SOME READING PROBLEMS ENCOUNTERED BY CISKEIAN SECOND LANGUAGE ENGLISH READERS IN SUBJECT CONTENT AREAS, WITH SPECIAL REFERENCE TO GEOGRAPHY AT THE STANDARD SIX LEVEL

T H E S I S

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by

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ABSTRACT

Since in our educational system a great deal of learning is supposedly dependant upon a child's ability to read and assimilate information from textbooks, this study investigated what reading skills are required by a second language reader of English to read textbooks with comprehension and understanding in relation to the reading skills of a competent reader and how Ciskeian Standard 6 pupils perform in relation to a Geography text prescribed at that level.

A test, designed to measure eight reading comprehension skills, was given to a sample of 250 children from four schools in Zwelitsha, Ciskei, to establish whether the subjects are able to: a) give the literal meaning of words; b) derive the appropriate meaning of an ambiguous word from the context in which it appears; c) find answers to questions by making direct reference to the text; d) identify the major points and details in a text; e) use the information in the text to predict what the writer is going to talk about next; f) find the referent for anaphoric terms; g) use discourse markers to predict information/meaning to come, and see the relationships between what they have just read and what they are about to read; h) activate and use the background knowledge and schemata that they have to understand the text topic.

The results of this study indicate that these children are: a) unfamiliar with the structure of expository texts; b) linguistically bound to a text and that they fail to use linguistic and contextual clues even when they are explicit in the text. The study also shows that the ability to make inferences and predictions is determined to a large extent by the prior knowledge and background experience that a pupil brings with him to the text and by his ability to activate that background knowledge.

The findings suggest that in the English classroom, in an English as a second language (L2) medium situation, the L2 teacher has responsibility to prepare the child for the study, which includes reading, writing, listening and speaking, of all subjects across the curriculum through the second language, which is the medium of instruction.

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CHAPTER ONE INTRODUCTION TO THE STUDY

1.1 Background to the Study

The ability to read is generally regarded not only as the basis of education, but also as an essential possession of the citizens of civilized countries. It is generally recognized that the efficient conduct of a modern civilized country depends on the possession by its members of a certain degree of literacy, if only to read the mass of printed notices, forms and instructions with which they are daily confronted. It is not surprising, therefore, to find that there is an increased pressure on all children to learn to read.

The children of the Ciskei, whose mother-tongue is Xhosa, are all exposed to a common education system which has English as the medium of instruction after the first four years of elementary school. The transition from English as a subject to English as a medium of instruction is fraught with problems. A problem which has far-reaching consequences is the fact that almost all Ciskeian teachers in the primary school are not native speakers of English. Yet these teachers have been assigned the enormous responsibility of teaching through the medium of English even though their ability to communicate in English is questionable.

As the child progresses to secondary school the Ciskeian second language (ESL) pupil simultaneously faces the twin problems of a) more advanced conceptual

difficulties in Geography, Science, Mathematics, etc, ..., and b) studying those subjects through the medium of English. Throughout secondary school the problem becomes more serious and by the time they reach university the surviving students are still struggling with what seems to them to be largely meaningless English prose in their texts. In my view it takes indomitable persistence on the part of those second language students to succeed against such daunting odds.

1.2 The Objectives of the Study

It is against the background such as the one outlined above that this area of study was approached. While working with children in the Ciskei the concerns that this researcher has regarding the overwhelming problems facing pupils who have to use a second language for virtually all their schooling, have deepened.

Although aspects of the language medium influences in schooling have been considered by a number of writers [see, for example De Wet (1967), Hartshorne (1967), Dreyer (1969) and Duminy (1972)], very little research in this area has been done in the Ciskei.

