES level		.14***		
Number of watches			.15***	
Possession of textbook		.15**		
Principals' tenure	.21***			.31***
Teaching principal		.19***	14***	.14**
Teachers' experience		.24***		.09*
Teachers' qualifications	09**	.21***	10**	
Supervision of teachers	.20***	.20***	15***	.10*
Faculty meetings	.21***	.12***	11**	
Discipline				.14**
Instructional objectives	.20***		08*	

*** p<.001 ** p<.01 * p<.05

Data analysis

In this section data are presented following the hypothesis to which they refer. Analysis of the data is performed for each hypothesis in order.

Hypothesis l_0 : There is no significant correlation between principals' instructional leadership rating and student mathematics achievement.

Analysis of co-variance was performed on the Grade 12 results, comparing the rating of the principals to mathematics achievement in order to determine the general effect of the principals' emphasis on instructional leadership. The mathematics curriculum followed by the student was used as a co-variate.

Analysis of variance was performed on the Grade 8 results, again comparing the rating of the principals to mathematics achievement in order to determine the general effect of the principals' emphasis on instructional leadership. Since the mathematics curriculum followed at this level is the same for all schools, no co-variate was used.

The results of the ANCOVA procedure for Grade 12 mathematics achievement are given as Table 4-3. The results of the ANOVA procedure for Grade 8 mathematics achievement are given as Table 4-4.

Source of Variation	Sum of Squares	DF	Mean Squar	e F	Sig.
Option	3158.314	1	3158.314	32.685	.001
Principal	5794.729	8	724.341	7.496	.001
Explained	8953.043	9	994 .783	10.295	.001
Residual	27249.392	<u>282</u>	96.629		
Total	36202.435	291	124.407		
Multiple R squared -	. 247				
Multiple R -	.497				

Table 4-3Grade 12 ANCOVA for Mathematics Achievement

			Ta	able 4-4	
Grade	8	ANOVA	for	Mathematics	Achievement

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig.
Principal Residual	8028.470 <u>118882.857</u>	8 <u>628</u>	1003.559 189.304	5.301	.001
Total	126911.326	636	199.546		
Multiple R squared - Multiple R -	.063 .252				

These figures merit careful consideration for several reasons. First, they show that, for both the Grade 8 and the Grade 12 students in the sample, there is a statistically significant relationship between the emphasis which principals place on instructional leadership and student outcomes (mathematics achievement). The level of significance found is p-.001 for both the Grade 8 and the Grade Second, they show a highly significant effect of the 12 students. option followed. (Other data from the study indicate that students in the sciences option average 8.268 percent higher than students in the humanities option; this is not particularly surprising since students in the sciences option average five class periods of mathematics per week compared to two in the humanities option.) Third, in addition to statistical significance, there is practical significance as well. The multiple R squared figure for Grade 12 students (.247) indicates that 24.7 percent of the variation in mathematics achievement is explained in terms of the variables This is not equivalent to saying that 24.7 percent of the included. variation is caused by the variables included, however. First, there may be a significant non-linear component to this relationship. Further, there may be a number of confounding variables which have not yet been considered. For instance, the students where the principals rate highest may have higher socioeconomic status than the others and may be doing better for this reason. Again, the higher ranking principals may have recruited students with better academic ability and it may be that this is what causes the better results. Much of the rest of this chapter will be devoted to examining this question. What can be said for certain at this point is that the data do support the alternative hypothesis, i.e. there is a significant correlation between principals' instructional leadership ratings and student mathematics achievement.

The finding of a lower level of practical significance for Grade 8 students (6.3 percent of the variation in mathematics achievement is explained in terms of the principals' emphasis on instructional leadership) is also meaningful for several reasons. Principals generally have much more contact with Grade 12 students than they do with Grade 8 students. Many principals tend to treat the Grade 7 and Grade 8 classes as more of a selection process than an instructional Only one of the principals who teach, for instance, teaches process. any courses at either the Grade 7 or the Grade 8 level. Grade 8 students have also had less time to be affected by the principals than have Grade 12 students. The finding of lower significance levels also tends to argue against the probability that students schools where principals rated higher were recruited at the significantly more capable academically than students at other More will be said about this later. schools. At any rate, Hypothesis 1_0 may be rejected at a significance level of .001.

Hypothesis 2_0 : There is no significant correlation between principals' instructional leadership ratings and student self-esteem scores.

Since the option followed by the student proved not to make any significant contribution to the Grade 12 analysis of variance for self-esteem, ANOVA procedures were conducted for Grade 8 and Grade 12

both, showing the percentage of variation in self-esteem explained by the principals' emphasis on instructional leadership.

It may not, at first glance, seem reasonable to try to determine the correlation between principals' emphasis on instructional leadership and the students' self-esteem scores. However, creating a climate in which students can concentrate on learning is seen as an important function of principals who emphasize instructional leadership. A harsh, stifling climate could be expected to result in lowered self-esteem while a more supportive climate could be expected to result in a raising of self-esteem scores. Climate is one of the factors included in the instructional leadership rating. The results of the Grade 12 ANOVA procedure for self-esteem are given as Table 4-5. The results for Grade 8 are given as Table 4-6.

Table 4-5Grade 12 ANOVA for Self-esteem

Source of Variation	Sum of Squares	DF	<u>Mean Square</u>	F	Sig.
Principals	196.627	8	24.578	3.285	.001
Residual	2162.512	<u>289</u>	7.483		
Total	2359.139	297	7.943		
Multiple R squared - Multiple R -	.083 .289				

Table 4-6Grade 8 ANOVA for self-esteem

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig.
Principals	304.028	8	38.004	5.058	.001
Residual	<u>4770.909</u>	<u>635</u>	7.513		
Total	5074 937	6/13	7 893		
IOCAL	5074.557	045	7.075		
Multiple R squared -	.060				

Multiple R = .245

These results indicate that, while the emphasis which principals place on instructional leadership does not have a particularly strong effect on the development of self-esteem, statistical significance is Of more interest than this, however, is the direction of obtained. While the correlation for Grade 12 students is a the results. positive one, the correlation for Grade 8 students is a negative one. (When summary statistics for self-esteem are examined, they show that in schools where principals rate in the top half for instructional emphasis, Grade 8 self-esteem scores average 55.5 leadership For schools where principals rate in the bottom half for percent. instructional leadership emphasis, Grade 8 self-esteem scores average This trend is reversed for Grade 12.) Since the 58.0 percent. correlations found are small and since there may well be other intervening variables, it would be premature to read a great deal this finding but it does indicate that an emphasis on into instruction may have a negative impact on other valued student outcomes, particularly for those students with limited influence in the system, such as the Grade 8 students in this study...

Hypothesis 3_0 : There is not a significant positive correlation between academic intake and principals' instructional leadership rating.

The challenge here is to show that differences in outcomes are related to differences among the principals. This requires showing that the academic ability of students enrolling at the schools with the higher rating principals is not superior to that of students enrolling at the other schools. The most convincing way to show this would be with a pretest-posttest design. Students would be measured at the beginning of some period and then again at the end in order to determine 1) where the best students are enrolling and 2) the actual levels of improvement in mathematics achievement for various student subgroups.

Given the constraints of time and money, this design was not possible for the present study. Instead, three measures of the academic intake at each school have been used. First, an expert panel consisting of three primary school inspectors and one secondary school inspector was asked to rank all of the secondary schools in the sample as to academic intake. They stated that there were no obvious patterns of one school in a particular area attracting all of the best students, but agreed to provide a tentative ranking. They stressed that it was tentative. Results of this ranking are given in Table 4-7.

Table 4-7Academic Intake of Schools Ranked by Inspectors

Academic Intake Schools

 High
 1,3,4,8

 Medium High
 10

 Medium
 14,15

 Medium Low
 2,7

 Low
 5,6,9,11,12,13

When a Pearson correlation coefficient is obtained for academic intake, it shows a slight negative correlation with Grade 8 mathematics achievement (r--.0912 with p = .011) and no statistical significance for Grade 12 mathematics achievement. This bolsters the argument that results are not due to academic intake. However, as noted, there may be some question as to the validity of this ranking. It is also found to correlate quite highly with the measure of socioeconomic status (.2514, p = .001) and may result from a confounding on the part of the inspectors of these two concepts.

A second measure of academic intake is based on admissions criteria. A ranking of schools according to the admissions criteria which they apply was attempted. Again, it is not a simple matter to differentiate among the schools on this basis because most of the principals state that they apply similar criteria, i.e., admissions are usually restricted to Grade 7 and Grade 9 only (referred to as the recruiting classes) and are based on successful completion of an entrance examination and presentation of a bulletin from the previous year with at least a 50 percent average. Two principals indicated a higher criterion, i.e., presentation of a bulletin from the previous year with at least a 55 percent average. The following factors were considered in preparing this second measure of intake: 1) the percentage required for permission to write the entrance exam; 2) the standard applied on the exam (percentage required for passing); 3) the number of students applying for a position; 4) whether or not students are admitted in other than the two recruiting years; and 5)

whether or not the decision is made by the principal alone (which could lead to abuses) or by a committee of teachers.

The rankings obtained in this way are explained in more detail in Appendix G. They turn out to be surprisingly similar to those indicated by the inspectors. There is only one school which clearly has a level of academic intake which surpasses the others. This is School 3, one of the two schools which require 55 percent of any student who wishes to write the entrance examination. It is a school with an excellent reputation and high numbers of candidates each Two principals indicated that this is the school of first year. choice for many students. This school has also just begun its own private primary school following a Belgian curriculum and taught entirely in French. This project has received government approval but is supported locally. It is run by the secondary school principal, as is a combination kindergarten/day care program. Interestingly, even here, the principal complained that entrance exam scores frequently turned out to be very poor predictors of subsequent academic success.

Only one other school was indicated by a number of individuals (including the inspectors, another principal and several parents) as the school of preference in its area. This was School 14. However, it did not seem nearly as stringent in its admissions criteria and did not appear to have the same high quality pool of candidates among which to choose. Many of the other schools were not in competition for candidates since they were in relatively isolated areas. The school whose students performed the highest in terms of mathematics achievement at the Grade 8 level appeared to have among the lowest levels of academic intake in the sample, with the principal indicating that he was forced to accept students scoring as low as 25 percent on the entrance examinations because of the general low level of the elementary schools in the area.

When Pearson correlations between mathematics achievement and academic intake are obtained based on this scale, no statistical significance is found. There is a high correlation between the two scales (.6834, p<.001). This scale is shown as Table 4-8.

Table 4-8Academic Intake Ranked According to Admissions Criteria

<u>Schools</u>
3
1
2,7,10,14
6,8,11
4,5,9,12,13,15

Another factor influencing admissions decisions is the practice of <u>matabishi</u>, which is the paying of bribes to principals and occasionally teachers in order to gain admission or other advantages. This is a subject about which it was generally difficult to ask questions but some teachers and principals were surprisingly open about the practice. One teacher provided a ranking of the schools at which it cost the most to gain admission. Another teacher suggested that a general rule of thumb for principals who practise <u>matabishi</u> is that it will cost a student at least one hundred zaires per year of secondary school for admission. That is, first year (Grade 7) will require a bribe of one hundred zaires; second year (Grade 8) will require a bribe of two hundred zaires, and so on. Another informant indicated that this figure was low and that more than one thousand zaires could easily be paid. The principal at one of the schools visited told indignantly of one of their students who had failed and who had immediately been admitted to a neighboring school after paying a bribe. Students at this school and at several others openly said that what they appreciated the most about their school was that there was no <u>matabishi</u>. One teacher also made the comment that what he liked most about a certain principal was that he was honest. On the other hand, a teacher at another school commented:

> The principal here makes his own personal arrangements when it comes to admissions. There is no committee. This year, most of the sixth-year students are new. Some years, there are only five or ten maximum who pass into sixth year but when you come back after summer vacation, you find twenty or thirty of them. You don't bother to ask where they came from. You just teach.

In general, it appears clear from the interviews that there are differences in student intake. The practice of <u>matabishi</u> appears more prevalent at the schools where principals ranked lower, which means that those schools are almost certainly receiving at least some students with lower academic ability on this basis alone. The schools in the city have a much larger pool of candidates from which to choose than do those in the more isolated areas, which again means that they can be more selective.

Logically, one would expect to find some correlation between levels of academic intake and the outcome scores for mathematics achievement and, while this is nominally the case, statistical and practical significance levels are not obtained. There are a number of reasons why this may be so. First, it may just be that the differences in academic intake levels between the different schools are just not that great. This is the belief of the inspectors who attempt a ranking with great reluctance. Other agreed to explanations are possible. Many schools which are not the first school of choice for the most able students appear to compensate by admitting great numbers of students in the first year and then applying more rigid standards for passing. One of the schools began the school year with 118 students in a single Grade 7 classroom. By June, there were only 102 left in Grade 7; there were 66 in Grade Almost without exception, the schools with higher ranking 8. principals had larger upper grade classes than did the others. This indicates at least that they are not maintaining their high levels of achievement by high degrees of selectivity. (It also demonstrates the potential hazards of trying to read too much into between-school variation without controlling for all of the variables. In this study. lower correlations between academic intake and student outcomes may well be the result of model underspecification; lower correlations between principal ratings and student outcomes may also occur because of this.)

Hypothesis 4_0 : There is no significant interaction effect between principals' instructional leadership rating and student tenure.

It was expected that the effect of the principals' leadership rating would increase the longer the student had been at the school. However, no significant interaction effect between principals' ratings and student tenure was found. This appears to result from the fact that in both Grade 8 and Grade 12, it was the students who had failed the greatest number of times who had been at the school the longest. Since student tenure appears to be confounded with the number of failures, no firm conclusions can be reached and the null hypothesis is retained.

Hypothesis 5_0 : There is no significant correlation between possession of a textbook and mathematics achievement.

The total numbers of students in possession of a mathematics textbook in this study are relatively small. At the Grade 8 level, 41 of 614 (less than 7 percent) students reported being in possession of a textbook; at the Grade 12 level, this figure rose to 68 of 301 (less than 23 percent). The Pearson product-moment correlation coefficient (Appendix H) shows that possession of a textbook is not significantly related to mathematics achievement at the Grade 8 level. This may be because such small numbers of students possess textbooks that teachers are unable to teach in a way that takes advantage of the few books that students do possess. One principal indicated that this is in fact the case--that even those students who do have textbooks are still expected to copy the same texts, etc. from the blackboard as the rest of the students.

At the Grade 12 level, the Pearson product-moment correlation coefficient attains significance only for the sciences program. Here the coefficient is .45 with a significance level of p = .001. For the humanities program, there is no significance. Again, this may reflect the teachers' use of these books. The teachers following the curriculum may make much greater use of the books. sciences Interestingly, when the possession of a textbook is entered into the analysis of variance at the Grade 8 level and the analysis of co-variance at the Grade 12 level, while mere possession of a textbook remains insignificant, the interaction effect with principals' rating becomes significant, particularly for the Grade 12 students. This indicates that in schools where principals emphasize instructional leadership, possession of a textbook is relatively In schools where the principal does not, possession of a important. textbook appears to be of little value. This result would appear to coincide with results reported in a textbook distribution plan in the Philippines (Heyneman, Jamison & Montenegro, 1984). The Grade 8 ANOVA is given as Table 4-9; the ANCOVA for Grade 12 as Table 4-10.

Table 4-9ANOVA for Grade 8 (Principals, Textbooks)

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig.
Principals	6284.791	8	785.599	4.514	.001
Text	62.246	1	62.246	.358	.550
2-way interactions	<u>2404.997</u>	<u>6</u>	400.833	2.303	.033
Explained	8752.034	15	583.469	3.353	.001
Residual	<u>97451.019</u>	<u>560</u>	174.020		
Total	106203.053	575	184.701		
Multiple R Squared	.060				

.244

Multiple R

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig
Covariates			_		
Option	2522.287	1	2522.287	28.416	.001
Main Effects					
Principals	5855.735	8	731.967	8.246	.001
Textbooks	165.979	1	165.979	1.870	.173
2-way interactions	<u>3012,759</u>	<u>8</u>	376.595	4.243	.001
Explained	11556.759	18	642.042	7.233	.001
Residual	<u>22811.679</u>	<u>257</u>	88.761		
Total	34368.438	275	124.976		

Table 4-10ANCOVA for Grade 12 (Principals, Textbooks)

Multiple R Squared - .249 Multiple R - .499

Since textbooks of themselves do not account for a significant degree of variation in mathematics achievement, the null hypothesis must be retained. However, the data indicate that textbooks have the potential for a significant impact on mathematics achievement when principals provide strong instructional leadership.

Hypothesis 6₀: There is no significant correlation between a student's socioeconomic status and that student's mathematics achievement.

Of key importance at this point is to demonstrate that the relationship found between instructional leadership and student outcomes is largely independent of the socioeconomic status of the students. This point will be examined in some detail, for the argument can and certainly has been advanced that differences in student outcomes at the better schools result from differences in the family backgrounds of the students and are not the result of school inputs and processes. The effective schools movement, of course,

received its initial impetus from an attempt to refute the claim made in the Coleman Report and later in the Jencks report that family all of the differences in backgrounds accounted for almost achievement levels. Simmons and Alexander (1978) have suggested that я similar claim can be made for schooling in the developing countries, i.e. that differences in achievement are due to family Heyneman and others have attempted to show, on the other effects. hand, that schooling in the developing countries has an effect on learning which is relatively independent of family inputs. The data examined here support this latter position, although this support is by no means unequivocal.

The effect of family background, or socioeconomic status can be measured in a variety of ways. In this study, the level of the mother's education (MOMED) is used as a proxy for SES, when the data are aggregated at the student level. (The level of the father's education (DADED) was also recorded but there was less variation than for MOMED and consequently, less predictive value.) One additional measure is used when the data are aggregated at the classroom level. This is the percentage of students in the classroom who wear a watch. While this measure may be somewhat confounded with rural/urban distinctions because of the greater availability of watches in urban areas, it correlates at a high level of statistical significance with MOMED when this latter variable is aggregated at the classroom level.

The Pearson correlation coefficients from Appendix H indicate a significant correlation between MOMED and principal ratings (r=.16 with a significance level of .003). If MOMED can be shown to be highly correlated with math achievement or self-esteem, it could be reasonably inferred that the correlations between these variables and principals ratings are due not to the principals after all, but to the higher socio-economic status of the students at these schools. However, when the data are aggregated at the individual student level, there is no significant correlation between mother's education and mathematics achievement at either the Grade 12 or the Grade 8 level. The Pearson correlation coefficients found are low and do not attain statistical significance (again, see Appendix H). When MOMED is added to the ANOVA and the ANCOVA already run, there is no additional predictive power and, indeed, a considerable loss of significance. Socioeconomic status consistently fails to show any correlation with mathematics achievement, when aggregated at the student level.

Hypothesis 7_0 : There is no significant correlation between a student's socioeconomic status and that student's level of self-esteem.

The correlation matrix in Appendix H shows that there is no correlation between a student's socioeconomic status and level of self-esteem. For Grade 12 students, r=.0560 with a significance level of .157. For Grade 8 students, r=-.0121 with a significance level of .377. Hypothesis 7_0 is retained.

Hypothesis 8_0 : There is no significant correlation between the socioeconomic level of the school and students' mathematics achievement.

When the data are aggregated at the classroom level, (see Appendix F and Figure 4-1) it becomes apparent that there are significant differences in socioeconomic status among the schools. interest here is the statistically significant Of particular relationship between MOMED and the ratings of principals at the Grade 12 level (r=.1602 with a significance level of .003). This would suggest that either the parents with higher socioeconomic status are able to get their children admitted to the schools where they perceive the principals to be the most serious about instruction or, conversely, that principals give greater attention to instruction the students have more educated parents. when The important questions here are: 1) does the socioeconomic status of the classroom have an effect on the students' levels of mathematics achievement? and 2) if so, does this account for the correlation between mathematics achievement and principals' ratings? When analyses of variance and covariance are calculated for Grade 8 and Grade 12, it becomes clear that there is a statistically significant, correlation positive between mathematics achievement and the socioeconomic status of the classroom. These analyses are given as Table 4-11 for Grade 8 and Table 4-12 for Grade 12.