The aim of this study is to find out whether a Ciskeian ESL student's reading competence in English matches the reading competence demands in English Standard 6 Geography textbooks. This will be looked at specifically in the following areas:

- does he/she* understand the meaning of words in a given passage? (see page 99);
- if a word is ambiguous, can he derive the appropriate meaning from its appearance in context? (the importance of this sub-skill will be discussed on pp 84, 85, 99);
- can he separate the main themes in a paragraph from subsidiary ones? (the importance of this sub-skill will be discussed on pp 90, 91, 92);
- can he make inferences that are essential to intelligent reading? (see discussion on pp 87, 88, 89, 90);
- can he use the information in the text to predict what the writer is going to talk about next? (see pp 94, 95 for a discussion of this sub-skill);
- can he find the referent for anaphoric terms? (refer to pp 95, 96, 97) for a discussion of this sub-skill);
- can he use discourse markers to see the relationship between what he has just read and what he is about to read? (see pp 95, 96, 97 for a discussion of this sub-skill);
- should this be viewed purely as a language issue in its broadest sense or should one not perhaps look deeper into the problem by considering the language of the textbooks authorised by the Ciskei Education Department?

Perhaps the chief concern of this study is best summed up by Lunzer and Gardner (1979) when they say:

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*Henceforth, the third person, singular, masculine gender will be used to refer to a Ciskeian ESL pupil.

> To learn by reading, a student needs to penetrate beyond the verbal forms of the text to the underlying ideas. He must compare these ideas both with what he already knows and with each other, so as to pick out what is essential and what is new, and thereby alter his previous conception in line with this novel information.

I have sought to address the extent of this problem at the Standard 6 level and have considered one aspect of their school subjects, viz. the Astronomical section of the Geography syllabus.

1.3 The Method of the Study

Various research activities were used in this study.

a) Literature Study

A consideration of aspects relating to such matters as:

i) the schema-theoretic view of reading (see pp 7-15);

ii) an historical exploration of content area reading instruction (see pp 15-23);

iii) prior knowledge and experience an individual brings to a text and how it influences how the text is comprehended (see pp 23-31);

iv) the influence of language and home background (see page 31);

as discussed by a number of authorities. This study should not be seen as exhaustive. Instead, it should be viewed simply as a means of clarifying certain relevant points from general theories relating to the issues listed above.

b) **An Empirical Study involving Standard 6 Pupils at Four Ciskeian schools**

This involved the following stages:

i) the construction and administration of a suitable test with a view to fulfilling the aims as outlined on page 3 (see Appendix A, pp 104-110)

The test has three distinctive features. The first of these features consists of an extract (see Appendix A, pp 105-107) from the prescribed Standard 6 Geography textbook on which twelve questions (see Appendix A, pp 107-111) were set to test five reading strategies, viz.:

literal meaning of words;

meaning of words in context;

literal comprehension;

inference;

salient points.

The second part of the test, also based on the prescribed Geography textbook, was designed to test the pupils' ability to predict what the writer will talk about next (see Appendix A, pp 109-110). The third feature of this test consists of a modified cloze test (see Appendix A 110-111), designed to test the pupils' ability to interpret discourse markers and anaphoric reference.

Before a test could be constructed, a number of issues needed to be addressed:

- the (minimally) four different kinds of meaning

embodied in a text, viz. conceptual meaning, propositional meaning, contextual meaning and pragmatic meaning (see pp 32-34);

- different reading processes with special attention to those postulated by the New York Board of Education (1979), Lunzer, Waite and Dolan (1979) and Lanham (1986) (see pp 35-43);
- some demands made on learners by Geography texts (see pp 43-48);
- the reading strategies to be tested in this study (see pp 48-50);
- consideration had also to be given to the question of readability and the suitability of the three techniques (readability formulae, cloze procedure comprehension tests and multiple-choice questions) as a guide to the comprehensibility of a text for its intended readership (see pp 51-64).

ii) administration of the test to the four sample schools.

1.4 A Discussion of the Results of the Test

This also includes a discussion of the schools from which the sample was chosen (see pp 65-68).

1.5 Implications of the Above Discussion for:

i) teachers;

ii) educational authorities;

iii) further research (see pp 98-103).

CHAPTER 2 BACKGROUND TO THE STUDY

Over the years there have been many models of the reading process. These models have undergone and are still undergoing a process of evolution, revolution and counterrevolution. It would not be appropriate in this study to examine all these models. Instead, this discussion will focus on the most widely-held current model of the reading process.

Recent studies in cognitive psychology have focused attention on the importance of prior knowledge and background experiences to the quality of reading instruction. Using the term "schema" Anderson (1977), Rumelhart (1980), Rumelhart and Ortony (1977), and others have offered a theoretical basis for practical aspects of instruction or modelling reading. This schema-theoretic view of reading is more than just a theory about reading and learning from reading. Its practical implications are of real importance to teachers because it has contributed significantly to making the complex problem of reading more intelligible.

2.1 The Schema-theoretic View of Reading

The notion of schema is not new as it has previously been used by cognitive psychologists in their theories of memory and learning (see, for example Bobrow and Norman, 1975; Fillmore, 1975; Rumelhart, 1975; Chafe, 1976; Minsky, 1977 and Schank and Abelson, 1977).

In fact, the term schema can be traced to Kant as far back as 1787.

Many schema-theoretic models have been, are being, and will be developed, and there are some fundamental differences among them. In view of this I have not tried to provide a detailed description of any one model. Instead, I will pretermit over the notion in the hope of providing a coherent expose of the overall theory.

The basic idea of schema theory, originally suggested by Bartlett (1932), is that human memory consists of high level structures known as schemata, each of which encapsulates our knowledge and everything connected with a particular object or event. This notion has been taken up and expanded by many researchers, e.g. Minsky (1977), Schank and Abelson (1977), Adams and Collins (1979), Lewis (1982) and Rumelhart (1975).

Adams and Collins (1979) and Adams (1982) argue that a fundamental assumption of schema-theoretic approaches to language comprehension is that a written text does not in itself carry meaning. Instead, a text only provides directions for readers as to how they should retrieve or reconstruct the intended meaning using their own, previously acquired knowledge. The words of a text evoke in the reader associated concepts, their past interrelationships and their potential interrelationships. The organisation of the text helps the reader to select among these conceptual complexes.

The goal of schema theory is to specify how the reader's knowledge interacts with and shapes the information on the page and to specify how that knowledge must be organized to support the interaction between the reader and the text.

Minsky (1977) emphasized the dynamic, constructive nature of schema use and described the role of schemata in learning - how they serve as organizers for input and how without them new experiences would be incomprehensible. In his writings, Minsky (1977) proposed knowledge schemata for representing different kinds of situations. He called these knowledge representations "frames" because he thought of them as frame-like networks for describing categories of objects and events. Schemata can be represented as frames which have slots which can be filled with appropriate values. Some of these slots have appropriate values while other slots are variables which can be filled in with optional values to represent particular situations (Green, 1986; Adams and Collins, 1979; Anderson, Spiro and Anderson, 1978; Rumelhart, 1975). Furthermore, slots cover a wide range of information. Variable slots can be filled in by many different optional values, each of which represents a particular event. A particularly useful aspect of frames is that, when specific information is lacking about slots, we can fill them in with what Minsky (1977) calls default values. The idea is that, if nothing else is indicated, by default we select the most commonly expected value for a slot.

Schank and Abelson (1977) make a similar point about the usefulness of "scripts" in communication: "What they do is let you leave out the boring details when you are talking or writing, and fill them in when you are listening or reading" (p.41). What Schank and Abelson mean by a script is an event schema, "a pre-determined, stereotyped sequence of actions that defines a well-known situation" (p.41). One popular example of a script is the restaurant script, which contains all that is associated in one's memory and experience with going to a restaurant. A "Restaurant" script is shown in Figure I (Green, 1986).