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig.
Classroom SES Residual	8716.489 125821.938	2 <u>674</u>	4358.245 <u>186.679</u>	23.346	.001
Total	134538.427	676	199.021		
Multiple R Squared - Multiple R -	.065 .255				

Table 4-11Grade 8 ANOVA for Classroom SES

Table 4-12Grade 12 ANCOVA for Classroom SES

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig.
Option	3158.314	1	3158.314	33.434	.001
Classroom SES	<u>2242.501</u>	<u>2</u>	1121.251	10.402	.001
Explained	5464.731	3	1821.577	16.899	.001
Residual	<u>34277,298</u>	<u>318</u>	107.790		
Total	39742.029	321	123.807		
Multiple R Squared -	.138				
Multiple R -	.371				

These figures show that students attending school in higher SES environments do attain higher levels of mathematics achievement than students attending school in lower SES environments, at least within the ranges found in this study. The important question now is this: when classroom level SES is treated as a covariate, are there still significant principal effects? The answer, as shown by Table 4-13, is a resounding 'Yes!' Table 4-13 takes the variables already shown to be important, and adds classroom level SES as a covariate. Note that the effects of the principal ratings are still significant at the .001 level.

Table 4-13Grade 12 ANCOVA for Principals, Classroom SES

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig.
Covariates	3818.853	2	1909.427	20.143	.001
Option	3158.314	1	3158.314	33.317	.001
Classroom SES	660.540	1	660.540	6.968	.009
Principals	<u>5651.282</u>	7	807.326	8.517	.001
Explained	9470.135	9	1052.237	11.100	.001
Residual	26732.300	<u>282</u>	94.795		
Total	36202.435	282	124.407		
Multiple R Squared	.262				
Multiple R	. 511				

Based on these findings, the most accurate explanation for what is occurring in the sample schools with regard to SES is that parents with higher socioeconomic status are able to use their influence to obtain admission for their children at the schools where they perceive the principals to be the best, and that once in the schools students will do slightly better in those classrooms characterized by higher SES. The rating of the principal in terms of emphasis on instructional management has a strong effect independent of classroom level SES, however, and is much greater than the SES effect.

Because of the high degree of debate which has surrounded the question of SES in developing countries, a second gauge of the socioeconomic status of the schools was used in order to provide verification of the findings in this area. For this purpose, the number of students wearing watches in each classroom was counted. Watches are highly valued in the Butembo area and give a reasonable indication of family income. Those who can afford them generally This count provided the ranking shown in Table 4-14. It wear them. correlates highly with classroom SES figures from Appendix F for Grade 12 students (r-.4530, p<.001). It does not correlate highly with classroom SES figures from Appendix F for Grade 8 students (r=-.0623, p=.062)The percentage of watches was typically so low for Grade 8 students that it evidently did not have a great discriminatory value.

Table 4-14 Percentage of Students Wearing Watches As an Indicator of SES, by Class and School

Grade 8 18 02 07 23 12 -- 22 07 39 14 15 10 15 21 45 Grade 12 83 50 90 48 67 -- 18 21 67 60 50 41 49 59 84 School 1 2 4 6 8 9 10 11 12 13 14 15 3 5 7 The correlation coefficients for these rankings with mathematics achievement failed to show either statistical or practical Significance both at the Grade 8 and Grade 12 levels, thus strengthening the argument that classroom level SES does not account for the correlation between principal ratings and student achievement. Based on the first of these measures, however, classroom SES does appear to have an effect on mathematics achievement. Hypothesis 80 is retained.

Hypothesis 9_0 : There is no significant correlation between the socioeconomic level of the school and students' level of self-esteem.

Here one may use the two proxies for socioeconomic level of the school: average level of mothers' education and percentage of students wearing watches. Both of these proxies show no significant correlation with students' level of self-esteem for the Grade 12 students. For the Grade 8 students, classes with a higher percentage of students wearing watches showed a significantly higher level of self-esteem (r-.1561, p-.001). However, the null hypothesis is retained.

Hypothesis 10_0 : There is not a significant positive correlation between mathematics achievement and self-esteem.

For both the Grade 12 and the Grade 8 students, the Pearson product-moment correlation between mathematics achievement and self-esteem is small and not statistically significant (see Appendix H). The ANCOVAs for both Grade 12 and Grade 8 also fail to show statistical significance. The null hypothesis is retained.

Hypothesis 11_0 : There is not a significant positive correlation between state examination results and school self-esteem scores.

The correlation between self-esteem scores and state examination results for 1986 is -.0386 with a significance level of .259. The correlation between self-esteem scores and state examination trends for the past four years is -.0696 with a significance level of .104. The null hypothesis is retained.

Hypothesis 12_0 : There is not a significant positive correlation between state examination results and school mathematics achievement.

Maloba's study of examination results in Zaire (1977) found that success in individual subjects as measured by the schools was of little value for predicting subsequent examination success. In this study, however, there appears to be a strong correlation between school mathematics achievement and state examination results, at least for the current year. The state examination results over the past four years are given as Appendix I. Figure 4-4 provides a summary of these results expressed as the percentage of students passing.

The correlation between mathematics achievement scores and state examination results for 1986 is .1809 with a significance level of .001. However, when trends in examination results for the past four years are examined, they fail to show significance. While the null hypothesis is not retained, it should be noted that current mathematics achievement scores are not predicted by the trend in examination results over the past four years. It should further be noted that examination results are aggregated at the school level and not at the individual level.



Figure 4-4

State Examination Results 1983-1986

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Hypothesis 13₀: There is not a significant correlation between gender and mathematics achievement.

The correlation between gender and mathematics achievement is small and statistically insignificant (see Appendix H). It approaches significance only for the Grade 12 sciences program, where females score somewhat better than males. This may be more an artifact of the sampling frame, however, since the total sample of those in the sciences program was small, with a disproportionate number at one of the top Catholic schools, where over 77 percent of the students in the class were female. The null hypothesis is retained.

Hypothesis 14_0 : There is not a significant correlation between gender and self-esteem.

The Kenyan study by Mwaniki (1973) reported no significant gender differences in self-concept. Similarly, in the overall sample for this study, the correlation between gender and self-esteem is small and statistically insignificant (see Appendix H). However, for the Grade 12 students in the sciences program, there is a correlation between self-esteem and gender (r-.2276) which is significant at the .05 level, with girls rating higher than boys. The total numbers involved are small, however, and it would seem premature to read much into this finding. Based on the data collected, the null hypothesis is retained.

Serendipity

It has already been noted that this study was developmental in **nature**. Although many of the findings were anticipated in the

research hypotheses, some were not. In particular, the unanticipated findings relate to trends in the examination results and to teacher characteristics. Trends in the examination results are explained first.

It is difficult to handle the examination results statistically because it is virtually impossible to determine with what they should be compared. Different subjects have different pass rates. In different years, the pass rates appear to vary considerably. From region to region within the country, pass rates vary. Some schools deliberately keep the size of the graduating class small in order to improve their passing percentages. There is evidence that this may be occurring in the Butembo district. The number of candidates presented at the sample schools declined in each of the past four years, from 542 to 503 to 475 to 465. This occurred while the number of students in Grade 7 was going from 1461 to 1571 to 1558 in the twelve schools for which figures were available. (No Grade 7 figures were obtained for the current year.)

The last year for which national and provincial figures were available, 1983, students in the Kivu province did considerably better on the state examinations than did students elsewhere (40 percent passing as compared to 31 percent overall). 1983 Kivu pass rates by option are as follows: math/physics (41 percent), biology/ chemistry (52 percent), teaching (32 percent), business (52 percent), social work (35 percent), literary (66 percent). Rates by sponsorship for the country in 1983 are: Government (27 percent), Catholic (45 percent), Muslim (10 percent), Protestant (26 percent). Overall pass rates have been relatively stable since 1979. Figures from 1979 through 1983 are as follows: 42 percent, 41 percent, 40 percent, 30 percent, 31 percent.

Figures in the sample schools of the present study were considerably higher than this for 1983 through 1986: 46 percent, 63 percent, 75 percent, 77 percent. These are much higher than the national averages which were said to be under 40 percent nationally for each of these years.

The fifteen sample schools were rated on the basis of overall percentage increases per year and relative rank per year. Those schools seen as good or improving were given a rating of 3. This includes schools 1,2,3,4,7, and 8. Those schools for which no pattern could be determined (i.e. they were either erratic or average) were given a rating of 2. This includes schools 6,9,10,11, and 14. The schools which remained low throughout the time period, or which steadily declined were given a ranking of 1. This includes schools 5,12,13, and 15.

Based on these ratings, a number of interesting correlations were noted. Principals' emphasis on instructional leadership was not shown to be correlated significantly to state examination results (r-.0424, p-.232). Years of teacher experience and teacher quality did, however, correlate highly, both at a significance level of .001 (r-.2115 and .5677 respectively). Possession of a textbook also correlated highly (.2246), as did female gender (.3613). Socioeconomic status proved to be highly significant (.5727 when aggregated at the classroom level). All of these variables were measured at a significance level of .001. This would indicate that the examination system may be slanted in favor of those with higher socioeconomic status. That is, they may obtain far better results even though their level of academic achievement is only minimally higher.

Teacher characteristics proved to be of considerable importance in predicting both examination and mathematics achievement results. While this was not the focus of the study, it fits well within the overall interpretive framework developed, since the effects of the principals are seen as mediated through the teachers. It was expected that teacher characteristics would account for more of the variation in outcomes than would principal characteristics and this has proven to be the case. However, the principals' effect on mathematics achievement remains high and significant even when teacher characteristics are taken as covariates. This indicates that while principals do affect student outcomes in part by selecting more highly qualified teachers, the other factors indicated are clearly important.

<u>Components of instructional leadership</u>

A number of the specific activities of principals which were used in the construction of the instructional leadership scale have proven to be significant predictors of mathematics and state examination success and, to a lesser degree, the levels of student self-esteem. These variables will be looked at briefly.

SUPERVISION OF INSTRUCTION

The number of classroom visits made by principals for the purpose of supervising instruction correlates quite highly with mathematics achievement at both the Grade 8 and the Grade 12 level (r=.20, p<.001 in each case). This variable is also highly correlated with the number of faculty meetings which a principal will hold (r=.8077, p<.001). It is negatively correlated with self-esteem (r=-.1499, p<.001). Principals who themselves teach are much more likely to visit classrooms frequently.

There appears to be at least one other positive side effect of frequent classroom visitation. At both the Grade 8 and the Grade 12 levels, there are many more textbooks in classrooms where the principals visit frequently. Principals who are in the classroom appear more sensitive to instructional needs. This may be as important a result of supervisory visits as any.

One finding which has equity implications is that principals appear to visit much more frequently in schools with a higher socioeconomic level. This may reflect parental expectations. (See Appendix K for a sample copy of the form used by one principal for supervisory visits.)

FACULTY MEETINGS

The number of meetings held with faculty members is so highly correlated with the number of classroom visits as to be almost confounded with that variable. As is true for the number of classroom visits, the number of faculty meetings is also highly predictive of mathematics and state examination success. It is not possible from the data to state with confidence which of these variables is responsible for the effects measured (or if both are responsible).

INSTRUCTIONAL OBJECTIVES

There is no school in the study which has developed explicit, written instructional objectives. Most have rather developed lists of teaching tasks which will be performed at specific points throughout the year. Where principals meet regularly with faculty, the school is much more likely to have given some thought at least to instructional objectives (there is a correlation of over .7 between the quality of instructional objectives and the number of faculty meetings). The quality of instructional objectives also correlates highly with state examination success (.5788 overall, although the sample size is small and there may well be other confounding variables).

TEACHING PRINCIPAL

Principals are much more likely to teach at schools with a lower socioeconomic level. When the number of students wearing watches is used to measure SES, the correlation found is -.4665 for Grade 8 and

-.5798 for Grade 12. There appears to be no negative effect on mathematics achievement and may even be a positive one. No particular effect was found for Grade 8 achievement, which is not surprising since only one principal teaches any courses at all at that level, and a positive correlation of .1851 for Grade 12. Any positive effect may well be due to the increased involvement overall of the principal with the instructional needs of the Grade level at which s/he teaches.

SUBJECT MATTER KNOWLEDGE

This variable consistently failed to show significance in the direction expected. This may have been due to the fact that it was a very inexact measure (principals were asked to indicate what mathematics textbook was used and what the general emphases of the curriculum were). According to the data collected, principals with greater subject matter knowledge are less likely to supervise teachers and hold regular faculty meetings and their overall level of discipline is lower.

PRINCIPALS' VIEW OF ROLE

Principals with greater experience and who meet regularly with their faculty members are much more likely to view their role in terms of instructional improvement. Where the principals describe their roles in terms of instructional improvement, students perform better on the state examinations (correlation of .5109).
DISCIPLINE

The measure of discipline used was highly subjective and based on several hours of classroom observation only. Nevertheless, this was enough in many cases to observe broad differences. In some schools, there was very clearly an attempt to provide an atmosphere in which students could concentrate on learning. In other schools, this was clearly not the case. This broad measure showed correlations between examination trends over the past four years, principal experience (.6), teacher qualifications (.55), supervision of teaching (.44) and classroom SES levels (.34). It also correlated positively with student self-esteem (.14) at the Grade 12 level. There was no significant correlation with mathematics achievement.

PRIORITY ON PURCHASE OF INSTRUCTIONAL MATERIALS

Principals were asked to indicate what their priorities for school purchases would be if money were available. A stated priority for instructional materials (textbooks, maps, chalk, etc.) correlated negatively with all of the measures of socioeconomic status used. It also correlated negatively with state examination results and most measures of principals' emphasis on instructional leadership. It showed no significant correlation with mathematics achievement. This may mean that, contrary to expectations, principals who value improved instruction see a greater need for improved facilities, etc., rather than for instructional materials <u>per se</u>. The answers given may also indicate a poorly chosen question, for principals talking about purchases with unlimited money to spend tended to think much bigger than books and chalk.

General observations

This section looks briefly at qualitative data and overall impressions gathered during the visits. Observations are placed in five categories: principals, teachers, students, building quality, and miscellaneous. Within each of these categories, there is no attempt at any tight logical ordering.

PRINCIPALS

- Almost all principals in the sample schools paid a great deal of attention to classroom visitation. This was universally held to be an integral part of the principal's job and principals commonly expressed regret that they did not have more time to devote to it. Most principals discuss with the teachers what they have observed. A few only prepare a formal report.
- 2. Most principals hold teachers' meetings on a very occasional basis. There is widespread agreement that such meetings are important. A common component of such meetings is for subject area teachers to observe and discuss the presentation of a model lesson.
- 3. Secondary school principals in the Butembo district tend to know one another by name but only occasionally get together. Almost all principals can name the majority of the thirty principals in the district. Formal meetings organized by a higher level of authority are rare; the principals themselves had organized one meeting at a local bar, the last part of which the researcher

attended. In addition to three secondary school principals, two elementary school principals were present.

- 4. End-of-year juries provide an opportunity for principals to learn what their peers consider to be acceptable norms of student performance. Juries typically consist of an inspector, at least one visiting principal or teacher, the local principal and several local teachers. The function of these juries is to grade students on performance of a practical task--teaching a lesson, repairing an engine, performing an experiment, etc.
- 5. Principals are commonly responsible for branch schools operating at a distance. They will commonly spend several days a month away at these branch schools (<u>succursales</u>). Branch schools may have well over a hundred students, but will not have all six grades.
- 6. Principals generally are free to hire teachers if they can find them. They usually rely on informal networking through family and friends to do this. Most say that they know students at the university and will contact them to offer jobs.
- 7. Principals are named by the sponsoring organization and frequently belong to an ethnic group other than the Nande. Principals in the government-sponsored schools may be named by the local education officer or his superiors, or by the regional commissioner, who is the top political officer in the area.

- 8. Principal turnover is high. Only one has been at a single school for more than six years; only seven of the thirty in the Butembo district have been at one school for more than four years. Over half have been at their present school for less than three years.
- 9. The only expatriate principal in the sample, a Catholic sister from Spain, expressed deep concern about the imbalance between the curriculum and the milieu. She said, "Teacher salaries don't allow them the dignity of their profession...classes don't teach students what most of them will need in their lives."
- 10. Several days a month are spent by most principals going back and forth to Butembo to arrange for the payment of teacher salaries.
- 11. Many principals at the teacher training schools have a close involvement with at least one elementary school in the immediate vicinity, which serves as a lab school. Some principals have direct administrative responsibility for this school.
- 12. During the course of the interviews, a number of principals expressed frustration at the systemic impediments to instructional leadership which they constantly face. The following comments, separated into general categories, are typical:

Teacher turnover

"Each year I get a new team of teachers. They use this as a starting point."

"Teachers around here are starting to look for jobs in Rwanda."

Teacher engagement

"Some teach at neighboring schools but a problem with this is that their loyalties are divided and they may give less attention to their work at (this school)."

"I have to keep an eye on the teachers so they don't just sit there."

"Teachers say, 'Let's eat first. We'll philosophize later.'"

Corruption

"Each month when I go for the teachers' pay, I am required to leave a bribe."

Physical facilities

"We charged each student 30 zaires extra for construction and we couldn't even finish a small office."

<u>Methodology</u>

"It really bothers me the way teachers just have students copy the text from the board..." <u>Personnel</u>

"The biggest problem here is finding qualified teachers."

"When it rains, the visiting teachers can't get here, so the students have to study on their own."

13. Principals keep busy at a wide range of activities, but most have a hard time defining just what it is they do.

> "I don't have a secretary so I'm running in all directions. I hardly know what job to start with in the morning."

> "I combine every kind of work there is: office work, monitoring students, supervising teachers, riding my bike back and forth, going to Butembo for instructions, passing along messages..."

"...church work, visits, committees, travelling..."

TEACHERS

1. Virtually all teachers supplement their income in one way or another. The most common way of doing this is by gardening. In many schools, teachers have insisted on a four-day work week to allow time for this. Many teachers also receive payment from students in various ways. It is considered acceptable for a teacher to require students to help in his/her field. Income from school gardens is frequently distributed among the teachers as well.

- Itinerant teachers (referred to as visiteurs) are commonplace. 2. teachers will teach at three different schools during the Some week, although officially they are only placed on the salary charts at one school. Mathematics teachers are particularly in demand. Arrangements for payment vary. One mathematics teacher works 22 hours a week at one school, 8 hours a week at a second and 4 at a third. In addition to his regular monthly salary of 1173 zaires (\$19), he receives 350 zaires (\$5.65) at the second school and 272 zaires (\$4.40) at the third. He also gets 100 zaires (\$1.60) in travel expenses from the third since it involves a four-hour round trip by bicycle each week. When it rains, he sleeps over. A teacher at a different school does a He works 20 hours at his own school and 8 hours little better. at another. He and another itinerant teacher share a full The other teacher works 9 hours and gets 9/17 of the salary. salary. He walks three hours one way.
- There is evidence of a great deal of transferring between schools within the district. Many teachers had taught at two or three other schools.
- 4. The inspectors stated the following impediments to teaching in the Butembo district: 1) the curriculum followed is too academic and not adapted to local conditions; 2) textbooks which follow the official curriculum don't exist; 3) lack of instructional materials; 4) low morale because of the salary situation; 5) teaching seen as a jumping off point (the metaphor of bouncing on

a trampoline was used); 6) the efforts required of teachers far outstrip the rewards; 7) the lack of teacher training ("we need a pedagogical reform"); 8) the lack of supervision given by principals in terms of class visits (this was attributed partially to the effects of recruitment irregularities: "teachers are chosen to be principal because they're the brother of this coordinator or that official or because whoever pays the most gets the job"); and 9) students are allowed to pass when they should be kept back. The inspectors speak nostalgically of "teaching like it was when teachers were paid enough and worked well".

- 5. The teaching profession has been nicknamed '<u>l'antechambre</u>'--the waiting room. It is a professional holding tank, providing contacts and often the opportunity to start out in business on the side, while receiving at least a minimal income on a regular basis.
- 6. A popular song in Zaire currently contains these words: "Don't let your daughter marry a teacher. She'll surely die of hunger." One principal reported asking the teachers to help come up with a list of objectives for the school and the teachers declined, saying: "Let's worry about eating first; we'll philosophize later."
- 7. Teachers teach an average of twenty to twenty-two hours a week. There is no school on Sundays and teachers receive a second day off known as a "journee pedagogique" (teacher preparation day).

In many schools, teachers have insisted on an additional day off to find ways to supplement their income. This makes scheduling difficult and as a consequence, students have free periods almost every day at some schools. In theory, no instructional time is lost but in practice, teachers often combine two or more class periods and teach it in less than the allotted amount of time.

 See Appendix J for a list of the rules which teachers at one school were expected to follow.

STUDENTS

- 1. When asked, students all state the same goal--to pass the state exams (preferably with 60% in order to qualify for university entrance). They are generally optimistic. A slogan on one blackboard read: 19 diplomas with omnipotence. (All 19 students did ultimately pass.) In spite of their optimism, there is a great deal of gallows humor on the topic of exams and the possibility of subsequent university attendance.
- 2. Students are subject to a variety of authoritarian requirements at many schools. (See Appendix J.) A sign on one door gives a list of cleaning duties with student names according to date, then:

"N.B. I insist on the conscientious and regular execution of these daily responsibilities: <u>sweep</u>, <u>dust</u> the classroom furniture (desks, tables, chairs), remove the <u>spider webs</u>. The

classroom monitors will inform the office of any recalcitrant students.

(Signature, date) The Principal"

- 3. Students are keenly aware of both poor quality teaching and poor quality administration. Comments heard include: "How can anyone learn anything with this little (i.e. underqualified) teacher? He's just a D6 (high school graduate)." "Our biggest problem is that the principal is not a "debrouillard" (a resourceful person)."
- 4. Students organize themselves into groups to prepare for the state exams. Occasionally, the principals will also help to organize these groups. The students are usually left free for several weeks before these exams but this year was an exception because the exams had been unexpectedly moved up by several weeks. Students were concerned that this would not allow them time to prepare. Invariably, they regarded the mathematics questionnaire as an excellent form of preparation and asked for copies to study from. They stayed long after they were done in order to ask questions and discuss answers.
- 5. Girls are much underrepresented, particularly at the Grade 12 level. The justification given at the Catholic schools for maintaining separate schools for girls was to enable them to have a fair chance at schooling. Only one of the Catholic girls' schools still refuses admission to boys, however.

6. A survey conducted by the principal at one of the Catholic girls' schools asked: What sorts of things would you like to see taught at this school? Answers included: how to keep a husband, how to act so our husbands won't beat us.

BUILDING QUALITY

- Parents in most areas are responsible for financing new construction. During an impromptu interview at one school, the president of a parents' committee complained that the principal kept all of the money they had raised for construction and used it himself.
- 2. The Catholic schools are generally the highest quality, but there is tremendous variation. Several schools are occupying buildings made for other purposes and left behind by the Belgians.
- 3. Almost no money is available for maintenance. Even the best schools need painting; broken windows are commonly replaced, if at all, by a piece of plywood. One second-floor classroom, where the buildings date only from 1954 but were abandoned for four years, has a plank floor with gaping holes where the planks have rotted away. The ceiling is sagging and broken away in several large areas. Stains along one side of the ceiling and along one wall indicate a serious leak.
- 4. Many classrooms have no teacher's desk or chair.

- 5. One classroom had a hole large enough to crawl through in one wall. Two students at the back of an adjoining class knelt down and watched the proceedings in the classroom where the researcher was explaining the use of the questionnaire. They remained there, undetected by their own teacher, for at least ten minutes.
- 6. Lizards are a fixture on the walls of some schools in the warmer areas. Angola Swallows nest under the eaves of another and constantly fly back and forth through the room, which has no window panes.
- 7. Almost all schools have a flag; all schools start the day with a flag ceremony and the singing of the national anthem.
- 8. It is uncommon for schools to share facilities but at one site, three separate schools use the buildings each day: the secondary school in the morning, a six-grade primary school and a two-grade secondary school in the afternoon. Several schools have morning and afternoon shifts, but teachers do not teach both. The principal is not generally present during the afternoon shift.
- 9. Principals scrounge around for materials wherever they can. The principal at one school sent a letter to a development agency out with the researcher. The principal at a business school was able to get several typewriters donated in 1981 and obtained three more last year through political connections. Church affiliations are important in the search for instructional

materials. The principal at one of the Baptist-sponsored schools was able to secure a donation of about one hundred books (for general reading) from a local Baptist businessman. The Catholic schools have a much better access to textbooks than do the others. These will not be sold to principals from the non-Catholic schools so these principals will frequently make arrangements for principals of Catholic-sponsored schools to make the purchases for them.

MISCELLANEOUS

- Church sponsorship does not necessarily mean that personnel or students will be predominantly from that church (although this tends to be so especially for the Protestant schools and, to a lesser degree, for the Catholic schools). At the only Moslem-sponsored school in the sample, there were no Moslem students or staff members. At a Kimbanguist high school (not in the sample because it does not run a six-year program) which was visited, only one of the teachers was Kimbanguist.
- 2. There has been a move toward decentralization of certain aspects of the educational process in Zaire over the past few years. The payment of salaries is the most obvious example of this. Until 1982, salaries were administered from Kinshasa and calculated by teacher. There was always a delay of at least one year before new teachers were paid and frequently, the names of individual teachers would mysteriously disappear from the lists sent out by the National Ministry, only to reappear several months later.

Salaries lost in this way were rarely recuperated. Now, salaries are administered from the provincial capital, Bukavu, and a total figure is calculated for each school. Individual teachers will receive more or less depending on their qualifications and experience, but all are paid regularly (if somewhat late) each expressed month. There is widely sentiment that а decentralization has been a good thing. There has been no decentralization of curriculum development or the administering of state exams, however.

- a strong commitment in the Butembo district to 3. There is vocational schooling. A literary section in Beni is being converted to general mechanics/ electricity. An automechanics school started recently in Lukanga is being upgraded to six-year Two four-year vocational schools operate in the status. Parents give strong support to this move. This may be district. because the trucking industry is one of the best-paying industries in the district and a job as a mechanic or as a driver is seen as a first step in owning a business.
- 4. The current mood regarding education in the Butembo district is somber. Not one of the many individuals formally and informally interviewed expressed any hope that things would improve at any time in the foreseeable future. This sense of futility is the second strongest impression to be gained in visiting with school personnel in the area. The strongest impression to be gained is that, for all of the problems, there remains an extraordinary

commitment to education. Students see it as the road to the future; many teachers show a willingness to make almost unimaginable sacrifices because they believe in what they are doing; many principals do the same.

CHAPTER FIVE

SUMMARY OF METHODOLOGY, FINDINGS, CONCLUSIONS AND IMPLICATIONS

Periods of educational change make heavy demands upon leadership. Programs for the education of secondary school administrators and other educational leaders are overdue in most African countries. -John Hanson (1971), p.22

Introduction

This chapter is divided into six parts: 1) a summary of the methodology used in the study; 2) a summary of the major findings; 3) limitations of the study; 4) conclusions; 5) an interpretation of the findings in the context of the literature review; and 6) practical and research implications.

Summary of methodology

In this study, the emphasis which secondary school principals in Zaire place on instructional leadership was examined in relation to schooling: mathematics achievement and the outcomes of two development of student self-esteem. Questionnaires were administered to 1017 students; interviews were conducted with 26 teachers, 15 principals and 3 inspectors in the Butembo district of the Kivu province in northeastern Zaire. A French/Swahili translation of the Coopersmith Self Esteem Inventories (Short Form) was used to collect self-esteem data. A French translation of selected items from the Second International Study of Mathematics (International Association for the Evaluation of Educational Achievement) was used to measure

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mathematics achievement. Only Grade 8 and Grade 12 students were included in the sample. Semi-structured interviews were conducted with the principals, teachers and inspectors. Principals were rated according to their emphasis on instructional leadership.

Summary of findings

The number system used in the summary of findings corresponds to the numbering found for the hypotheses listed in Chapters 1, 3 and 4. Additional findings not specifically tied to given hypotheses but arising from the developmental nature of the study are listed at the end of this section.

1. The emphasis which principals place on instructional leadership has a significant effect on student mathematics achievement, particularly at the Grade 12 level.

2. The emphasis which principals place on instructional leadership has a mild effect on the development of student self-esteem. A positive effect was found for Grade 12 students and a negative effect for Grade 8 students.

3. Principals' effect on mathematics achievement is generally independent of the academic ability of students enrolling at the school.

4. The emphasis which principals place on instructional leadership does not have an effect on students which grows significantly stronger the longer the student is at the school. (This finding may result in part from an inability to disaggregate confounding variables such as failure of courses and academic intake levels.)

5. Textbooks are associated with greater mathematics achievement only for students following the Grade 12 sciences option and for those students whose principals emphasize instructional leadership. Fewer than 7 percent of Grade 8 students and 23 percent of Grade 12 students possess a mathematics textbook.

6. The student's socioeconomic status does not affect her/his level of mathematics achievement.

7. The student's socioeconomic status does not affect his/her level of self-esteem.

8. The socioeconomic level of the classroom has a small, positive effect on mathematics achievement.

9. The socioeconomic level of the school does not in general affect the student's level of self-esteem.

10. There is no statistically significant correlation between mathematics achievement and student self-esteem for the schools studied.

11. Schools where students have higher self-esteem scores did not perform any better or any worse on state examinations over the past four years.

12. Schools with higher mathematics scores achieved greater success on the 1986 state examinations.

13. No significant correlation between gender and mathematics achievement was found.

14. Gender differences in self-esteem levels were found only for the Grade 12 sciences option, where females rate higher than males.

OTHER FINDINGS

a) The effect of principals' instructional leadership, while not dependent on either the academic intake levels of the schools or the socioeconomic status of the school, may nevertheless be influenced by these variables. Principals in schools with either higher academic intake levels or higher socioeconomic status tend to emphasize instructional leadership more than do principals in other schools. b) National examination results are significantly correlated with teacher experience and qualifications.

c) Gender differences are particularly noticeable in terms of access to schooling, with females much less likely than males to complete twelve years of schooling.

d) The level of the mother's education is highly predictive of whether females will remain in school.

e) The number of classroom visits and the number of faculty meetings correlate highly with mathematics achievement and pass rates for the Grade 12 national examinations.

f) Schools applying stricter admissions criteria achieve higher rates of success on the national examinations.

g) The female principals in the study emphasize instructional leadership much more than do the male principals; the schools run by female principals consistently outperform the schools run by male principals both for mathematics achievement and pass rates for the national examinations.

h) Strategies used by principals to cope with resource scarcity include: 1) hiring itinerant teachers, 2) granting a four-day work week to enable teachers to obtain supplementary employment, 3) an increased teaching load, 4) <u>matabishi</u> (unauthorized payments solicited from students or parents), 5) increased study time for students under the supervision of a monitor, 6) solicitation of financial and material support from the community.

Limitations of the study

instructional leadership on the part of The exercise of principals is necessarily linked to teacher activities. An important limitation of this study, however, is that little information was gathered about teachers and teacher activities. The two teacher variables about which data were collected, years of teacher experience and level of teacher qualifications, both proved to be consistently correlated with mathematics achievement and state examination pass rates. It can be assumed that closer attention to teacher activities would have further illuminated the leadership role of the principal. (High turnover rates and low teacher morale are examples of two teacher variables which appear of importance to the topic under study but which were not dealt with at length.)

An important limit to the generalizability of the study is that the Butembo district appears to be highly atypical, at least insofar as pass rates on the Zairian national examinations are concerned. Pass rates in this district have the reputation of being, and were indeed found to be, much higher than the national average. While this may lessen the possibility of generalizing to other Zairian schools, however, it also increases the likelihood of finding and describing effective management patterns and practices. One further limitation of the current study is the generally low level of reliability found for the self-esteem questionnaire (Cronbach's alpha equal to .40 and .49 for Grades 8 and 12 respectively). This may, at least in part, account for the generally low correlations found between self-esteem levels and a broad range of independent variables.

A final limitation is the cross-sectional nature of much of the study, which does not permit causal inferences based on changes over time. This has particularly restricted the discussion of academic intake. Also, a lack of time spent observing individual schools and principals limited knowledge about the degree of actual instructional leadership exercised by the principals. Because of this, it has only been possible to measure the emphasis which principals place on instructional leadership. Placing an emphasis on instructional leadership and actually exercising it are two separate constructs, although they may be presumed to be highly correlated.

<u>Conclusions</u>

This section has been kept brief by conscious design. The study was exploratory in nature and it would be presumptive at this point to draw other than preliminary conclusions.

1. Direct principal/teacher contacts appear to be by far the most important component of instructional leadership in Zaire. The number of classroom visits and the number of faculty meetings are both consistently correlated with important instructional outcomes. 2. Effectiveness in promoting instructional goals may not necessarily lead to the attainment of valued non-cognitive outcomes, particularly where equity concerns are given low priority. There is evidence, for instance, that Grade 8 students, who tend not to receive the particular attention of the principal and for whom teacher expectations may be lower, actually develop lower self-esteem at schools where principals emphasize instructional leadership.

3. The effect of out-of-school factors on mathematics achievement appears to be relatively small; the effect of schooling and school characteristics appears to be relatively great.

Interpretation

The finding that principals who emphasize instructional leadership have a significant influence on mathematics achievement is consistent with the effective schools research. The evidence suggests that the sorts of bargaining described in much of the current literature on schools as non-rational organizations are not characteristic of schools in Zaire, where staff and students alike are generally in agreement concerning broad instructional goals. The high dropout rate which is not only tolerated but frequently encouraged increases the likelihood that those who remain in the system will form a relatively homogeneous group with respect to overall educational goals.

The finding that the socioeconomic status of individual students does not account for a significant degree of the variation in mathematics achievement is consistent with the findings of Heyneman (1983, 1984) and Currie (1977), but not with the findings of Mukweso et al. (1979) and Sheline et al. (1979). These findings are also counter to the findings of Simmons and Alexander (1978). The finding that classroom SES levels do appear to affect achievement, on the other hand, suggests that a more complex multilevel model of school and family effects may be able to reconcile some of the apparent differences described in the literature. Even when classroom SES levels are considered, however, the overall impact on achievement is relatively low.

The difference between the findings dealing with SES in this study and the data described by Mukweso and Sheline may be that those studies were national in scope and would have included a much more diverse group of students in terms of SES. While variations in SES certainly do exist in the Butembo district, there is relative homogeneity, particularly with respect to cultural and economic opportunities. Socioeconomic status may also have a more highly differentiated impact in urban environments. It may also be that there exists a threshold level beyond which socioeconomic factors become important; this level may not have been reached as yet for most students in the Butembo district. A final factor rendering the effects of SES difficult to gauge is that higher socioeconomic status in some areas of the Butembo district appears to lead to more employment opportunities without the need for schooling. This may mean that students with higher socioeconomic status are placing their energies in other than scholastic endeavors.

The finding that academic intake does not appear to significantly influence academic achievement may be reflective of the generally low level of academic intake more than anything else. At the one school where the students were clearly more academically capable coming in, they were also more academically capable going out. There is evidence, however, that principals in schools with low academic intake and low socioeconomic status were able to positively influence student outcomes. School 6 ranked among the lowest in both of these constructs, yet the principal had inaugurated the most ambitious program of any of the schools to emphasize instruction and the Grade 8 students scored higher than any others in the study.

A caveat is in order at this point regarding the interpretation of many of these findings. Zaire's teachers are among the lowest paid in the world (averaging \$12 to \$15 monthly) and morale is almost universally low. This may mean that under these circumstances, the level of teaching is so low that a principal who rises "above the pack" and succeeds in achieving a consensus as to instructional goals may have a differentially greater impact than in countries where the level of teaching is already higher. Conversely, the impact of principals may be obscured by a number of confounding variables which were not controlled for in this study. This certainly appears to be the case at School 15, for instance, where the principal received the highest rating in the sample but where teacher turnover is also higher than elsewhere in the sample because of relatively attractive career alternatives.

Implications

RESEARCH

1. The overall context of instructional leadership in Zaire remains unclear. A priority of future research must be to determine which leadership practices and processes are most associated with improved student outcomes. The complexity of schooling in Zaire means that these studies would probably be of more value if the interactions of inputs and processes are examined rather than an approach which attempts to identify discrete variables or inputs which affect student outcomes.

2. Studies employing a pre-test post-test design are needed to provide a more adequate control of academic intake at the schools and of the differential impact of instructional leadership on identifiable subgroups of students.

3. Supervision of instruction is one area which provides great research potential since it is widely practiced in one form or another, with principals generally incorporating supervision into their understanding of what it is that principals "should" do. A worthwhile area of investigation is the differential impact of supervision when it is used for control and when it is used for instructional improvement (or when it is used for both, which may be more typical).

4. In this study, principals were found to actively screen student admissions only on the basis of academic achievement. This

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will certainly mean that students from regions with lower quality primary schools will be restricted from secondary schooling. It may also result in lower female participation in schooling. Research is needed to determine whether the principals' role in promoting or failing to promote equity is consistent with national objectives of increasing access to schooling.

5. The relationship between instructional leadership, student outcomes, and subsequent employment opportunities has not yet been fully explored in the context of a developing country. If principals are "effective" in promoting academic achievement but not "effective" in promoting subsequent employment, there may be a legitimate question as to whether this is the sort of effectiveness which is needed. Again, this points up the need for research which takes into account the multiple objectives of schooling.

6. The principals' role in recruiting and retaining teachers in Zaire merits careful research attention. Are there ways in which principals creatively "bend the rules" to facilitate teachers' collaboration in the attainment of instructional objectives? The four-day work week, the hiring of itinerant teachers and the rearranging of schedules at the larger schools to provide a salary for a vice-principal of instruction are three ways which come to mind. What are the positive and negative effects of these practices? Does the good outweigh the bad?

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7. What is the role of <u>matabishi</u> in secondary school administration in Zaire? Research into this sensitive area will need to investigate the impact of <u>matabishi</u> on both equity and the quality of teaching. Are there only negative impacts? Does it serve as a form of unofficial privatization? What sorts of implements do policy makers control in order to change current practices?

8. The cost-effectiveness of pre-service and in-service training programs for principals merits serious research attention.

9. Research is needed into how principals can manage innovative approaches to instructional improvement in times of extreme resource scarcity and increased demographic pressure. Facility-sharing, multiple shifts, every-other-day instruction, and cross-age peer tutoring are several approaches which may be worthy of research attention.

10. More carefully refined measures are needed to shed light on how schooling contributes to the development of self-esteem and other non-cognitive outcomes.

11. Ethnographic studies of outlier schools are potentially of considerable value. In the present study, for instance, Schools 3 and 4 have shown consistent stability of academic excellence over the past four years. One of these schools is low SES and one is high SES, providing an opportunity for meaningful contrasts and a deeper understanding of instructional leadership under varying conditions. The principal of School 6 has shown a remarkable commitment to instructional innovation with apparent success. Long-term results are well worth researching. Also, the pilot school for this study has demonstrated high self-esteem levels and high mathematics achievement, along with consistently high national examination pass rates. The explanatory potential of ethnographic studies at these and other schools could lead to a greatly enhanced understanding of instructional leadership and effective schooling in Zaire.

Practical implications

1. It would seem reasonable to begin programs at the tertiary level to train principals in Zaire. In a situation of intense resource scarcity, it may not be possible to give all teachers an optimal level of training, but it may be much more cost-effective to train a principal and give him/her responsibility for the instructional organization of the school.