Figure I: Restaurant Script. (Cited in Green, 1986)

NAME: Restaurant

PROPS:
- Tables
- Menu
- Food
- Bill
- Money
- Tip

ROLES:
- Customer
- Waiter/waitress
- Cook
- Cashier
- Owner

ENTRY CONDITIONS:
- Customer is hungry
- Customer has money

RESULTS:
- Customer has less money
- Owner has more money
- Customer is not hungry

SCENE 1: ENTERING

Customer enters restaurant
Customer looks for table
Customer decides where to sit
Customer goes to table
Customer sits down

SCENE 2: ORDERING

Waitress brings menu
Customer reads menu
Customer decides on food
Customer orders food
Waitress gives food order to cook
Cook prepares food

SCENE 3: EATING

Cook gives food to waitress
Waitress brings food to customer
Customer eats food

SCENE 4: EXITING

Customer asks for bill
Waitress gives bill to customer
Customer gives tip to waitress
Customer goes to cashier
Customer gives money to cashier
Customer leaves restaurant

Inference-making plays a central role in the schema-theoretic view of reading. Default values permit us to make inferences. For example, when someone walks home after a dance, the default value allows us to assume that he does not possess a car. Since it is a general characteristic of humans to make inferences in order to make sense of everything they see, hear or read, the range of inferences based on schemata is potentially unlimited (Schank, 1972; Frederiksen, 1975; Kintsch, 1974; Haviland and Clark, 1974; Anderson, 1985).

Central to the schema theory are two basic modes of information processing which are sources of activation for schemata. These are usually referred to as top-down and bottom-up activation. These two directions correspond to what Bobrow and Norman (1975) have called conceptually-driven and data-driven processing.

The first mode, bottom-up processing - believed by many researchers to represent the complete reading process - is evoked by the incoming data (Lewis, 1982). A schema is said to be activated from the bottom-up whenever a sub-schema which has been somehow activated causes the various schemata of which it is a part to be activated (Rumelhart, 1980). As schemata at the lower levels are activated they evoke schemata at the next (higher) level. As these schemata are activated they, in turn, trigger off schemata at the next higher level.

Adams and Collins (1979) reason that in this way the information is propagated upwards through the hierarchy, through increasingly comprehensive levels of interpretation. At the same time, these high level schemata initiate top-down processing by activating the sub-schemata not already activated in an attempt to evaluate its goodness of fit. Once its "goodness of fit" has been established these higher, more abstract schemata would then activate, from the top-down, other sub-schemata and this activation would flow back down to lower-level schemata which would eventually make contact with either other schemata which have been activated from the bottom-up or they will initiate a search for the predicted inputs.

The crucial feature of a schema - theoretic account of reading comprehension is that for the skilled reader top-down and bottom-up processing occur simultaneously and interact with each other (Rumelhart, 1975; Adams and Collins, 1979; Lewis, 1982). One attempt to describe something of this process is that of Lewis (1982). The following exposition is an adaptation of his version of the interactive reading model:

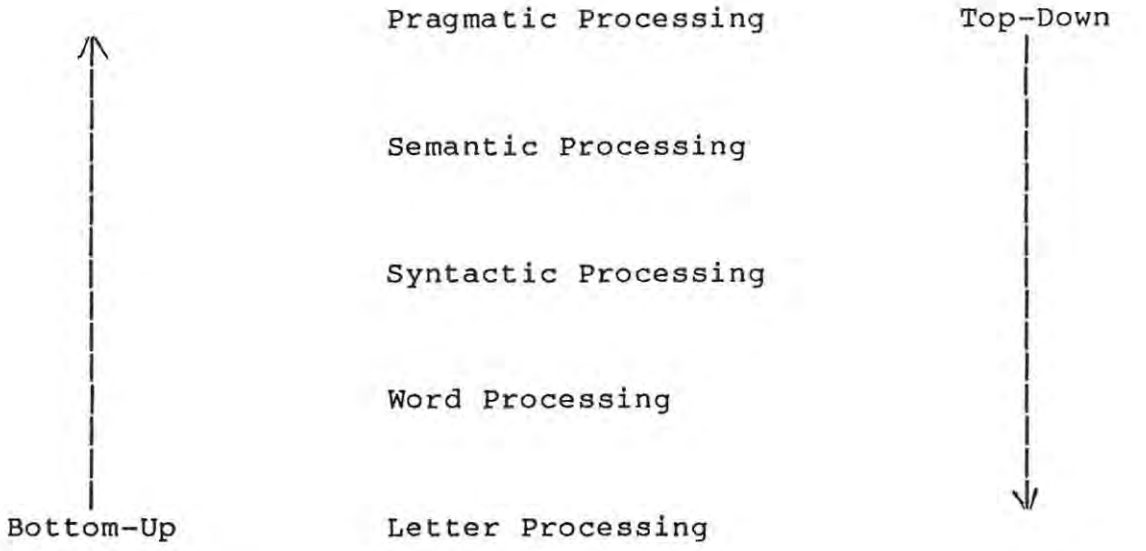


Figure 2: The Interactive Reading Model (adapted from Lewis, 1982)

The data that are needed to instantiate the schemata become available through bottom-up processing. In the above figure, such a process would start with letter processing and lead to word recognition. The word would then be appraised for its syntactic and semantic properties, at which point it is presumably interpreted. At the same time top-down processing is taking place: this process facilitates the assimilation of information if it is anticipated or is consistent with the reader's conceptual set. While bottom-up processing ensures that the reader will be sensitive to information that is novel or does not fit his ongoing hypotheses about the content of the text, top-down processing helps the reader to resolve ambiguities or to select between alternative possible interpretations of the incoming data.

Having proposed a framework of the schema-theoretic view of reading, it perhaps is necessary to comment on its potential uses. Anderson, Reynolds, Schallert and Goetz (1977) have identified three functions of schemata. First, schemata provide the basis for filling the gaps in a text: no message is ever completely explicit, and schemata permit a coherent interpretation through inferential elaboration. Second, schemata constrain a reader's interpretation of an ambiguous message: if readers possess background information and assumptions which differ from those of the author, they will re-interpret vague aspects of the passage to conform with their own schemata and will be unaware of other possible interpretations which in fact conform to the author's schemata. Third, it is by establishing a correspondence between things known, as represented by schemata, and the givens in a message that readers monitor their comprehension and know whether they have understood the text.

2.2 An Historical Exploration of Content Area Reading Instruction

Children are required to read content material from a variety of sources in many of their school subjects. But the only reading strategies that have traditionally been taught in schools are those for dealing with narrative discourse (see, for example, Pearson et.al.., 1981). However, current research has shown that school children have trouble comprehending the structure of expository prose (McGee, 1982; Meyer, Brandt and Bluth, 1980; Taylor, 1980). Furthermore, research

shows that the type of reading strategies required depends, inter alia, on purpose. Different reading purposes require different reading strategies. Therefore, the strategies required for narrative and fictional texts and the strategies required for content and expository texts are different. Content area reading instruction is designed to develop these strategies. Since the primary purpose of this instruction is to develop students' reading strategies and thus help them locate, comprehend, remember and retrieve information that is contained in various styles of writing across the curriculum it is perhaps appropriate to provide a short historical background on the beginnings of content area reading instruction.

The specialty of content area reading instruction came about in recognition of the fact that readers require various strategies when they read particular subject areas and read many kinds of materials for different purposes. Essentially, content area reading instruction attempts to enable students to cope with the special reading materials and tasks encountered during the study of school subjects.