2. Increasing the opportunity for sharing knowledge and ideas through workshops and in-service programs is a potentially cost-effective means of improving student outcomes by improving principal capabilities. Even the publication and diffusion of a simple newsletter dealing with effective instructional leadership would be helpful.

3. Virtually all principals have access to radios--regular radio programs could serve to update principals in terms of trends in supervision and instruction.

4. A strengthening of the collaborative role of the inspectors would be one means of improving instruction and providing the principals with guidance and feedback. Inspectors could also organize seminars for principals and teachers, etc.

5. A decentralization of the curriculum would afford principals, teachers and inspectors an opportunity to design a program adapted to the varying realities of life in the context in which students study. This would also provide for greater parental input.

6. A focus on the contact points between principals and teachers may hold the promise of further improving instruction. The forms currently used widely for instructional supervision, for instance, could be re-evaluated and re-designed in the light of research findings to provide greater assistance and support for teachers.

7. Women are very much underrepresented at all levels of education in the Butembo district and, indeed, throughout Zaire, yet their contribution far outweighs their numbers. They represent a vastly under-utilized resource in an area where resources are scarce. A greater concern for equity here may lead to quality payoffs as well. APPENDICES

APPENDIX A

Instruments used for data collection

- 1. Demographic questionnaire (students)
- 2. Coopersmith Self-Esteem Inventories (French, Swahili)
- 3. Mathematics questionnaires
- 4. Principals' interview schedule
- 5. Teachers' interview schedule

DEMOGRAPHIC QUESTIONNAIRE (Students)

The demographic questionnaire, the self-esteem questionnaire, and the mathematics questionnaire were stapled together and completed by the students at one sitting. Note that the numbering system is sequential and that the last of the demographic questions followed the mathematics questionnaire. It was numbered 71 on the Grade 8 questionnaire and 65 on the Grade 12 questionnaire. Individual questions appear here exactly as on the questionnaires filled out by the students, but there are differences in pagination.

INTRODUCTION

Le questionnaire qui suit est en deux parties. Il vous faudra environ une heure pour le compléter. La première partie vous posera des questions à propos de vous-même--qu'est-ce qui vous plaît, qu'est-ce qui ne vous plaît pas, etc. La deuxième partie est un examen de mathématiques. Puisque cette partie est tirée d'un examen international qui a été donné en plus de 20 pays, il peut y avoir des questions sur des sujets que vous n'avez pas étudiés. Ceci est tout à fait normal. Veuillez continuer avec les questions auxquelles vous pouvez répondre.

Votre participation est volontaire et vous avez le droit de ne pas continuer. Ce test ne constitue pas une partie du cours régulier et n'aura aucune influence sur les côtes. Si vous ne voulez pas continuer, il n'y aura aucune peine. Si vous acceptez de continuer, vous avez le garanti de l'anonymité. Veuillez ne pas mettre votre nom sur le questionnaire ou sur la feuille des reponses.

Les résultats de cette étude contribueront à une meilleure compréhension des écoles secondaires au Zaire. Merci d'avance pour votre coopération. Quand vous aurez terminé, vous pouvez garde \boldsymbol{r} le crayon en guise de remerciement. Veuillez commencer maintenant avec le numéro 1.

- 1. Indiquer votre sexe 0. féminin 1. masculin
- 2. Indiquer votre age
 - 0. 17 ans ou moins
 - 1. 18 ou 19 ans
 - 2. 20 ou 21 ans
 - 3. 22 ou 23 ans
 - 4. 24 ou 25 ans
 - 5. plus de 25 ans

3. Indiquer l'éducation du père 0. 1 an ou moins 1. 2 à 4 ans 2. 5 ou 6 ans 3. 7 a 9 ans 4. 10 à 12 ans 5. plus de 12 ans 4. Indiquer l'éducation de la mère 0. 1 an ou moins 1. 2 à 4 ans 2. 5 ou 6 ans 3. 7 à 9 ans 4. 10 à 12 ans 5. plus de 12 ans 5. A la fin de juin, cela fera combien d'années que vous aurez étudié à cette école? 0. 1 an 4. 5 ans 1. 2 ans 5. 6 ans 2. 3 ans 6. plus de 6 ans 3. 4 ans

71. Est-ce que vous avez le texte de mathématiques?

0. oui

۰.

1. non

PLEASE NOTE:

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These consist of pages:

Coopersmith Self-Esteem Inventories (French translation)

P. 163-180



300 N Zeeb Rd., Ann Arbor, MI 48106 (313) 761-4700

COOPERSMITH SELF-ESTEEM INVENTORIES (French translation)

Following is the French-language translation of the Coopersmith Self-Esteem Inventories used by all students in the study. It is followed by the Swahili version which was used orally with the same students to improve comprehension.

Coopersmith Self-Esteem Inventory Author: Stanley Coopersmith Copyright date: 1981 Publisher: Consulting Psychologists Press, Inc. Translator: R. Prouty Translation date: May 22. 1986

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Pour les prochaines 25 questions, mettez '0' si la phrase vous décrit et 'l' si la phrase ne vous décrit pas. C'est-à-dire, O si vous dites, 'Oui, je suis comme cela' et l si vous dites, 'Non, je ne suis pas comme cela'.

6.	D'habitude, les choses ne me genent pas facilement.
	0. oui 1. non
7.	C'est difficile pour moi de parler devant toute la classe.
	0. ouí 1. non
8.	J'ai beaucoup de traits que je changerai^s si possible.
	0. oui 1. non
9.	Je peux faire des décisions facilement.
	0. oui 1. non
10.	Les gens aiment être avec moi.
	0. oui 1. non
11.	Je suis souvent mécontent(e) chez moi (a la maison).
	0. oui 1. non
12.	Je prends beaucoup de temps avant de m'habituer à ce qui est nouveau.
	0. oui 1. non
13.	Je suis très populaire avec ceux qui ont le même age que moi.
	0. oui 1. non
14.	D'habitude, ma famille prend mes sentiments en consideration.
	0. oui 1. non
15.	Je cede tres facilement aux autres.
	0. oui 1. non
16.	Mes parents s'attendent à trop quant à ce que je ferai de ma vie.
	0. oui 1. non
17.	Vivre comme moi, c'est très difficile.
	0. oui 1. non
18.	Les choses sont très troublées dans ma vie.
	0. oui 1. non
19.	D'habitude, les gens suivent mes idées.
	0. oui 1. non
20.	Je n'ai pas une bonne opinion de moi-meme.
	0. oui 1. non
21.	Il y a beaucoup de fois que j'ai voulu quitter la maison pour du bon.
	0. oui 1. non
22. Je suis souvent malheureux (malheureuse) à l'école. 0. oui 1. non 23. Je suis moins beau (belle) que la plupart des autres. 0. oui 1. non 24. S'il y a quelquechose que je veux dire, d'habitude je le dis sans hésiter. 0. oui 1. non 25. Mes parents me comprennent. 1. non 0. oui 26. La plupart des gens ont plus d'amis (amies) que moi. 0. oui 1. non 27. Je sens souvent que ma famille me pousse trop à réussir. 1. non 0. oui 28. Je suis souvent découragé(e) à l'école. 0. oui 1. non 29. Je pense souvent que ce serait mieux si j'étais quelqu'un d'autre. 0. oui 1. non 30. On ne peut pas avoir confiance en moi. 0. oui 1. non

COOPERSMITH SELF-ESTEEM INVENTORIES (Swahili translation)

Following is a translation of the Coopersmith Self-Esteem Inventories into Kingwana, the dialect of Swahili used in eastern Zaire. Because of the relatively low level of French comprehension of the Grade 8 students in particular, each question was read in Kingwana after being read in French. Students did not have printed copies of the Kingwana translation. For the three questions where further explanations in Nande were given, these follow the Kingwana version in square brackets.

Kwa maswali 25 inayofuata, muweke '0' mukiona kama swali ile ni kweli kwako. Mukiona kama swali ile si kweli kwako, muweke '1'. Maana yake, muweke '0' mukijisemea, 'Ndiyo, ninajiona vile' na muweke '1' ikiwa munajisemea, 'Hapana, haiko vile kwangu.'

- Zaidi, mambo ya maisha haiwezi kunihuzunika sana.
 [ebindu by'eribyaho sibyangatoka erinyitsandya obuli ndambi]
- 7. Kusema mbele ya wanafunzi wote, ni nguvu kwangu.
- 8. Kuna mambo mingi kwangu (maana yake, kwa maisha yangu) ningegeuka ningaliweza.
- 9. Ninaweza kukata shauri (au kuchagua) bila shida.

10. Watu wanapenda kuwa pamoja na miye.

11. Mara mingi, ninajisikia mubaya mu nyumba (maana yake, sifurahi.)

- 12. Inanifaa muda murefu mbele ya kuzoea vitu vipya au watu wapya.
- 13. Ninapendezwa na wale wenye umri yangu.
- 14. Zaidi, jamaa yangu inaweza kuuliza mawazo yangu.
- 15. Wengine wakiuliza kitu fulani, ninaweza kukubali tu.
- 16. Wazazi wangu wanakuwa na mawazo juu zaidi kama nitafanya nini na maisha yangu.
- 17. Kuishi saa miye, iko nguvu sana.
- 18. Mambo ya maisha yangu, iko nguvu sana.
- 19. Zaidi, watu wanafuata mawazo yangu. [abandu bakakwama amalengekanya wage]
- 20. Ninapojaribu kufikiri juu yangu, au juu ya maisha yangu, ninawaza kama si vizuri sana.
- 21. Kuna mara mingi nilipotaka kutoka mu nyumba na kuwenda tu, bila kurudia tena.
- 22. Mara mingi, sifurahi mu masomo.
- 23. Wengine wananipita kwa uzuri wa uso.
- 24. Ikiwa kuna kitu fulani ambacho ninataka kukisema, basi, niko naisema tu, bila kusitika.
- 25. Wazazi wangu wananisikia.
- 26. Zaidi, wengine wako na rafiki mingi kupita miye. [abandi bawite abira bangi kwilaba ingye]
- 27. Ninasikia mara mingi kama jamaa yangu inanishukuma muno ili nipate kuweza.
- 28. Mara mingi, mu masomo, ninasikia kama siwezi.
- 29. Mara mingi, ninawaza kama ingekuwa vizuri zaidi niwe mutu mwengine, maana yake, nisiwe mimi mwenyewe.
- 30. Watu hawawezi kuniamini.

MATHEMATICS QUESTIONNAIRE (Grade 8)

MATHEMATIQUES A

31. 2 metres + 3 millimetres -0. 2,0003 metres 1. 2,003 metres 2. 2,03 metres 3. 2,3 metres 4. 5 metres 32. 1/5 est égal à 0. 0,20% 1. 2% 2. 5% 3. 20% 4. 25% 33. Si 5x + 4 = 4x - 31, alors x est égal à 0. -35 . 1. -27 3 2. 3. 27 4. 35 34. Une mère a mis quatre bols de riz sur la table. Chaque bol

contenait l litre. Quand la famille a terminé son repas, il restait l bol vide, 2 bols remplis à moitié et un bol rempli a trois-quarts. Combien de litres de riz la famille avait-elle mangé?

3 3/4
 2 3/4
 2 1/2
 1 3/4
 Aucune de ces réponses.

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	6,9	m
8:8 m		

Laquelle des réponses suivantes donne la meilleure approximation de l'aire du rectangle?

 $\begin{array}{ccccc} 0. & 48 & m^2 \\ 1. & 54 & m^2 \\ 2. & 56 & m^2 \\ 3. & 63 & m^2 \\ 4. & 72 & m^2 \end{array}$



La longueur de AB est 1 unité. Quelkest la longueur de PQ?

0. 2 unités 6 unités 1. 2. 10 unités 14 unités 3. 4. 18 unites 39. Sur l'échelle en haut, la flèche indique un point entre 0. 51 et 52 1. 57 et 58 2. 60 et 62 3. 62 et 64 4. 64 et 66

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40. Un cube solide en plastique pèse 1 gramme. Chaque côté de ce cube mesure 1 centimètre de longueur. Combien pesera un cube solide en plastique semblable si chaque côté mesure 2 centimètres de longueur?

- 0. 8 grammes 1. 4 grammes
- 2. 3 grammes
- 3. 2 grammes
- 4. 1 gramme

41. Sur une droite, deux points A et B sont donnés. La coordonnée de A est -3 et la coordonnée de <u>B</u>est +7. Quelle est la coordonnée du point C, si B est le mi-point du segment AC?

> 0. -13 1. -1/2 2. +2 3. +12 4. +17

42. Un peintre doit mélanger les couleurs vert et jaune dans la proportion de 4 à 7 afin d'obtenir la couleur voulue. S'il a 28 litres de peinture verte, combien de litres de peinture jaune devra-t-il ajouter?

0. 11 1. 16 2. 28 3. 49 4. 196

43. Si P - LW et si P - 12 et L - 3, alors W est egal a

0. 3/4 1. 3 2. 4 3. 12 4. 36

44. Un bateau construit en miniature est 1/10 de la longueur du bateau original. Si la largeur du bateau original est de 4 mètres, la largeur du bateau en miniature doit être

- 0. 0,1 metre
- 1. 0,4 metre
- 2. 1 metre
- 3. 4 mètres
- 4. 40 metres

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45. La valeur de 0,2131 x 0,02958 est environ

- 0. 0,6
- 1. 0,06
- 2. 0,006
- 0.0006 3.
- 4. 0,00006

46. (-2) x (-3) -

- 0. -6
- 1. -5
- 2. -1
- 5 3.
- 4. 6







48. Si 4x = 0, alors x est égal à 12



La circonference du cercle avec centre 0 est 24, et la longueur de l'arc RS est 4. Quelle est la mesure en degrés de l'angle ROS ?

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- 0. 24 1. 30 2. 45 60 3.
 - 4. 90

50. Dans une compétition, quelqu'un a jeté une pierre 61,60 metres. Quelqu'un d'autre a jeté une pierre 59,72 metres. Combien plus loin est-ce que la première pierre était jetée?

> 0. 1,12 metres 1. 1,88 mètres 2. 1,92 mètres 2,12 mètres 3. 4. 121,32 metres



Dans le diagramme en haut, les triangles ABC et DEF sont des équivalents, avec BC - EF. Quelle est la mesure de l'angle EGC?



Un carre a été enlevé du rectangle ci-haut. Quelle est l'aire qui reste?

> 316 m² 300 m² 284 m² 80 m² 16 m² 0. 1. 2. 3. 4.

54. Le tissu est vendu par le metre carré. Si 6 mètres carrés de tissu coutent 480 zaires, alors le prix de 16 mètres carres sera

> 0. 1.280 zaires 1.440 zaires 1. 2. 2.880 zaires 3. 5.280 zaires 4. 12.800 zaires

55. La temperature de l'air au pied d'une montagne est de 31 degrés. En haut de la montagne la temperature est -7 degrés. Combien plus chaud est l'air au pied de la montagne?

> 0. -38 degrés 1. -24 degrés 2. 7 degrés 3. 24 degrés 38 degrés 4.

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56. $0,40 \ge 6,38 =$

0. 0,2552 1. 2,452 2. 2,552 3. 24,52 4. 25,52

57. Un commerçant possède x kilos de thé. Il vend 15 kilos et puis il reçoit 2y kilos. Combien de kilos possède-t-il maintenant?

> 0. x - 15 - 2y1. x + 15 + 2y2. x - 15 + 2y3. x + 15 - 2y4. Aucune de ces réponses

58.

Dans la figure, les petits carrés sont tous de la même grandeur et l'aire du rectangle entier est égal à 1. L'aire des carrés noirs est égal à:

- 0. 2/15 1. 1/3 2. 2/5
- 3. 3/8
- 4. 1/2

59. D'habitude, la distance entre deux villes est mesurée en:

- 0. millimètres
- 1. centimètres
- 2. decimètres
- 3. mètres
- 4. kilomètres
- 60. Le tableau en bas compare la distance qu'une balle tombe (d) et la distance qu'elle rebondit (r).

d	50	80	100	150
r	25	40	50	75

Quelle équation décrit cette relation?

0. $r = d^2$ 1. r = 2d2. r = d/23. r = d + 254. r = d - 25

61. 2/5 + 3/8 =0. 5/13 1. 5/40 2. 6/40 3. 16/15 4. 31/40 62. 7 3/20 est égal à 0. 7,03 1. 7,15 2. 7,23 3. 7,3 4. 7,6 63. Dans une école de 800 eleves, 300 sont des garçons. Le nombre de garçons par rapport au nombre de filles est 0. 3:8 1. 5:8 2. 3:11 3. 5:3 4. 3:5 64. 20 est quel pourcent de 80? 1. 20% 3. 40% 4. Aucune de ces réponses 0. 4% 2. 25% 65. La phrase " un numéro x diminué par 6 est moins de 12" peut être écrite comme l'inégalité suivante: 0. x - 6 > 121. $x - 6 \ge 12$ 2. x - 6 < 123. $6 - x \ge 12$ 4. 6 - x < 1230 est 75% de quel numéro? 66. 0. 40 1. 90 2. 105 3. 225 4. 2250 67. Lequel des points A, B, C, D, E sur la droite correspond à 5/8?

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0. point A 1. point B 2. point C 3. point D 4. point E

68. 20% de 125 est égal à

0. 6,25 1. 12,50 2. 15 3. 25 4. 50

69.



Quelles sont les coordonnées du point P?

0. (-3,4) 1. (-4,-3) 2. (3,4) 3. (4,-3) 4. (-4,3)

70.

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Les triangles PQR et STU sont semblables. Quelle est la longueur de SU?

0. 5 1. 10 2. 12,5 3. 15 4. 25

MATHEMATICS QUESTIONNAIRE (Grade 12)

MATHEMATIQUES B

31. a - (b + (c - d)) =
0. a - b + c - d
1. a - b - c + d
2. a - b - c - d
3. a - b + c + d
4. aucune de ces reponses

32. La courbe y = 3x(x - 2)(2x + 1) intersecte l'axe des ordonnées (x) uniquement aux points suivants:

0. (-2, 0) et (1/2, 0)
1. (2, 0) et (-1/2, 0)
2. (3, 0) et (-2, 0) et (1/2, 0)
3. (3, 0) et (2, 0) et (-1/2, 0)
4. (0, 0) et (2, 0) et (-1/2, 0)

33. Quelle est la transformation complexe associée à la similitude s directe telle que: B = s(A) et C = s(B)

avec A(0,1) B(-1,0) C(0,-3)

0. z' = (1 + 2i) z + 1 - i1. z' = (1 - 2i) z + 1 + i2. z' = (1 - i) z + 1 + 2i3. z' = (1 + 2i) z4. aucune de ces réponses

34. Les fonctions f et g sont définies par f(x) = x - 1et $g(x) = (x + 3)^2$

g(f(x)) est égal à

0. $(x - 1)(x + 3)^2$ 1. $(x + 3)^2 - 1$ 2. $(2x - 2)^2$ 3. $(x + 2)^2$ 4. $x^2 + 8$ 35. Le diagramme montre le graphique de la fonction cubique f.



La seule équation possible qui décrit cette fonction est la suivante.

f(x) =

- 36. Quelle est la somme de la serie géometrique infinie qui suit? 1 - 1/2 + 1/4 - 1/8 + ...
 - 0. 5/8 1. 2/3
 - 2. 3/5
 - 3. 3/2
 - 4. 🗙
- 37. $\int_{0}^{1} \frac{12 x}{(2 x^{2} + 1)^{2}} dx$ est égal à 0. -2 1. -1 2. 2 3. ln 2 4. 3 ln 3

38. Equation A $y = 6x - x^2$ Equation B y = 2xSi 0 < x < 5, pour quelles valeurs de x est-ce que l'équation B sera plus grande que l'équation A?

> 0. 0 < x < 41. 0 < x < 52. 3 < x < 53. 3 < x < 44. 4 < x < 5

39. Un côté d'un triangle equilatéral est sur l'axe des ordonnées. La somme des pentes des trois côtés est:

> 0. 0 1. -1

40. Pour l'équation $x^2 - 5x + 6 + 0$

0. il n'y a aucune solution 1. il y a exactement une solution 2. il y a exactement deux solutions 3. il y a exactement trois solutions 4. il y a plus de trois solutions

41. Le symbole P/Q représente l'intersection des ensembles P et Q, et le symbole PUQ représente l'union des ensembles P et Q. Lequel des suivants représente ce qui est en noir ici-bas?



42. P est un polynôme en x de degré m, et Q est un polynôme en x de degré n, avec n < m. Le degre du polynôme (P + Q) (P - Q) est

> 2m m² 0. 1. 2. mn 3. n^2 4 m²

4.

43. Quelle est l'équation de la droite qui passe par le point (0, -5) et qui est parallèle à la droite représentée par l'équation y = 2x + 3?

> 0. x + 2y + 5 = 01. 2x - y - 5 = 02. 2x + 3 = -53. 2x - 5y + 3 = 04. 2x + y + 5 = 0

44. Lequel des suivants est négatif?

0. sin 511/2 1. sin 578 2. tg 576 3. tg 576 4. cos 577

45. Lesquels des suivants, (x - 1), (x - 2), (x + 2), (x - 4) sont des facteurs de $x^3 - 4x^2 - x + 4$? 0. (x - 1) seulement 1. (x - 1) et (x + 2)2. (x - 2) et (x + 2)3. (x + 2) et (x - 4)4. (x - 1) et (x - 4)46. Le nombre complexe $(1 + i)^2$ est égal a 0. 0 1. 2 2. 21 3. 1 + 14. 2 + 2i47. Si $\cos\theta = 1/2$, alors $\cos 2\theta$ est égal à 0. -1/2 1. 1/2 2. - 3/2 3. 3/2 4. 1 48. $\lim_{x \to +\infty} \frac{(2x + 1)(x + 1)}{3x^2 - 2}$ est egal à 3. 6 4. 00 0. -1/2 1. 2/3 2. 1 49. La pente de la droite qui passe par les points (-1, 3) et (4, -7) est 0. -1/2 1. -3/4 2. -4/3 3. -2 4. -10/3 50. La courbe ici à côte représente laquelle des équations suivantes? y 10 0. y = (1 - x) (x - 2)1. y = (1 - x) (2 - x)2. $y = (1 - x) (2 - x)^2$ 3. $y = (1 - x)^2 (x - 2)^2$ 4. $y = (1 - x)^2 (2 - x)^2$

51. Un précepteur doit arranger pour qu'un certain nombre de garçons occupe un dortoir. S'il y a deux garçons dans chaque chambre, alors il y aura deux garçons sans chambre. S'il y a trois garçons dans chaque chambre, alors il y aura deux chambres qui restent vides. Combiens de chambres y a-t-il dans le dortoir?

0. 6 1. 8 2. 10 3. 12 4. 14

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52. Lequel des suivants représente le graphique de $y - x^4 - x^2$



- 53. Soit $\log_b 2 = 1/3$, alors $\log_b 32$ est égal à
 - 0. 2 1. 5 2. -3/5 3. 5/3 4. $\frac{3}{\log_2 32}$

54. Soient x et y des nombres réels, pour quels x peut-on définir y par

 $y = \frac{x}{\sqrt{9 - x^2}}$ 0. Tout x sauf x = 3 1. Tout x sauf x = 3 et x = -3 2. x < -3 ou x > 3 3. -3 < x < 3 4. x < 3

55. A quel point est-ce que $y = 3x^2 - x$ a un minimum local?

0. (2,4) 1. (3,0) 2. (1,2) 3. (0,3) 4. (0,0)

56. De combien de manières peut-on ranger sur une étagère de bibliothèque, 5 gros livres, 4 livres moyens et 3 livres minces, sachant que les livres de meme grosseur restent voisins?

> 0. 5! 4! 3! 3! = 1036801. 5! 4! 3! = 172802. $(5! 4! 3!) \times 3 = 51840$ 3. $5 \times 4 \times 3 \times 3 = 180$ 4. $2^{12} \times 3 = -12288$

57. Soit Eun espace affine de dimension 3 et $(0, (\vec{1}, \vec{j}, \vec{k}))$ un répère orthonorme de É. Soit f l'application de É dans É qui a tout point M de coordonnées (x,y,z) associe le point M' de coordonnées (X', y', z') définies par: x' = z + 1y' = x + 1z' = y + 1Laquelle des propositions suivantes est vraie? 0. f est une translation 1. f est une symétrie orthogonale par rapport à un plan 2. f est une rotation 3. f est un vissage 4. f est une symetrie orthogonale par rapport à une droite 58. Une fonction f est paire et dérivable en 0. Quelle propriete doit satisfaire f'(0)? 0. f'(0) = 11. f'(0) > 02. f'(0) < 03. f'(0) = 04. f'(0) peut prendre n'importe quelle valeur. 59. Si log N = n, alors log N² est égal à 0. n + 21. n^2 2. n/23. 2n 4. n - 2 60. Sur une droite, deux points A et B sont donnés. La coordonnée de A est -3 et la coordonnée de B est +7. Quelle est la coordonnée du point C, si B est le mi-point du segment \overline{AC} ? 0. -13 1. -1/2 2. +2 3. +12 +17 4. 12 10 centimètres 61. 9 6 4 Z Semaines 8 9 10 11 12 13 6 7 . 5 3 2 1

Dans la figure, on indique combien de centimetres de pluie sont tombées pendant 13 semaines. La moyenne par semaine est environ

0.2 cm 1.4 cm 2.6 cm 3.8 cm 4.10 cm

62. Si sy - 1 et x est superieur à 0, lequel des suivants est vrai?

Quand x est supérieur à 1, y est négatif.
Quand x est supérieur à 1, y est supérieur a 1.
Quand x est inférieur à 1, y est inférieur a 1.
Quand x augmente, y augmente.
Quand x augmente, y diminue.

63. Si 2x² - 12x + 9 = 2 (x - a)² + b, alors

a = -3 et b = -9
a = -3 et b = -9
a = -3 et b = 27
a = 3 et b = 27

64. La courbe définie par y = x³ - ax + b contient un point minimum relatif à (2,3). Les valeurs de a et de b sont

a = 8 1/2 et b = 12
a = 12 et b = 8 1/2
a = 12 et b = 19
a = 19 et b = 12
a = 19 et b = 32

1

FIN

INTERVIEW SCHEDULE (Principals)

The 15 question groups listed were used to frame the interviews with the principals. They represent general topics which were then often discussed in considerably greater detail. They are all given first in French, followed by an English translation. The questions were not necessarily worded exactly as given here. Often there was a short conversational lead-in to soften the impact of the question, particularly if the question could be seen as sensitive.

1. Est-ce que vous-même vous vous occupez des visites de classe? Combien de visites faîtes-vous chaque période? Est-ce que c'est le même pour les anciens que pour les nouveaux? Y a-t-il des visites officielles et non-officielles?

2. Comment est-ce que vous arrangez la question des admissions? Y a-t-il beaucoup de candidats? Quel est le pourcentage requis pour être admis? Qui décide les cas difficiles? Est-ce que chaque professeur a droit d'admettre deux enfants?

3. Est-ce que l'école a des objectifs écrits quelque part? (Si oui) Comment est-ce que ces objectifs étaient élaborés? (Si non) Qu'est-ce que vous voyez comme le but principal ou bien les buts principaux de cet école?

4. Combien de fois est-ce qu'on fait des réunions pédagogiques? Quelle sorte de chose est-ce qu'on y discute?

5. Quand les professeurs sont absents ou bien en retard, quelles sortes d'action est-ce que vous prenez? Y a-t-il des règlements pour cela? Est-ce que c'est un problème ou bien ce n'est pas un problème?

6. Quel est l'effectif actuel de l'école? Combien d'élèves y a-t-il dans chaque classe?

7. Donnez-vous cours? Quelle matière? Combien d'heures? Est-ce que vous préférez donner ou ne pas donner cours?

8. Quel texte de mathématiques est-ce qu'on emploie en 2ème? en 6ème?

9. Pour la question de l'achat du matériel pédagogique, comment est-ce qu'on décide les priorités? Si vous aviez suffisamment d'argent, qu'est-ce que vous acheteriez? Est-ce que les professeurs vous indiquent ce dont ils ont besoin?

10. Vous êtes préfet depuis combien d'années? Quelle est votre formation? Est-ce que vous avez pris des cours avancés en mathématiques? 11. Comment est-ce que vous partagez votre horaire? Combien souvent étes-vous obligés d'être absent de l'école? Pour chercher les salaires, cela prend combien de jours chaque mois? En général, qu'est-ce qui vous occupe le plus? La discipline? Les visites en classe? Les comités? Le travail de bureau? Les parents?

12. Est-ce que vous introduisez de la méthodologie aux professeurs?

13. Est-ce que vous examinez regulièrement les plans de leçons des professeurs?

14. Est-ce que vous faites une préparation particulière pour l'exétat? (organisation des élèves, recherche des items, etc.?)

15. Pour vous, quel est le rôle le plus important du préfet? Pourquoi?

INTERVIEW SCHEDULE (Principals)-Translation

(As noted above, only the general topics of the interview are listed. The questions as they appear here were reworded by the researcher and broached in a generally more cautious manner than would appear from the rather blunt form in which they appear here.)

1. Do you do the classroom supervision of teachers yourself or does someone help you with this? How many visits are made each quarter? Is this the same for new teachers and experienced teachers? Are there both official and unofficial visits?

2. How is the question of student admissions handled? Are there many candidates? What percentage is required for admission? Who decides the difficult cases? Does each teacher have the right to admit two students?

3. Does the school have written objectives somewhere? (If yes) How were these objectives elaborated? (If no) What do you see as the principal goal or the principal goals of this school?

4. How often are faculty meetings held? What sorts of topics are discussed?

5. When teachers are absent or late, what sort of action is taken? Are there rules covering this? Is this generally a problem or is it generally not a problem?

6. How many students attend this school? What is the breakdown by class?

7. Do you teach? What subject? How many hours? Given the choice, would you prefer to teach or not to teach?

8. What mathematics textbook is used in Grade 8? In Grade 12?

9. As far as purchasing instructional materials is concerned, how are priorities decided? If you had the money, what would you buy? Do the teachers tell you what they need most?

10. How long have you been principal here? What educational background do you have? Have you taken advanced courses in mathematics?

11. How is your daily program broken down? How often are you obliged to be absent from the school? How many days are required each month to take care of picking up the salaries? In general, what keeps you busiest? Discipline? Classroom visits? Committees? Office work? Parents?

12. Do you introduce new teaching methods to the teachers?

13. Do you regularly examine the teachers' lesson plans?

14. Do you make any special preparation for the state exams? (by organizing the students, tracking down multiple choice questions used in previous years, etc.?)

15. For you, what is the most important role of the principal? Why?

INTERVIEW SCHEDULE (Teachers)

(The comments made regarding the nature of the questions for the principals also apply to the questions for the teachers.) In addition to the questions listed here, teachers indicated for each mathematics question whether or not it had been covered in class during the current school year, during a previous school year, or not at all. As with the principals' interview schedule, the English translation follows.

1. Depuis quand donnez-vous cours ici? Ailleurs? Quelle est votre formation?

2. Combien de fois est-ce que le préfet (ou bien le proviseur) a visité votre classe cette année? Comment est-ce que le préfet vous informe de ce qu'il voit pendant ces visites?

3. Avez-vous change de méthodologie suite à ces visites?

4. Combien souvent y a-t-il des réunions pédagogiques? Quel est le but de ces reunions? Quelle sorte de choses est-ce qu'on traite?

5. Etes-vous membre de comités pédagogiques?

6. Est-ce que le préfet s'occupe beaucoup de l'enseignement ou est-ce qu'il s'occupe plutot d'autres affaires?

INTERVIEW SCHEDULE (Teachers) -Translation

1. How long have you taught at this school? Elsewhere? What is your educational background?

2. How often has the principal (or an individual given this responsibility) visited your classroom this year for purposes of supervision? How does the principal inform you about what he has observed?

3. Have you changed your teaching in any way because of the principal's visits?

4. How often are faculty meetings held? What is the nature of these meetings?

5. Are you a member of any curriculum committees, etc.?

6. Does the principal get very involved in the teaching process or does he tend to be occupied mainly with other sorts of things?

APPENDIX B

Site access correspondence

LETTRE DE PERMISSION

Je sous-signé,______, préfet des études de l'Institut______, donne à Robert Prouty la permission de faire remplir ses questionnaires aux élèves pour lesquels je suis responsable. J'ai reçu une copie des questionnaires et je comprends qu'il s'agit de 25 questions sur l'estîme de soi et de 34 à 40 questions à propos des mathématiques. Je comprends que ces questionnaires demandent environ une heure à remplir. J'ai arrangé ceci avec le titulaire des classes en question et j'accepte toute responsabilite in loco parentis.

> Fait à ______ le _____1986

Préfet des études

LETTRE DE CONSENTEMENT

Cher Inspecteur:

Je suis un candidat au doctorat en Administration de l'Education à Michigan State University aux Etats-Unis. Comme partie intégrale de mes études, je suis en train de faire un recherche-terrain dans plusieurs écoles secondaires de la Zone de Lubero. Le but de cette recherche est de mieux connaître les activités des préfets des études et d'étudier la relation entre ces activités et les résultats obtenus chez les élèves.

Si vous acceptez de participer dans cette recherche, je vous prie de signer le formulaire en bas. Veuillez comprendre que vous n'avez aucune obligation et que vous êtes libres à quitter la recherche n'importe quand sans aucune difficulté. Si vous acceptez de participer, sachez que tous les résultats seront gardés dans la plus stricte confidence et que l'anonymité de chacun est garanti. Si cependant, vous voulez une copie des résultats avec ces restrictions, je serai très content de vous les pourvoir.

Cet interview prendra entre une et deux heures. Je vous remercie d'avance pour votre compréhension.

Sincèrement,

R. Prouty Ancien préfet des études Institut de Lukanga

Je sous-signé,_____, atteste par la présente que cette recherche m'a été expliquée, que je la comprends, et que je consens librement à y participer.

> Fait à _____ le_____1986

Inspecteur

LETTRE DE CONSENTEMENT

Cher Préfet:

Je suis un candidat au doctorat en Administration de l'Education à Michigan State University aux Etats-Unis. Comme partie intégrale de mes études, je suis en train de faire un recherche-terrain dans plusieurs écoles secondaires de la Zone de Lubero. Le but de cette recherche est de mieux connaître les activités des préfets des études et d'étudier la relation entre ces activités et les résultats obtenus chez les élèves.

Si vous acceptez de participer dans cette recherche, je vous prie de signer le formulaire en bas. Veuillez comprendre que vous n'avez aucune obligation et que vous êtes libre à quitter la recherche n'importe quand sans aucune difficulté. Si vous acceptez de participer, sachez que tous les résultats seront gardés dans la plus stricte confidence et que l'anonymité de chacun est garanti. Si cependant, vous voulez une copie des résultats avec ces restrictions, je serai très content de vous les pourvoir.

Cet interview prendra environ une heure de temps. Je vous remercie d'avance pour votre compréhension.

Sincèrement,

R. Prouty Ancien préfet des études Institut de Lukanga

Je sous-signé,_____, atteste par la présente que cette recherche m'a été expliquée, que je la comprends, et que je consens librement à y participer.

Fait à______le____1986

(Signature)

LETTRE DE CONSENTEMENT

Cher Professeur:

Je suis un candidat au doctorat en Administration de l'Education à Michigan State University aux Etats-Unis. Comme partie intégrale de mes études, je suis en train de faire un recherche-terrain dans plusieurs écoles secondaires de la Zone de Lubero. Le but de cette recherche est de mieux connaître les activités des préfets des études et d'étudier la relation entre ces activités et les résultats obtenus chez les élèves.

Si vous acceptez de participer dans cette recherche, je vous prie de signer le formulaire en bas. Veuillez comprendre que vous n'avez aucune obligation et que vous êtes libres à quitter la recherche n'importe quand sans aucune difficulté. Si vous acceptez de participer, sachez que tous les résultats seront gardés dans la plus stricte confidence et que l'anonymité de chacun est garanti. Si cependant, vous voulez une copie des résultats avec ces restrictions, je serai très content de vous les pourvoir.

Ce questionnaire vous demandera environ quinze minutes. Je vous remercie d'avance pour votre compréhension.

Sincerement,

R. Prouty Ancien préfet des études Institut de Lukanga

Je sous-signé,_____, atteste par la présente que cette recherche m'a été expliquée, que je la comprends, et que je consens librement à y participer.

Fait a______le____1986

(Signature)

A QUI DE DROIT

Je sous-signé KAKURU MUHASHANI, Commissaire du Zone de Lubero, atteste par la présente que Robert Prouty, candidat au doctorat à l'Universite de l'Etat de Michigan et ancien préfet des études de l'Institut de Lukanga, a mon accord pour faire sa recherche-terrain dans le territoire du Zone de Lubero.

Je prie aux autorités tant civiles que militaires de lui apporter l'aide dont il aura besoin.

Fait à Lubero le 26/Février/1986

RRÉSIDENT DU COMITE POPULAIRE DE ZONE T'COMMISSAIRE DE ZONE a.i. KAKURU MUHASHANI MUBUNGA

A QUI DE DROIT

Je sous-signé, $\underline{LOUS - REGED}$, atteste par la présente que Robert Prouty, candidat au doctorat à l'Université de l'Etat de Michigan et ancien préfet des études de l'Institut de Lukanga, a mon accord pour faire sa recherche-terrain dans des écoles secondaires du Zone de Lubero.

Je prie aux préfets des études de lui accorder l'aide dont il aura besoin.

Fait à Butembo le <u>26 /02/</u>1986 balume Mitrinolo Invist Réged/Britembo

Balune Uitrindo rovs- Regent Brokenhoo B.P. 420

> HR. R. Prouty, l'ai reçue tou note du 03-journier 86 avec heaucoups de retard. C'est GAD qui me l'a amené et yen ai trouvé aume objection prom l'autoriser la affectuer sette sugnite au Sein de mos écolos de Lubero. le toute les manières vous rerer le bien venne to Je seroi personne llement this haven de te recevoir "encore une fois agris tant de jours de réparation. je comprende tra reserve quant à s'arris pas vonhe' crize homme dans la manne ou tusais que chez uous les chors changent rite. Mais from mon cash, of buis enere dens un petit brueau de Britembo. J'ai prime été à Irhaugo là ri l'hippopotame t'avais f'Après donc le revoir heitol alume Mitricolo 2686

APPENDIX C

Letters of Permission

- University Committee on Research Involving Human Subjects
- 2. Second International Mathematics Study
- 3. Consulting Psychologists Press

MICHIGAN STATE UNIVERSITY

UNIVERSITY COMMITTEE ON RESEARCH INVOLVING HUMAN SUBJECTS (UCRIHS) 236 ADMINISTRATION BUILDING (517) 355-2186 EAST LANSING . MICHIGAN . 48824-1046

May 13, 1986

Mr. Bob Prouty 620 Lexington Avenue East Lansing, Michigan 48823

Dear Mr. Prouty:

Subject: Proposal Entitled, "Principals' Instructional Management Emphasis and Two Outcomes of Secondary Schooling in Zaire"

I am pleased to advise that I concur with your evaluation that this project is exempt from full UCRIHS review, and approval is herewith granted for conduct of this project.

You are reminded that UCRIHS approval is valid for one calendar year. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval prior to May 13, 1987.

Any changes in procedures involving human subjects must be reviewed by the UCRIHS prior to initiation of the change. UCRIHS must also be notified promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

Thank you for bringing this project to my attention. If I can be of any future help, please do not hesitate to let me know.