2.2.1 Recurring Issues about Content Area Reading Instruction

There are several recurring issues which confront educators concerned with developing content area reading instruction. Moore, Readence and Rickelman (1983) identify five such issues: locus of instruction, reading demands of various subjects,

study, reading materials and age focus. But for the purposes of this study, attention will be focused only on the first two (locus of instruction and the reading demands of various subjects) as they have particular relevance to the problem being investigated.

i) Locus of Instruction

The first issue in content area reading instruction revolves around locus of instruction. The issue is whether reading strategies should be taught in content classrooms by content area teachers or in reading classrooms by reading teachers. Herber (1970) suggested that there were two choices: direct, skills-centred instruction, or functional, content-centred instruction.

a) Direct, Skills-centred Instruction

Direct, skills-centred instruction occurs when a teacher identifies a set of reading strategies and presents them to his pupils regardless of the tasks currently being faced during the subject matter lesson. Reading strategies are taught separately from the content being studied and, as a result, text content is seen purely as a vehicle that allows direct and systematic presentation of strategies.

Secondary-school educators were also concerned with the fact that the content area teachers would not assume reading instruction responsibilities. These teachers tended to emphasize the content of their

subjects rather than reading strategies for acquiring that content with the result that implementing reading programmes across the curriculum was seen to be futile (Moore, Readence and Rickelman, 1983).

b) Functional, Content-centred Instruction

This type of instruction occurs when teachers identify strategies which are necessary for completing certain tasks and then present those strategies along with the subject matter. Progressive educators in the early 1900's did not favour setting time aside for isolated strategy instruction; instead they felt that reading should be tied up with all the other work of the school (Thorne-Thomson, 1901, p.227 - cited in Moore, Readence and Rickelman, 1983). Even educators who were not closely affiliated with the Progressive Movement recommended that reading and subject matter instruction should be combined (Horn, 1937; McCallister, 1936; Monroe and Mohlman, 1924; Yoakam, 1928 - cited in Moore, Readence and Rickelman, 1983).

Although educators in the Progressive tradition did not separate reading instruction from subject matter instruction, they did distinguish between no attention to language forms and some attention to language forms. Educators who advocated no attention to language forms believed that students would automatically develop reading and study abilities while investigating subject matter topics. J.L.

Meriam's famous words "Let children read to learn, incidentally they will learn to read" sums up this position (cited in Harris, 1964). In contrast to no attention to language forms, other educators in the Progressive tradition claimed that students should always be directed toward content but that lessons which emphasize specific aspects of written language occasionally should be conducted (Goodman and Goodman, 1981). Content is still paramount, but students' attention occasionally is directed towards how that content is presented.

Transfer of training was another area of concern to educators. They worried that reading strategies acquired during official reading periods would not carry over to content area situations. In other words, students might become adept at identifying reading strategies during reading periods yet remain unable to apply these strategies to their content area subjects.

The question of whether students were better served by reading instruction in separate reading periods or during the presentation of subject matter was investigated in depth by Herber in 1970. His study resulted in an unequivocal call for functional instruction, with content teachers addressing reading strategies while presenting subject matter. Although his contention received some empirical support (Herber and Barron, 1973; Herber and Riley, 1979; Herber and Sanders, 1969; Herber and Vacca, 1977)

research efforts conducted to date have produced results which favour skills-centred instruction (Brown, Bransford, Ferrara, and Campione - cited in Moore, Readence and Rickelman, 1983).

2.2.2 Reading Demands of Various Subjects

The various reading demands which the disciplines placed on readers were investigated empirically in a number of ways after 1950. The studies fall into four categories: eye movement analyses, vocabulary frequency counts, reading achievement test correlations and observational research.

i) Eye Movement Analysis

Judd and Buswell (1922) investigated readers' eye movements when reading and found that readers' eye movements varied with the type of material that was encountered. This lead them to conclude that different types of reading material induce different types of reading attitudes. Consequently, they advocated that reading instruction across the curriculum should be provided. Since then a great deal of research has been done on the improvement of eye movements and reading speeds, stemming partly from the work of Judd and Buswell (op. cit.) and partly from the discovery that good readers do not read word for word; for an account of the research involved see Banton-Smith (1966), De Leeuw (1965), Fry (1963) and Hill (1981).