Sincerely,

Sickede

Henry E. Bredeck Chairman, UCRIHS

HEB/jms

cc: Dr. Samuel A. Moore II



Second International Mathematics Study Deuxième Etude Internationale en Mathématiques

341 Armory, University of Illinois, Champaign, Illinois 61820, U.S.A. Telephone: (217) 333-6743 -

May 12, 1986

Mr. Bob Prouty 620 Lexington Avenue East Lansing, MI 48823

Dear Mr. Prouty:

I am glad that the materials were helpful to you.

With respect to the French instruments, I suggest that you request copies from the Ontario Centre, since they tested a bilingual population. My understanding is that they, in turn, obtained the instruments from France (or French-speaking Belgium).

I should note, however, that some questions have been raised about the adequacy of the French translations. You might ask, as well, if they have any comments along those lines. Feel free to get back if you run into problems.

Contact person:

Dr. D. Raphael Educational Evaluation Centre 252 Bloor Street West Toronto, Ontario M5S 1V6 CANADA

I see no reason why you should not go ahead and do your testing in Zaire--and you may regard this letter as permission to do so, as far as I am concerned. But I would much appreciate receiving a report of your findings.

Sincerely,

Kenneth J. Travers Professor of Mathematics Education

KJT:del



CONSULTING PSYCHOLOGISTS PRESS, INC.

577 College Ave. (P.O. Box 60070), Palo Alto, California 94306 (415) 857-1444

Dear Robert S. Prouty:

We appreciate your interest in our test, <u>Coopersmith Self-Esteem Inventory</u> by <u>Stanley Coopersmith</u> and are responding to your letter of <u>17 January 1986</u> in which you request permission to translate the test into French for your use in research.

We would be willing to authorize you to make this translation provided you agree to the following conditions:

- You will inform us of the subject of your research and how many copies of the translation you expect to use. If you intend to make more than 200 copies, please notify us regarding further permission and a possible fee. A fee of .08c per copy is over the 200 copies used.
- 2. You will send us three copies of your translation and all rights to the trans lation will be assigned by you to Consulting Psychologists Press, Inc.
- 3. The translation will be used for your own research project only, and you will not sell or give away any copies for others to use. Upon completion of the project you agree to destroy the copies printed except for the few you need for your records.
- 4. Each copy of your translation will have on it a credit line to indicate, in English, the test name, author, copyright date, publisher, translator's name, and the date of the translation.

If you agree to these conditions and intend to proceed with the translation, sign the enclosed copy of this form and return it to the Permissions Department at Consulting Psychologists Press. If you decide not to proceed, return this letter to the Permissions Department and indicate that you are not proceeding with the translation.

Sincerely na

Solia Perntz Permissions Editor Date: 24 Janaury 1986

Agreed to by Robert & Prout
(name) Date: <u>April 23 1986</u>
Students pust have a supervising professor sign this form.
(name of supervising professor)

(-')

APPENDIX D

Explanation of principal ratings

Ratings for principals represented a composite score based on eight components of instructional leadership. These are: 1) number of classroom visits, 2) existence of explicit instructional objectives, 3) number of meetings with teachers for instructional purposes, 4) principal's knowledge of mathematics curriculum, 5) principal's emphasis on instructional materials when stating purchasing priorities, 6) principal's emphasis on instruction when stating perceived role of principal, 7) principal's stated emphasis on creating an orderly, yet open learning environment and 8) the teaching load of the principal. In each of these categories, principals were assigned a rating of 1, 2 or 3 (low, average or high).

In the category of classroom visits, schools where principals had visited the two mathematics teachers a combined total of two times or less during the course of the year were given a low rating. Principals who had visited a combined total of between three and seven times were ranked average and principals who had visited more than seven times were ranked high. Where there were vice-principals whose duty it was to visit classes, these visits were considered in the same way as visits by the principals. However, visits by vice-principals did not generally appear as consistently associated with higher achievement as did visits by the principals themselves.

In the category of teachers' meetings, principals who had held fewer than three were rated low; principals holding between three and

195

five were rated average and the two principals who had held eight and fifteen respectively were rated high.

None of the principals rated high on instructional objectives, since none of the schools had formulated explicit written objectives in instructional terms. Principals who indicated that teachers had met to discuss general instructional objectives were rated average and those who indicated no discussion of instructional objectives were rated low.

Principals were asked to name the mathematics books used in their Grade 8 and Grade 12 classes and to briefly describe the curriculum. Those who could not name the books were rated low in the category of curriculum knowledge. Those who could name the books but who either openly stated they knew nothing about the curriculum or who showed no knowledge of the curriculum were rated average. Those who appeared to know something about the curriculum were rated high.

Two questions were collapsed into one to rank principals on the basis of the priority which they assigned to the purchase of instructional materials. Principals were asked to list their purchasing priorities and whether or not teachers were given input into purchasing. Principals who gave teachers input received at least a rank of average in this category. Principals who gave priority to the purchase of textbooks, maps, and other instructional materials were rated either average or high (depending on whether or not teachers were given input). Principals who gave priority to
other sorts of purchases or who showed no particular interest in instructional materials were ranked average or low.

Principals were asked to state what sorts of activities occupied them the most, what reasons motivated most of their absences from school, and what they saw the role of the principal to be. The emphasis on instruction in each of these answers provided the categorization of high, average, or low.

Principals were ranked according to the observed level of discipline at the school, i.e., whether or not there appeared to exist an orderly climate in which students could learn without an excessive number of disruptions.

Finally, principals were ranked according to their own teaching load, i.e., the number of hours personally spent in the classroom each week. Principals teaching more than four hours were ranked high, principals teaching from one to four hours were ranked average and those who do not teach were ranked low. Principals' teaching hours were as follows:

0 hours--Schools 1,3,4,9,13,15
4 hours--Schools 2,5,7,14
6 hours--School 6
7 hours--Schools 12
8 hours--School 11
10 hours--School 8
12 hours--School 10

APPENDIX E

Mathematics achievement and self-esteem scores

<u>School</u>	N	Mathach	St.Dev.	St.Err.	N	Self-Esteem	St.Dev.	<u>St.Err</u> .
1	40	44.808	9.158	1.448	40	50.184	9.516	1.504
2	51	41.629	10.426	1.460	55	52.032	9.920	1.336
3	42	49.817	14.539	2.243	42	61.272	9.044	1.396
4	40	34.519	9.521	1.505	40	56.556	12.444	1.968
5	42	41.575	14.093	2.175	42	58.380	12.252	1.892
6	43	61.091	9.759	1.488	43	53.676	12.504	1.908
7	41	45.122	10.534	1.645	41	54.892	10.932	1.708
8	67	37.773	11.459	1.400	67	56.048	12.400	1.516
9	30	43.462	17.086	3.119	31	62.956	12.432	2.232
10	64	46.635	15.423	1.928	66	52.268	10.188	1.256
11a	28	41.484	12.836	2.426	28	57.440	10.312	1.948
11ь	33	52.797	11.347	1.975	33	58.796	9.132	1.588
12	41	38.743	9.476	1.480	41	57.444	9.392	1.468
13	27	48.575	16.006	3.080	27	62.816	12.832	2.468
14	38	47.874	17.217	2.793	38	61.768	7.728	1.252
15	50	39.154	12.618	1.784	50	60.448	9.664	1.368

Table A-1 Grade 8 Mathematics and Self-Esteem Scores

Table A-2Grade 12 Mathematics and Self-Esteem Scores

School	N	Mathach	St.Dev.	St.Err.	N	Self-Esteem	St.Dev.	St.Err.
1	18	28.333	9.093	2.143	18	57.800	12.980	3.060
2	40	36.667	10.487	1.658	40	62.200	11.844	1.872
3a	22	32.727	9.739	2.076	22	64.364	12.276	2.616
*3Ъ	18	38.333	8.024	1.891	18	66.667	8.784	2.072
4	30	32.667	10.947	1.999	31	53.020	14.008	2.516
*5	9	28.519	12.705	4.235	9	60.444	11.568	3.856
6	11	27.273	7.575	2.284	11	64.000	10.584	3.192
7	15	31.333	6.146	1.587	17	62.932	11.744	2.848
8	29	30.115	9.063	1.683	29	64.000	8.000	1.484
*9	12	42.222	9.779	2.823	12	63.268	14.452	4.172
10	15	45.333	9.984	2.578	15	66.836	8.460	2.184
*11	10	40.000	6.479	2.049	10	45.816	10.864	3.436
12a	22	33.788	8.184	1.745	21	71.436	12.004	2.620
*12Ъ	7	62.857	12.387	4.682	7	66.448	7.360	2.780
13	34	27.451	8.802	1.510	35	60.980	9.724	1.644
14a	13	30.513	6.213	1.723	13	61.296	8.028	2.228
14b	2	40.000	14.142	10.000	2	58.000	14.144	10.000
15	15	34.667	9.241	2.386	19	59.788	7.240	1.660

Parents' level of education

APPENDIX F

	Ta	able	e A-3	
Parents'	Level	of	EducationGrade	8

School	MOMED	DADED	
1	1.700	2.949	
2	1.400	2.255	
3	2.333	3.286	
4	1.350	2.500	
5	.571	1.643	
6	.698	1.372	
7	1.550	2.244	
8	1.439	2.343	
9	1.323	2.710	
10	1.556	2.919	
11a	1.429	1.714	
11ь	1.121	2.091	
12	1.195	2.077	
13	.556	1.593	
14	2.128	3.205 [.]	
15	1.320	2.140	

Table A-4Parents' Level of Education--Grade 12

1	1.444	2.611
2	1.100	1.800
3a	1.545	2.500
3Ъ	1.944	3.056
4	1.258	2.226
5	. 333	1.556
6	.700	1.636
7	1.118	2.529
8	.857	1.655
9	1.250	1.917
10	1.000	2.400
11	. 300	. 700
12a	.864	1.955
12Ъ	1.143	1.571
13	.200	1.371
14a	1.692	2.750
14Ъ	2.500	2.000
15	1.105	2.158

APPENDIX G

Academic Intake Rankings

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ACADEMIC ADMISSIONS SCALE

The purpose of this scale is to determine the selectiveness of schools in admitting students. It is designed to provide a further measure of differences in academic intake at the schools and is calculated on the basis of five elements: 1) the percentage with which the student must have passed at the school from which s/he is coming; 2) the percentage which the admitting school requires on its own admissions exams; 3) the number of students applying for admission; 4) whether or not admissions are open to all grades or only to Grades 7 and 9; and 5) whether or not the principal has broad discretionary power in admitting students (if s/he does, the rating on item 5 is 0). Tighter admissions procedures on any of these items will give the school a score of 1 for that item (or up to 1.5 if very stringent criteria are applied by the school). Average or below average admissions procedures for an item give a score of 0 or .5 for that item. Where incomplete data were available, scores were averaged.

Schools with an overall score of 0 are ranked low, 1 is medium low, 2 is medium, 2.5 is medium high and 3 or above is high. The exact cutoff points for these classifications is admittedly somewhat arbitrary. Statistics based on this variable use an order ranking which has the effect of creating values of 1 through 5 for the five categories. Scores are given below.

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<u>School</u>		<u>Sca</u>	ale			<u>Total</u>	Rating
	1	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>		
1.	0	1.5	0	1	0	2.5	medium high
2.	1	0	0	0	1	2	medium
3.	1	0	1	-	-	3.3	high
4.	0	0	0	0	0	0	low
5.	0	0	0	0	0	0	low
6.	0	0	1	0	-	1.25	medium low
7.	0	1.5	0	0	0	1.5	medium
8.	0	0	0	1	0	1	medium low
9.	0	0	0	0	. 5	. 5	low
10.	0	. 5	0	-	1	1.9	medium
11.	0	0	0	-	1	1	medium low
12.	0	0	0	0	0	0	low
13.	0	0	-	0	0	0	low
14.	0	-	-	1	1	2	medium
15.	0	0	-	0	0	0	low

APPENDIX H

.

Pearson Product-Moment Correlation Coefficient Matrices

The following variables are compared in this appendix:

- MATHACH Mathematics achievement
- SESTEEM Self-esteem
- PRINCIP Principals' ratings for emphasis on instructional leadership
- MOMED Mothers' level of education
- DADED Fathers' level of education
- ADMISS Admissions selection criteria
- INSTAKE Academic intake ranked by inspectors
- TEACHX Years of teacher experience
- TEACHQ Teacher qualifications
- STAB Years student has been at same school (Student tenure)
- AGE Student age
- XAMPALL Trends in pass rate over four years
- **TEXT** Possession of a textbook (0 = YES, 1 = NO)
- VIS Number of classroom visits for purposes of supervision
- SEX Gender (0 FEMALE, 1 MALE)

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	MATHACH	SESTEEM	XAMPALL
PRINCIP	.2071	.0902	.0577
	(292)	(298)	(301)
	P = 001	P = 060	P = 159
	1001	1000	1157
SESTEEM	.0140		0681
	(320)		(329)
	P402		P- .109
MOMED	0549	.0553	.2313
	(320)	(327)	(330)
	P164	P160	P=.001
	0005		
DADED	0285	.0951	.1416
	(321)	(328)	(331)
	P305	P=.043	P- .005
ADMISS	.0303	.0906	.6208
	(322)	(329)	(332)
	P- .294	P=.051	P001
INSTAKE	0183	.1413	.4113
	(322)	(329)	(332)
	P372	P005	P=.001
STAB	.0892	.0673	- 1645
	(319)	(326)	(329)
	P = 0.56	P = 113	P = 0.01
			1 .001
AGE	1656	.065 6	1735
	(322)	(329)	(332)
	P001	P=.118	P - .001
TEXT	1472	0385	2232
	(303)	(309)	(312)
	P005	P250	P001
TEACHO	.2479	.0382	. 5451
•	(322)	(329)	(332)
	P001	P - .245	P=.001
TEACHY	1908	0996	2170
1 11 10111	(290)	(298)	(300)
	P_{-} 001	P = 0/3	P- 001
	r	1045	1001
VIS	.1942	.0970	.0086
	(322)	(329)	(332)
	P001	P=.039	P438
SEX	0184	0690	3614
	(322)	(329)	(332)
	P371	P- .106	P=.001

	MATHACH	SESTEEM
PRINCIP	.1631 (637) P001	0525 (644) P - .092
SESTEEM	.0474 (676) P - .109	
MOMED	0757 (672) P - .025	0121 (679) P - .377
DADED	0310 (670) P - .211	.0168 (677) P - .331
ADMISS	.1631 (677) P001	1150 (684) P - .001
INSTAKE	0173 (677) P327	0755 (684) P - .024
STAB	.0517 (675) P - .090	0550 (682) P - .076
AGE	0926 (674) P008	0327 (681) P - .197
TEXT	.0076 (616) P426	0385 (623) P - .169
TEACHQ	1629 (677) P001	1013 (684) P004
TEACHX	0413 (677) P142	.0430 (684) P - .131
VIS	.2037 (677) P001	1499 (684) P - .001
SEX	.0164 (677) P - .335	0087 (684) P - .410

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APPENDIX I

State examination results, 1983-1986

Schoo	1 Section	W83	P83	\$83	W84	P84	884	W85	P85	8 85	W86	P86	\$ 86_
1	Teach.	37	4	11	29	15	52	22	22	100	18	12	67
	(Math/Ph.	35	12	34	31	27	87	23	20	87	29	27	93)
2	Teach.	35	33	94	28	27	96	37	31	84	45	45	100
3	Bio/Ch.	31	4	13	24	23	96	20	18	90	18	17	94
	Teach.	24	18	75	30	14	47	40	39	98	22	22	100
4	(Math/Ph.	38	22	58	38	22	58	48	44	92	35	34	97)
	Bus.	27	12	44	33	6	18	22	8	36	-	-	-
5	Math/Ph.	-	-	-	6	3	50	15	5	33	9	1	11
6	Social	9	7	78	8	5	63	13	13	100	14	5	36
7	Teach.	28	25	89	29	29	100	18	11	61	19	19	100
8	Teach.	18	2	11	27	22	81	21	18	86	29	27	93
9	Bio/Ch.	21	9	43	11	8	73	10	6	60	14	11	79
10	Bus.	28	11	39	27	15	56	27	27	100	15	12	80
11	Bio/Ch.	21	7	33	17	6	35	14	3	21	11	11	100
12	Teach.	46	16	35	47	43	91	18	9	50	28	11	39
	Math/Ph.	13	6	46	13	6	46	8	3	38	7	5	71
13	Teach.	27	1	4	37	17	46	39	12	31	42	21	50
14	Lit.	28	19	68	20	18	90	19	15	79	-	-	-
	Bus.	39	29	74	36	8	22	41	41	100	-	-	-
15	Teach.	27	9	33	12	8	67	20	9	45	20	9	45
Total	-	532	246	46	503	319	63	475	354	75	375	289	77

Table A-5 State Examination Pass Rates 1983-1986

Below are the ranks of each school for each of the past four years. Based on these ranks, trends over the past four years are placed into one of three categories and assigned a score which is used for calculating examination pass rate trends (XAMPALL).

Table A-6 Annual State Examination Ranks

<u>School</u>	<u>83</u>	<u>84</u>	<u>85</u>	<u>86</u>	<u>Status</u> (Rank score)
1	12	6	5	7	good or improving (3)
2	1	2	7	1	good or improving (3)
3	7	7	3	4	good or improving (3)
4	5	14	8	5	good or improving (3)
5	-	11	13	14	poort or deteriorating (1)
6	3	9	2	13	no clear trend (2)
7	2	1	9	2	good or improving (3)
8	13	4	6	6	good or improving (3)
9	6	5	10	9	no clear trend (2)
10	8	10	1	8	no clear trend (2)
11	11	15	15	3	no clear trend (2)
12	9	3	11	11	poor or deteriorating (1)
13	14	13	14	10	poor or deteriorating (1)
14	4	12	4	-	no clear trend (2)
15	10	8	12	12	poor or deteriorating (1)

APPENDIX J

Rules governing teacher and student behavior at two schools in the sample

RULES FOR TEACHERS

1. The behavior of the teacher must serve as an example for the students. The teacher will not permit himself to do what he forbids his students to do.

2. It is strictly forbidden for teachers to ask students to pay a tip in order to receive a favor.

3. It is forbidden for teachers to engage in scandalous conduct (drunkenness, smoking tobacco, immorality, etc.).

4. The school does not authorize any private meetings between teachers and students, even for a missed quiz. These must be taken care of at the school and not at the teacher's home.

5. It is strictly forbidden to allow visitors into the classroom, except for cases of absolute necessity.

6. The respect for and the swift execution of directives from the principal is recommended for all teachers at this school.

7. No teacher is authorized to enter the classroom and begin teaching without informing the administration of his presence. Upon arriving and leaving, each teacher must sign the register which is located in the principal's office.

8. It is forbidden for a teacher to send a student on an errand during class hours. The student is at the school to study, and not to play the role of an errand boy.

9. Clandestine meetings of a revolutionary character are forbidden and may lead to an investigation.

10. All requests must be made in writing, with courtesy, on good writing paper.

11. Corporal punishment is forbidden.

12. Teachers do not have the right to exclude students or to confiscate anything belonging to a student without the approval of the administration.

13. It is forbidden to punish a student at one's home for a fault committed at school.

14. Punishments must be proportional to the fault committed.

15. Teachers must keep their lesson plans with them and present them when requested to do so by an authority.

STUDENT INFRACTIONS: CLASSIFICATION

(The list given here for students does not come from the same school as do the above rules for teachers.)