ii) Vocabulary Frequency Counts

During the 1920's and the 1930's the vocabulary load of the content areas received a great deal of attention (Thorndike 1921; Dolch, 1928; and Pressey, 1923). The consequent identification of technical vocabularies within the separate disciplines contributed substantially to calls for special instruction. Furthermore, studies across the curriculum by researchers like Buswell and John (1931), Barr and Gifford (1929) and Curtis (1938) provided evidence that each discipline presented at least one characteristic reading demand, its technical vocabulary, which deserved special attention. Since then a considerable amount of research has been done in this area: major trends in vocabulary research have included investigations of the relationship between vocabulary knowledge and reading comprehension, the role of context in acquiring word meaning, and the effectiveness of vocabulary instruction [see, for example, Carnine, Kameenui, and Coyle (1984), Jenkins, Stein and Wysecki (1984), Nagy, Herman and Anderson (1985) and Patching, Kameenui, Carnine, Gersten and Colvin (1983)].

iii) Reading Achievement Test Correlations

Research into relationships among students' comprehension test scores across the curriculum also contributed to concerns about different reading demands of different subjects.

Researchers such as Ritter and Lofland (1924), Artley (1943) and Swenson (1942) concluded that different subjects presented distinct reading demands. Perhaps Ritter and Lofland (1924) sum up the situation best when they say:

> Reading can never be learned except in connection with some content, but the technique of interpreting one type of content is probably very different from that required in another. (p.546)

iv) **Observational Research**

Rather than assessing only content reading differences due to materials, McCallister (1930, 1932) researched differences due to classroom teachers' daily assignments. In his research he identified reading activities required in various subjects and the reading difficulties students experienced during the various activities. He concluded that there were differences among the reading activities assigned in various content areas and that students required help to cope with those differences.

A summary at this point is perhaps desirable. Researchers during the first half of this century investigated whether the content areas presented reading demands that were content-specific or generic. The general conclusion was that different reading demands existed due either to different texts or different tasks. More recently the findings of Bruner, (1960) Smith (1964), Birkmire (1985) and Carrell (1985) supported the assertion that content area texts differed funda-mentally.

Writers such as Hoetker (1982) and Peters (1982) have argued that the content area reading methods texts actually provide only superficial overviews of the reading process that are appropriate for specific content areas.

Although the findings of the studies presented above view reading strategies as content-dependent, many content area reading methods and texts present strategies in generic terms. One reason for this seems to be based on the idea that a common set of strategies underlies all content area reading but that the strategies are adjusted to handle specific demands of specific subjects.

A second reason is that each traditional content area encompasses diverse specialities and each speciality area contains various styles of writing and purposes for reading within their fields. For example, the study of Geography entails reading expository, narrative, and technical styles of writing for broad overviews as well as for specific, detailed information. Consequently, the reading demands within each content area are seen to differ more drastically than those between each area.

2.3 Prior Knowledge

Since schema-based theories dominate the contemporary research on the reading comprehension process, special emphasis has been placed on instruction and activity prior to and not after the reading act.

The major purpose of the next few pages, then, is to investigate the role of prior knowledge and information orderings on the reading comprehension of English second language readers.

Typically, teachers think of background experience only in terms of children having general knowledge of a topic that they are about to encounter in their reading. They think, for example, that children who know something about a farm will better be able to comprehend a story about a farm.