SLIGHT

1. tardiness, lack of cleanliness, wearing of a hat or non-prescription glasses

SERIOUS

- 1. talking in class, at flag raising, or while entering class
- 2. failure to wear school uniform
- 3. failure to bring tools for intellectual or manual labor
- 4. extravagant dress, beard, straightened hair, makeup
- 5. smoking
- 6. speaking in a language other than French or English
- 7. hand games
- 8. lack of respect for peers

GRAVE

- 1. repeated offenses in the above categories
- 2. refusal to accept a punishment
- 3. cheating
- 4. neglect of manual labor, sports and cultural activities
- 5. fighting
- 6. insolence toward a member of the staff
- 7. unexcused absence
- 8. plundering
- 9. failure to keep up school documents

VERY GRAVE

- 1. repeated GRAVE infractions
- 2. lack of respect, insolence, arrogance toward school authority or third person
- 3. false documents
- 4. theft at the school or at the exterior
- 5. revolt or attempted revolt and any subversive activity
- 6. presence at places of ill repute (bars, brothels), drunkenness, libertinage
- 7. pornographic behavior (writings, conversation, reading, etc.)

PUNISHMENTS

- 1. For slight infractions
 - -individual reprimand in front of class or parents
 -physical or intellectual labor to perform
 -exclusion from one to three hours of class
 -a grade of 'fair' on the report card

2. For serious infractions

-reprimand in front of the entire student body
-no more than one day of physical labor
-no more than a one-day suspension, with parents being called to the school
-a grade of 'mediocre' on the report card

- 3. For grave infractions
 - -no more than three days of manual labor
 - -three-day suspension with a severe warning in the presence of parents
 - -a grade of 'bad' on the report card
- 4. For very grave infractions
 - -definitive expulsion after meeting of the Discipline Committee

APPENDIX K

Instructional supervision form

1	PROFESSEUR: Fiche De preparation <u>N</u> º
liat	ièrcs :Beurc:BATE:Beurc:
1•	<u>Suict de la leçon:</u>
2• 3•	<u>But de la leçon:</u> <u>Réréfence</u> :
4•	Matériel didactique (à gapporter en classe):
5•	Matière de la lecon:
	PREAMBULE (liaison avec la leçon précédente):
	•••••••••••••••••••••••••••••••••••••••
	B) Points principaux:
•	· · · · · · · · · · · · · · · · · · ·
	··· ••••••••••••••••••••••••••••••••••
	•••••••••••••••••••••••••••••••••••••••
	· · · · · · · · · · · · · · · · · · ·
	C) <u>Synthèse:</u>
6°	Travail imposé aux élèves& Sujet d'Interrogation:
	····
7•	Critique de la lecon(éventuelle) :
	•••••
	•••••

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BIBLIOGRAPHY

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- Apumbi-Lomema (1984). Les langues dans l'enseignement au Zaire. <u>Educateur</u>, <u>4</u>, 33-45.
- Armour, D. (1972). Equality of educational opportunity: The basic findings reconsidered. In Mosteller, F. & Moynihan, D. (Eds.) <u>On</u> <u>equality of educational opportunity</u>. New York: Random House.
- Averch, H. et al. (1972). <u>How effective is schooling? A critical</u> <u>review and synthesis of research findings.</u> Santa Monica, CA: The Rand Corporation.
- Bachman, J. & O'Malley, P. (1984). Black-white differences in self-esteem: Are they affected by response styles? <u>American</u> <u>Journal of Sociology</u>, <u>90</u>(3), 624-639.
- Bedeian, A. et al. (1977). Test-retest reliability and internal consistency of the short form of Coopersmith's Self-Esteem Inventory. <u>Psychological Reports</u>, <u>41</u>, 1041-1042.
- Behrman, J. & Birdsall, N. (1983). The quality of schooling: Quantity alone is misleading. <u>The American Economic Review</u>, <u>73</u>(5), 928-946.
- Berman, P. & McLaughlin, M. (1978). Federal programs supporting educational change, 8. Santa Monica, CA: Rand Corporation.
- Bidwell, C. (1965). The school as a formal organization. In J. March (Ed.), <u>Handbook of organizations</u>. Chicago: Rand McNally, 972-1022.
- Bidwell, C. (1977). The school as a formal organization: Some new thoughts. In G. Immegart & W. Boyd, Eds., <u>Problem-finding in</u> <u>educational administration</u>; <u>Trends in research and theory</u>. Lexington, MA: Heath.
- Bloom, B. (1980). The new direction in educational research: Alterable variables. <u>Phi Delta Kappan</u>, <u>61</u>, 382-385.
- Bossert, S. et al. (1982). The instructional management role of the principal. <u>Educational Administration Quarterly</u>, <u>18</u>, 34-64.
- Bowles, S. & Levin, H. (1968). The determinants of scholastic achievement: An appraisal of some recent evidence. <u>Journal of</u> <u>Human Resources</u>, <u>3</u>, 3-24.
- Brookover, W. & Lezotte, L. (1977). <u>Changes in school</u> <u>characteristics coincident with changes in student achievement</u>. <u>East Lansing</u>: Michigan State University College of Urban Development.
- Brookover, W. et al. (1979). <u>School social systems and student</u> <u>achievement: Schools can make a difference</u>. New York: Praeger.

- Buschmann, M. (1984). The use of research knowledge in teacher education and teaching. <u>American Journal of Education</u>, <u>92</u>(4), 421-439.
- Cain, G. & Watts, H. (1970). Problems in making policy inferences from the Coleman Report. <u>American Sociological Review</u>, <u>35</u>, 228-242.
- California State Department of Education, Office of Program Evaluation and Research. (1977). <u>School effectiveness study:</u> <u>The first year</u>. Sacramento, CA: California State Department of Education.
- Chang, L. & Ruzicka, J. (1985). Second international mathematics study (United States Technical Report 1). Champaign, IL: Stipes.
- Chapman, D. & Windham, D. (1985). Academic program "failures" and the vocational school "fallacy": Policy issues in secondary education in Somalia. <u>International Journal of Educational</u> <u>Development</u>, <u>5</u>(4), 269-282.
- Cohen, M. (1981). Effective schools: What the research says. <u>Today's Education</u>, April/May, 48G.
- Cohen, M. (1983). Instructional, management, and social conditions in effective schools. In Odden, A. & Webb, L. (Eds.) <u>School</u> <u>finance and school improvement: Linkages for the 1980's</u>. Cambridge, MA: Ballinger.
- Cohen, M. et al. (1972). A garbage can model of organizational choice. Administrative Science Quarterly, 17, 1-25.
- Colclough, C. (1980). <u>Primary schooling and economic development</u>; <u>A</u> <u>review of the evidence</u>. (World Bank Staff Working Paper No. 399) Washington, DC: World Bank.
- Coleman, J. et al. (1966). <u>Equality of educational opportunity</u>. Washington, DC: U.S. Office of Education.
- Coleman, J. et al. (1982). <u>High school achievement</u>. New York: Basic.
- Cooksey, B. (1981). Social class and academic performance: A Cameroon case study. <u>Comparative Education Review</u>, <u>25</u>, 403-418.
- Coopersmith, S. (1967). <u>The antecedents of self-esteem</u>. Palo Alto, CA: Consulting Psychologists Press.
- Corwin, R. (1974). Models of educational organizations. In F. Kerlinger & J. Carroll, eds. <u>Review of Research in Education</u>. <u>Vol. 2</u>. Itasca, IL: Peacock.

- Crook, et al. (1984). The linkage of work achievement to self-esteem, career maturity and college achievement. <u>Journal of</u> <u>Vocational Behavior</u>, <u>25</u>(1), 70-79.
- Cuban, L. (1983). Effective schools: A friendly but cautionary note. Phi Delta Kappan, 64(10), 695-696.
- Cuban, L. (1984). Transforming the frog into a prince: Effective schools research policy and practice at the district level. <u>Harvard Educational Review</u>, <u>54</u>(2), 129-151.
- Currie, J. (1977). The occupational attainment process in Uganda: Effects of family background and academic achievement on occupational status among Ugandan secondary school graduates. <u>Comparative Education Review</u>, <u>21</u>, 14-28.
- Currie, J. (1979). Family background, academic achievement and occupational status in Uganda. In Heyneman, S. & Currie, J. (Eds.) <u>Schooling, academic performance and occupational</u> <u>attainment in a non-industrialized society</u>. Washington, DC: University Press of America, 80-93.
- Dede, C. & Freiberg, H. (1986). The long-term evolution of effective schools. <u>The Educational Forum</u>, <u>51</u>(1), 65-79.
- Diaz, J. (1984). A cross-cultural study of the reliability of the Coopersmith self-esteem inventory. <u>Educational and Psychological</u> <u>Measurement</u>, <u>44</u>(3), 575-581.
- Dove, L. (1980). The role of the community school in rural transformation in developing countries. <u>Comparative Education</u>, <u>16(1)</u>, 67-79.
- Edmonds, R. (1978). <u>A discussion of the literature and issues</u> <u>related to effective schooling</u>. A paper prepared for the National Conference on Urban Education. St. Louis, Missouri, July 10-14.
- Eisemon, T. (1985). <u>Socio-economic consequences of school expansion</u> <u>in Kenya</u>. Unpublished manuscript. McGill University, Montreal.
- Elmore, R. (1978). Organizational models of social program implementation. <u>Public Policy</u>, <u>26</u>(2), 185-228.
- Elmore, R. (1983). Social policymaking as strategic intervention. In E. Seidman (Ed.) <u>Handbook of social intervention</u>. Beverly Hills, CA: Sage, 212-236.
- Elmore, R. (1984). Forward and backward mapping: Reversible logic in the analysis of public policy. In Hans, K. & Toonen, T. (Eds.), <u>Policy implementation in federal and unitary systems</u>. Boston: Nijhoff, 33-70.

- Erickson, F. (1984). School literacy, reasoning, and civility: An anthropologist's perspective. <u>Review of Educational Research</u>, 54(4), 525-546.
- Farnsworth, C. (1986, November 17). Washington watch: Plea by Zaire on debt seen. <u>The New York Times</u>, p.22.
- Firestone, W. & Herriott, R. (1982). Prescriptions for effective elementary schools don't fit secondary schools. <u>Educational</u> <u>Leadership</u>, <u>40</u>, 51-53.
- Firestone, W. & Wilson, B. (1985). Using burearcratic and cultural linkages to improve instruction: The principal's contribution. <u>Educational Administration Quarterly</u>, <u>21</u>(2), 7-30.
- Foster, P. (1965). The vocational school fallacy in development planning. In C. Anderson & M. Bowman (Eds.) <u>Education and</u> <u>Economic Development</u>. London: Frank Cass, 142-166.
- Gamoran, A. & Dreeben, R. (1985, August). <u>Coupling and control in</u> <u>educational organizations</u>. A paper prepared for the annual meeting of the American Sociological Association.
- Glasser, W. (1969). <u>Schools without failure</u>. New York: Harper & Row.
- Good, T. & Brophy, J. (1985). School effects. In Wittrock, M. (Ed.) <u>Handbook of research on teaching. 3rd edition</u>. New York: Macmillan.
- Goodlad, J. (1983). <u>A place called school: Prospects for the</u> <u>future</u>. New York: McGraw-Hill.
- Gould, D. & Amaro-Reyes, J. (1983). <u>The effects of corruption on</u> <u>administrative performance:</u> <u>Illustrations from developing</u> <u>countries.</u> (Staff Working Paper No. 580.) Washington, DC: The World Bank.
- Gran, G. (Ed.) (1979). <u>Zaire:</u> The political economy of <u>underdevelopment</u>. New York: Praeger.
- Griffiths, D. (1958). <u>Administrative theory in education</u>. Chicago: University of Chicago.
- Hallinger, P. & Murphy, J. (1985a). <u>Instructional effectiveness and</u> <u>school socio-economic status</u>. Is good for the goose, good for <u>the gander</u>? A paper presented at the annual meeting of the American Educational Research Association, Chicago.
- Hansford, B. & Hattie, J. (1982). The relationship between self and achievement/performance measures. <u>Review of Educational</u> <u>Research</u>, <u>52</u>(1), 123-142.

- Hanson, J. (1971). Enhancing the contribution of formal education in Africa: Primary schools, secondary schools and teacher training institutions. Washington, DC: American Council on Education.
- Hanson, M. (1975). The modern bureaucracy and the process of change. <u>Educational Administration Quarterly</u>, <u>11</u>, 21-36.
- Hanson, M. (1976). Beyond the bureaucratic model: A study of power and autonomy in educational decision-making. <u>Interchange</u>, <u>7</u>, 27-38.
- Hanushek, E. & Kain, J. (1972). On the value of equality of educational opportunity as a guide to public policy. In Mosteller, F. & Moynihan, D. (Eds.) <u>On equality of educational</u> <u>opportunity</u>. New York: Random House.
- Heyneman, S. (1976). Influences on academic achievement: A comparison of results from Uganda and more industrialized societies. <u>Sociology of Education</u>, <u>49</u>, 200-211.
- Heyneman, S. (1980). Differences between developed and developing countries: Comments on Simmons & Alexander's 'Determinants of school achievement'. <u>Economic Development and Cultural Change</u>, <u>28</u>(2), 403-408.
- Heyneman, S. (1983). Improving the quality of education in developing countries. <u>Finance and Development</u>, <u>20</u>(1), 18-21.
- Heyneman, S. (1984). Research on education in the developing countries. <u>International Journal of Educational Development</u>.
- Heyneman, S. & Loxley, W. (1982). Influences on academic achievement across high and low income countries: A re-analysis of IEA data. <u>Sociology of Education</u>, <u>55</u>, 13-21.
- Heyneman, S. & Loxley, W. (1983). The impact of primary school quality on academic achievement across 29 high- and low-income countries. <u>American Journal of Sociology</u>, <u>88</u>, 1162-1194.
- Heyneman, S. et al. (1984). Textbooks in the Philippines: Evaluation of the pedagogical impact of a nationwide investment. <u>Educational Evaluation and Policy Analysis</u>, <u>6</u>(2), 139-150.
- High, R. & Achilles, C. (1986). <u>Principal influence in</u> <u>instructionally effective schools</u>. A paper presented at the annual meeting of the American Educational Research Association, San Francisco.
- Huff, S. et al. (1982). <u>Principal differences: Excellence in school</u> <u>leadership and management</u>. Boston: McBer.
- Hurst, P. (1981). Some issues in improving the quality of education. <u>Comparative Education</u>, <u>17</u>, 185-193.

- Irvine, D. (1979). Factors associated with school effectiveness. Educational Technology, 29(5), 53-55.
- Jencks, C. et al. (1972). <u>Inequality: A reassessment of the effect</u> of family and schooling in America. New York: Basic.
- Johnson, B. et al. (1983). The Coopersmith self-esteem inventory: A construct validation study. <u>Educational and Psychological</u> <u>Measurement, 43</u>, 907-913.
- Kagia, R. (1986). The impact of educational research on policy: <u>Trends and possibilities in Africa</u>. A paper presented at the annual meeting of the Comparative and International Educational Society, Toronto.
- Kaplan, I. (Ed.) (1979). Zaire: A country study. Washington, DC: Government Printing Office.
- Klitgaard, R. & Hall, G. (1974). Are there unusually effective schools? Journal of Human Resources. 74, 90-106.
- Kokenes, B. (1978). A factor analytic study of the Coopersmith Self-Esteem Inventory. <u>Adolescence</u>, <u>13</u>, 149-155.
- Lanzas, A. & Kingston, P. (1981). English achievement in Zaire: The effects of family status and residential disruption. <u>Comparative</u> <u>Education Review</u>, <u>25</u>, 431-441.
- Lezotte, L. (1986). <u>School effectiveness: Reflections and future</u> <u>directions</u>. A paper presented at the annual meeting of the American Educational Research Association, San Francisco.
- Lezotte, L. et al. (1980). <u>School learning climate and student</u> <u>achievement</u>. Institute for Research on Teaching. East Lansing, MI: Michigan State University.
- Madden, J. et al. (1976). <u>School effectiveness study: State of</u> <u>California</u>. A paper presented at the annual meeting of the American Educational Research Association, San Francisco.
- Maloba, N. (1977). Predicting schools' performance in the state examinations: A model for Shaba province in Zaire. <u>Dissertation</u> <u>Abstracts International</u>, <u>38</u>, 5383A.
- Manasse, A. (1985). Improving conditions for principal effectiveness. <u>Elementary School Journal</u>, <u>85</u>(3), 439-463.
- March, J. & Olsen, J. (1979). <u>Ambiguity and choice in organizations</u>. <u>2d edition</u>. Bergen, Norway: Universitesforlaget.
- Marsh, H. et al. (1983). Self-concept: Reliability, stability, dimensionality, validity, and the measurement of change. <u>Journal</u> <u>of Educational Psychology</u>, <u>75</u>(5), 772-790.

- Martin, W. & Willower, D. (1981). The managerial behavior of high school principals. <u>Educational Administration Quarterly</u>, <u>17</u>, 69-90.
- McAndrew, G. (1981). The high-school principal: Man in the middle. <u>Daedalus</u>, <u>110</u>, 105-118.
- McLaughlin, M. & Marsh, D. (1978). School management and organization in successful schools. <u>Sociology of Education</u>, <u>51</u>, 211-226.
- Meunier, R. & Ketelslegers, M. (1985). Definition des objectifs educationnels. <u>Educateur</u>, <u>5</u>, 22-32.
- Meyer, J. & Rowan, B. (1978). The structure of educational organization. In M. Meyer (Ed.) <u>Environments and</u> <u>Organizations</u>. San Francisco: Jossey-Bass, 78-109.
- Meyer, J. & Rowan, B. (1983). The structure of educational organizations. In J. Meyer and W. Scott (Eds.) <u>Organizational</u> <u>Environments: Ritual and Rationality</u>. London: Sage.
- Morse, W. (1964). Self Concept Data. NASSP Bulletin, 48, 23-27.
- Mukweso, M. et al. (1984). Education and occupational attainment from generation to generation: The case of Zaire. <u>Comparative</u> <u>Education Review</u>, <u>28</u>(1), 52-68.
- Mwaniki, M. (1973). The relationship between self-concept and academic achievement in Kenyan pupils. <u>Dissertation Abstracts</u> <u>International</u>, <u>34</u>, 1138A.
- New York State Department of Education. (1974). <u>School factors</u> <u>influencing reading achievement: A case study of two inner-city</u> <u>schools</u>. Albany, NY: Office of Education Performance Review.
- Nimnicht, G. et al. (1969). <u>The new nursery school</u>. New York: General Learning.
- Parsons, T. (1947). Introduction. In M. Weber, <u>The Theory of</u> <u>Social and Economic Organization</u>. New York: Free, 3-86.
- Powell, A. et al. (1985). <u>The shopping mall high school: Winners</u> <u>and losers in the educational marketplace</u>. Boston: Houghton Mifflin.
- Psacharopoulos, G. (1973). <u>Returns to education: An international</u> <u>comparison</u>. Amsterdam: Elsevier.
- Psacharopoulos, G. (1986). <u>To vocationalize or not to</u> <u>vocationalize? That is the curriculum question</u>. A paper presented at the annual meeting of the American Educational Research Association, San Francisco.

- Psacharopoulos, G. & Woodhall, M. (1985). <u>Education for</u> <u>development: Analysis of investment choices</u>. New York: Oxford University Press.
- Purkey, S. & Smith, M. (1982). Too soon to cheer? Synthesis of research on effective schools. <u>Educational Leadership</u>, <u>39</u>, 64-69.
- Purkey, S. & Smith, M. (1983). Effective schools: A review. Elementary School Journal, 83(4), 427-452.
- Purkey, S. & Smith, M. (1985). School reform: The district policy implications of the effective schools literature. <u>Elementary</u> <u>School Journal</u>, <u>85</u>(3), 353-389.
- Ralph, J. & Fennessey, J. (1983). Science or reform: Some questions about the effective schools model. <u>Phi Delta Kappan</u>, <u>64</u>, 689-694.
- Raudenbush, S. & Bryk, A. (1986). A hierarchical model for studying school effects. <u>Sociology of Education</u>, <u>59</u>, 1-17.
- Rio, A. (1979). Defensiveness, self criticism and self concept in a sample of Black, Mexican, and White American adolescents (Doctoral dissertation, Michigan State University, 1979). <u>Dissertation Abstracts International</u>, .
- Rowan, B. (1982). Instructional management in historical perspective: Evidence on differentiation in school districts. <u>Educational Administration Quarterly</u>, <u>18</u>(1), 43-59.
- Rowan, B. & Denk, C. (1984). Management succession, school socioeconomic context, and basic skills achievement. <u>American</u> <u>Educational Research Journal</u>, <u>21</u>(3), 517-537.
- Rowan, B. et al. (1982). <u>Methodological considerations in studies of</u> <u>effective principals</u>. A paper presented at the annual meeting of the American Educational Research Association, New York.
- Rowan, B. et al. (1983). Research on effective schools: A cautionary note. <u>Educational Researcher</u>, <u>12</u>(4), 24-31.
- Saunders, M. & Vulliamy, G. (1983). The implementation of curricular reform: Tanzania and Papua New Guinea. <u>Comparative</u> <u>Education Review</u>, <u>27</u>(3), 351-373.
- Sedlak, M. et al. (1986). <u>Selling students short: Classroom</u> <u>bargains and academic reform in the American high school</u>. New York: Teachers' College Press.
- Simon, H. (1971). Decision making and organizational design. In D. Pugh (Ed.) Organization Theory. New York: Penguin.

- Spady, W. (1982). Outcome-based instructional management: A sociological perspective. <u>Australian Journal of Education</u>, <u>26</u>, 10-29.
- Squires, D. (1980). Characteristics of effective schools: The importance of school processes. Washington, DC: National Institute of Education. (ERIC Document Reproduction Service No. ED 197 486)
- Steers, R. (1975). Problems in the measurement of organizational effectiveness. <u>Administrative Science Quarterly</u>, <u>20</u>, 546-558.
- Thompson, J. (1967). <u>Organizations in Action</u>. New York: McGraw-Hill.
- Tyler, W. (1985). The organizational structure of the school. <u>Annual Review of Sociology</u>, <u>11</u>, 49-73.
- Udy, S. (1959). Bureaucracy and rationality in Weber's organization theory: An empirical study. <u>American Sociological Review</u>, <u>24</u>, 791-795.
- Urevbu, A. (1984). Vocational education in Nigeria: A preliminary appraisal. <u>International Journal of Educational Development</u>, <u>4</u>(3), 223-229.
- Vansina, J. (1982). Mwasi's trials. <u>Daedalus</u>, <u>111</u>, 49-70.
- Varon, B. (1979). <u>Zaire: Current economic situation and</u> <u>constraints</u>. Washington, DC: The World Bank.
- Weber, G. (1971). <u>Inner-city children can be taught to read</u>: Four <u>successful schools</u>. Washington, DC: Council for Basic Education.
- Weber, M. (1947). The essentials of bureaucratic organization: An ideal-type construction. In R. Merton, et al. (Eds.), <u>Reader in</u> <u>bureaucracy</u>. Glencoe, II: Free Press, 18-27.
- Weick, K. (1976). Educational organizations as loosely coupled systems. <u>Administrative Science Quarterly</u>, <u>21</u>, 1-19.
- Wellisch, G. et al. (1978). School management and organization in successful schools. <u>Sociology of Education</u>, <u>51</u>, 211-226.
- Wholeben, B. (1985). <u>Decision simulation modeling for educational</u> <u>administration</u>. Unpublished manuscript, University of Texas at El Paso, Department of Educational Leadership and Counseling, El Paso, Texas.
- Williams, P. (1984). <u>African education under siege</u>. Paper presented at the Conference on Education Priorities in Sub-Saharan Africa, Windsor, England.

- Windham, D. (1985). <u>Internal efficiency and the African school</u>. Unpublished manuscript, Universite de Dijon, Dijon, France.
- Wise, A. (1979). <u>Legislated learning: The bureaucratization of the</u> <u>American classroom</u>. Berkeley, CA: University of California Press.
- Wylie, R. (1979). <u>The self-concept: Theory and research on</u> <u>selected topics. Vol. 2</u>. Lincoln, NB: University of Nebraska Press.
- Youdi, R. (1972). An exploratory study of achievement and attitudes of high school students in the Congo: An aspect of socialization for national development. <u>Dissertation Abstracts International</u>. Ann Arbor, MI: University Microfilms.
- Young, R. (1986). <u>Project SHAL: An analysis of implementation in</u> <u>the St. Louis public schools--findings from the replication</u> <u>implementation field test. June. 1984.</u> A paper presented at the annual meeting of the American Educational Research Association, San Francisco.
- Zirkel, P. & Gable, R. (1977). Reliability and validity of various measures of self-concept among ethnically different adolescents. <u>Measurement and Evaluation in Guidance</u>, <u>10</u>(4), 48-54.

- Alexander, K. et al. (1981). Measure for measure: On the use of endogenous ability data in school-process research. <u>American</u> <u>Sociological Review</u>, <u>46</u>, 619-631.
- Assie-Lumumba, N. (1983). <u>Social inequality and access to schooling</u> <u>in the Third World: An African case</u>. Revised version of a paper presented at the annual conference of the Comparative and International Education Society, Atlanta. (ERIC Document Reproduction Service No. ED 236 788)
- Austin, G. (1979). Exemplary schools and the search for effectiveness. <u>Educational Leadership</u>, <u>37</u>(1), 10-14.
- Blank, R. et al. (1985). <u>District and school policies and management</u> <u>practices leading to effective secondary schools: Preliminary</u> <u>draft for non intrusive sites</u>. A paper presented at the annual meeting of the American Educational Research Association, Chicago.
- Blase, J. (1986). <u>Dimensions of effective school leadership: The</u> <u>teacher's perspective</u>. A paper presented at the annual meeting of the American Educational Research Association, San Francisco.
- Bolman, L. & Deal, T. (1984). <u>Modern approaches to understanding</u> <u>and managing organizations</u>. San Francisco: Jossey-Bass.
- Bor, W. van den (1985). Problematic aspects of expatriate educational research with and in developing countries. International Journal of Educational Development 5(3), 167-181.
- Boyer, E. (1983). <u>High school: A report on secondary education in</u> <u>America</u>. New York: Harper & Row.
- Bridges, E. (1982). Research on the school administrator: The state of the art, 1967-1980. <u>Educational Administration Quarterly</u>, <u>18(3)</u>, 12-33.
- Clift, R. & Waxman, H. (1986). Some neglected elements of effective schools research: A review of literature. <u>Journal of Classroom</u> <u>Interaction</u>, <u>20</u>(2), 2-11.
- Cohn, E. & Rossmiller, R. (1985). <u>Research on effective schools:</u> <u>Implications for less-developed countries</u>. Washington, DC: World Bank.
- Coleman, J. (1984). Professorial training and institution building in the Third World: Two Rockefeller Foundation experiences. <u>Comparative Education Review</u>, <u>28</u>(2), 180-202.
- Coleman, J. & Ndolamb, N. (1983). Zaire: The state and the university. In Thomas, R. (Ed.) <u>Politics and education</u>. Oxford: Pergamon Press.

- Coopersmith, S. (1981). <u>Self-esteem inventories</u>. Palo Alto, CA: Consulting Psychologists Press.
- Crahay, M. (forthcoming). Search for school effects in developing countries: 1966-1986. In Crahay, M. (Ed.), L'Art et la Science <u>de l'Enseignement: Hommage a Gilbert de Landsheere</u>. Paris: Nathan.
- Crandall, D. et al. (1983). <u>People, policies and practices:</u> <u>Examining the chain of school improvement</u>. Andover, MA: The NETWORK.
- Cusick, P. (1983). <u>The egalitarian ideal and the American high</u> <u>school</u>. New York: Longman.
- De Bevoise, W. (1984). Synthesis of research on the principal as instructional leader. <u>Educational Leadership</u>, <u>41</u>(5), 14-20.
- Donmoyer, R. (1985). Cognitive anthropology and research on effective principals. <u>Educational Administration Quarterly</u>, <u>21</u>, 31-57.
- Dwyer, D. et al. (1983). <u>Five principals in action: Perspectives on</u> <u>instructional management</u>. San Francisco: Far West Laboratory for Educational Research and Development.
- Edmonds, R. (1979). Effective schools for the urban poor. Educational Leadership, 37, 15-24.
- Elmore, R. & McLaughlin, W. (1982). Strategic choice in federal education policy: The compliance - assistance trade-off. In Lieberman, A. & McLaughlin, M. (Eds.), <u>Policymaking in</u> <u>education</u>. Chicago: University of Chicago Press, 159-194.
- Etzioni, A. (1964). <u>Modern organizations</u>. Englewood Cliffs, NJ: Prentice-Hall.
- Fallon, B. (1979). Principals--the instructional leaders--hit or myth? <u>NASSP Bulletin</u>, <u>60</u>, (423).
- Farrar, E. et al. (1983). <u>Effective schools programs in high</u> <u>schools: Implications for policy, practice and research</u>. Cambridge, MA: Huron Institute.
- Farrell, J. (1977). The IEA studies: Factors that affect achievement in six subjects in twenty-one countries. <u>Teachers'</u> <u>College Record</u>, <u>79</u>, 289-297.
- Fuller, B. (1985). <u>Raising school quality in developing countries:</u> <u>What investments boost learning?</u> (Report No. EDT7.) Washington, DC: The World Bank.

- Furtwengler, W. (1986). <u>Reaching success through involvement:</u> <u>Implementation strategy for creating and maintaining effective</u> <u>schools</u>. A paper presented at the annual meeting of the American Educational Research Association, San Francisco.
- Gauthier, W. (1982). <u>Connecticut perspectives on instructionally</u> <u>effective schools: A model and process</u>. A paper presented at the annual meeting of the American Educational Research Association, New York.
- Gray, J. (1981). School effectiveness research: Key issues. Educational Research, 24(1), 49-54.
- Greenfield, W. (1982). <u>Empirical research on principals: The</u> <u>state-of-the-art</u>. A paper presented at the annual meeting of the American Educational Research Association, New York.
- Hallinger, P. & Murphy, J. (1985b). Assessing the instructional management behavior of principals. <u>Elementary School Journal</u>, <u>86</u>,(2), 217-247.
- Hanson, E. (1981). Organizational control in educational systems: A case study of governance in schools. In Bacharach, S. (Ed.) <u>Organizational behavior in schools and school districts</u>. New York: Praeger.
- Harbison, R. et al. (forthcoming). <u>School quality and achievement</u> <u>in rural Brazil: Results of initial analysis</u>. Washington, DC: World Bank.
- Hawkridge, D. et al. (1982). In-service teacher education in Kenya. In Perraton, H. (Ed.) <u>Alternative routes to formal</u> <u>education</u>. Baltimore: Johns Hopkins University Press.
- Heyneman, S. (1978). <u>Textbooks and achievement: What do we know?</u> Washington, DC: World Bank.
- Heyneman, S. & Jamison, D. (1980). Student learning in Uganda: Textbook availability and other factors. <u>Comparative Education</u> <u>Review</u>, <u>24</u>(2), 206-220.
- Heyneman, S. & White, D. (Eds.) (1986). <u>The quality of education and</u> <u>economic development</u>. Washington, DC: The World Bank.
- Johnson, H. (1978). <u>Do principals make a difference? The</u> <u>relationship between principal-related variables and student</u> <u>outcomes in IGE schools</u>. Washington, DC: National Institute of Education. (ERIC Document Reproduction Service No. ED 168 181)
- Kabuya, L. (1980). Assessment of reading abilities of Zairean students at ages 12 and 18 years. <u>Dissertation Abstracts</u> <u>International</u>, <u>41</u>, 2529A.

- Keyes, E. (1975). The problem of wastage in Zairian elementary schools. <u>Dissertation Abstracts International</u>, <u>36</u>, 6614.
- Kokenes, B. (1974). Grade level differences in factors of self-esteem. <u>Developmental Psychology</u>, <u>10</u>, 954-958.
- Kotter, J. (1982). What effective general managers really do. <u>Harvard Business Review</u>, <u>60</u>(6), 156-167.
- Leithwood, K. & Montgomery, D. (1982). The role of the elementary school principal in program improvement. <u>Review of Educational</u> <u>Research</u>, <u>52</u>, 309-339.
- Lezotte, L. & Bancroft, B. (1985a). School improvement based on effective schools research: A promising approach for economically disadvantaged and minority students. Journal of <u>Negro Education</u>, Summer Yearbook.
- Lezotte, L. & Bancroft, B. (1985b). Growing use of the effective schools model for school improvement. <u>Educational Leadership</u>, <u>42</u>(6), 23-27.
- Licata, J. et al. (1978). The school and environmental robustness: An initial inquiry. <u>Journal of Experimental Education</u>, <u>47</u>, 28-34.
- Linn, R. (1983). <u>Measuring school effectiveness: How achievement</u> <u>data can and cannot be used</u>. A paper presented at the annual meeting of the American Educational Research Association, Montreal.
- Lipham, J. (1981). <u>Effective principal. effective school</u>. Reston, VA: American Association of Secondary School Principals.
- Madaus, G. et al. (1979). The sensitivity of measures of school effectiveness. <u>Harvard Educational Review</u>, <u>49</u>, 207-230.
- Madaus, G. et al. (1980). <u>School effectiveness: A reassessment of</u> <u>the evidence</u>. New York: McGraw-Hill.
- Mandeville, G. (1986). <u>The evaluation of a "count down" procedure</u> <u>for identifying effective schools</u>. A paper presented at the annual meeting of the American Educational Research Association, San Francisco.
- Mandeville, G. & Anderson, L. (1986). <u>A study of the stability of</u> <u>school effectiveness measures across grades and subject areas</u>. A paper presented at the annual meeting of the National Council on Measurement in Education, San Francisco.
- Masiala, M. (1984). La problematique de la langue nationale dans l'enseignement. <u>Educateur</u>, <u>4</u>, 25-32.

- Matthews, K. & Brown, C. (1976). The principal's influence on student achievement. <u>NASSP Bulletin</u>, <u>60</u>(402), 1-15.
- Maxwell, R. (1968). Leader behavior of principals: A study of ten inner-city elementary schools of Flint, Michigan. <u>Dissertation</u> <u>Abstracts</u>, <u>28</u>, 2950A.
- McDonnel, L. (1985). Implementing low-cost school improvement strategies. <u>Elementary School Journal</u>, <u>85</u>, 424,438.
- Meyer, et al. (1978). Institutional dissensus and institutional consequences in schools. In M. Meyer (Ed.) <u>Environments and</u> <u>Organizations</u>. San Francisco: Jossey-Bass.
- Miskel, C. (1977). Principals' perceived effectiveness, innovation effort, and the school situation. <u>Educational Administration</u> <u>Ouarterly</u>, <u>13</u>, 31-46.
- Murnane, R. (1981). Interpreting the evidence on school effectiveness. <u>Teachers' College Record</u>, <u>83</u>(1), 19-35.
- Nagel, T. & Scholar, M. (1986). <u>A longitudinal study of systematic</u> <u>efforts to raise standardized achievement test scores using</u> <u>factors from school effectiveness research</u>. A paper presented at the annual meeting of the American Educational Research Association, San Francisco.
- Niles, F. (1981). Social class and academic achievement: A Third World reinterpretation. <u>Comparative Education Review</u>, <u>25</u>, 419-430.
- Odden, A. & Odden, E. (1984). Education reform, school improvement, and state policy. <u>Educational Leadership</u>, <u>42</u>(2), 13-19.
- O'Malley, P. & Bachman, J. (1983). Self-esteem: Change and stability between ages 13 and 23. <u>Developmental Psychology</u>, 19, 257-268.
- Peters, T. & Waterman, R. (1982). <u>In search of excellence: Lessons</u> from America's best-run companies. Cambridge, MA: Harper & Row.
- Phi Delta Kappa (1980). <u>Why do some urban schools succeed?</u> <u>Study of</u> <u>exceptional urban elementary schools</u>. Bloomington, IN: Phi Delta Kappa.
- Pitner, N. & Hocevar, D. (1986). <u>An empirical investigation of the</u> <u>multi-dimensional nature of principal leadership</u>. A paper presented at the annual meeting of the American Educational Research Association, San Francisco.
- Porter, J. & Washington, R. (1979). Black identity and self-esteem: A review of studies of black self-concept, 1968-1978. <u>Annual Review of Sociology</u>, <u>5</u>, 53-74.
- Psacharopoulos, G. (1983). Education as an investment. In Habte, A. et al. (Eds.) <u>Education and development: Views from the World</u> <u>Bank</u>. Washington, DC: World Bank, 11-14.
- Rampaul, W. et al. (1984). The relationship between academic achievement, self-concept, creativity, and teacher expectations among native children in a northern Manitoba school. <u>Alberta</u> <u>Journal of Educational Research</u>, <u>30</u>,(3), 213-225.
- Reidel, J. (1980). Self-esteem, achievement scores and IQ scores among students of three ethnic groups in grades seven and eight. <u>Dissertation Abstracts International</u>, <u>42</u>, 996A.
- Rosenholtz, S. (1985). Effective schools: Interpreting the evidence. <u>American Journal of Education</u>, 93, 352-388.
- Rutter, M. et al. (1979). <u>Fifteen thousand hours: Secondary</u> <u>schools and their effects on children</u>. Cambridge, MA: Harvard University Press.
- Salmi, J. (1984). Educational research on the Third World or with the Third World: A view from the South. <u>IDS Bulletin</u>, <u>15(4)</u>, 9-11)
- Sheline, Y. (1979). Education and national development: The effects of school sponsorship and other factors on academic achievement in Zaire. <u>Dissertation Abstracts International</u>. Ann Arbor, MI: University Microfilms.
- Sheline, Y. et al. (1984). The effect of school sponsorship on academic achievement: A comparison of Catholic, Protestant and government secondary schools in Zaire. <u>Comparative Education</u>, <u>20</u>(2), 223-236.
- Simmons, J. & Alexander, L. (1978). The determinants of school achievement in developing countries: A review of research. <u>Economic Development and Cultural Change</u>, <u>26</u>, 341-358.
- Rutter, M. (1983). School effects on pupil progress: Research findings and policy implications. In Shulman, L. & Sykes, G. (Eds.) <u>Handbook of teaching and policy</u>. New York: Longman.
- Saidi, R. (1979). An emerging problem for educational planners in Zaire: Unemployment among the educated; causes and tentative solution. <u>Dissertation Abstracts International</u>, <u>39</u>, 4605A.
- Sergiovanni, T. & Corbally, J. (Eds.) (1984). <u>Leadership and</u> organizational culture: New perspectives on administrative theory and practice. Urbana, IL: University of Chicago Press.
- Shoemaker, J. & Fraser, H. (1981). What principals can do: Some implications from studies of effective schooling. <u>Phi Delta</u> <u>Kappan</u>, November, 178-182.

- Simmons, R. et al. (1978-79). Self-esteem and achievement of black and white adolescents. <u>Social Problems</u>, <u>26</u>, 88-96.
- Sirotnik, K. & Burstein, L. (1983). <u>Methodological issues in</u> <u>studying the effectiveness of schooling: Recent developments and</u> <u>lingering concerns</u>. Los Angeles: University of California, unpublished.
- Sizer, T. (1984). <u>Horace's compromise: The dilemma of the American</u> <u>high school</u>. Boston, MA: Houghton Mifflin.
- Somerset, T. (1984, December). <u>A note on the effects of head</u> <u>teachers and of supervisers on school quality</u>. A paper presented at the Conference on Education Priorities in Sub-Saharan Africa, Windsor, England.
- Sparks, G. et al. (1985). School improvement through staff development. <u>Educational Leadership</u>, <u>42</u>(6), 59-61.
- Stewart, J. (1978). Bureaucratic structure, interpersonal climate and student achievement. <u>Dissertation Abstracts International</u>, <u>39</u>, 6457A-6458A.
- Weick, K. (1982). Administering education in loosely coupled schools. <u>Phi Delta Kappan</u>, <u>63</u>, 673-676.
- Young, B. (1980). Principals can be promoters of teaching effectiveness. <u>Thrust for Educational Leadership</u>, 9, 11-12.