While general knowledge is important, the concept of background experience includes four other types of knowledge that a second language reader needs.

i) Concepts about Print

Initially, second language learners must develop a basic knowledge of how print functions. Clay (1972) suggests that children must understand the following:

- that a book has an identifiable front and back and that pages have an identifiable top and bottom;
- that what one reads in a book is the print, not the pictures;
- recognition of the 26 letters of the English alphabet;
- that print on the left page is read before print on the right page, and that print on a page progresses from top to bottom, left to right;
- that the letters in a word and words in a sentence are ordered from left to right, and that by changing

the order you alter the meaning ("on" and "no" are not the same word; "The dog bit the man" and "The man bit the dog" do not have the same meaning);

- that what constitutes a word is a cluster of letters surrounded by space;
- a recognition of the function of basic elements of capitalization and punctuation.

ii) Printed Language

In addition to these concepts about print, second language learners must also understand the relationship between written and spoken language. These children must also learn that authors use vocabulary and sentence structures uncommon in speech. For example, "nevertheless" and "however" are far more common in print than in conversation. The point here is that second language learners must be exposed to book language before they can be expected to read it themselves. They must begin to associate written language with oral language and then develop an ear for those terms and structures found primarily in print.

iii) Sense of Text Structure / Story

The third type of background experience is the knowledge that each literary genre has its own special format or style. Students' ability to recognize and use text structure - the way a text is organized, the pattern used to arrange the information - is an important aid to their reading comprehension (McGee, 1982; Meyer, Brandt and Bluth,

1980; Taylor, 1980; Whaley, 1981). If the pattern is discernible, readers can use it as an outline to organize their understanding of the text. Experienced first language readers know at a book's beginning what type of text they are reading. Second language readers, on the other hand, have a limited knowledge of text structure and, therefore, much more difficulty reading the variety of texts available to us all. To become proficient readers, second language readers must develop this special background experience.

iv) Reading is Useful and a Pleasure

The knowledge that reading is both enjoyable and immediately useful is one of the most important types of background experience. If children sense neither immediate benefit from reading nor learn to enjoy the activity, they will regard it unfavourably and fail to develop the habit.

Research on reading comprehension among native and non-native speakers of English has shown that the ability to understand texts is based not only on a reader's linguistic knowledge, but also on his knowledge of text(s) (formal schemata) and on his general knowledge of the world and the extent to which that knowledge is activated during the mental process of reading (Carrell, 1983). The research of Bransford and Johnson (1973), and Pearson, Hanson and Gordon (1979) suggests that the experiences and knowledge a person brings to a text influence how the

text is comprehended. Langer (1978) points out that in drawing meaning from a text, readers build their own elaborations; they read situational demands, review personal knowledge, and select what seems most appropriate and useful for the task at hand. The research of Bransford and Johnson (1973) has also shown that the better a reader is able to access background knowledge about the content area of a text, the better he will be able to comprehend, to store in long term memory, and to recall the text. If we add to this the findings of the research of Anderson, Reynolds, Schallert and Goetz (1977) that the individual prior experience of the reader influences which background schemata he will activate when interpreting a text that is vague or ambiguous as to its content area, then it is clear just how significant a role prior knowledge and experiences play in reading comprehension. However, although prior knowledge generally appears to have a facilitative effect on the processing of information from text, the exact nature of this effect remains unclear. For example, the findings of Thorndyke and Hayes-Roth (1979), Spiro (1979) and Maria and MacGinitie (1980) have pointed out that some readers tend to over-rely on their prior knowledge when attempting to interpret a text. In such cases prior knowledge tends to be a handicap.

To date, very little research has been done to investigate the role of schemata or background knowledge in second language reading comprehension,

but, see Carrell and Eisterhold (1983), Perkins and Jones (1985), Ghadessy (1985). However, some recent studies of English second language readers demonstrate the effects of background knowledge in reading comprehension. Most of these studies show that English second language readers read, understand and remember better texts that deal with their own familiar culture - i.e. materials for which they have well-developed background knowledge (schemata) - than they do texts that deal with a less familiar or unfamiliar culture - i.e. materials for which they lack the appropriate schemata (Steffensen, Joag-Dev, and Anderson, 1979).

In terms of schema - theoretic approaches to reading, in which the reader is viewed as being at least as important as the text, and which reading comprehension is taken to be the reader's construction of meaning from the text, reading is an interactive process between the reader and the text. Meaning does not just reside in the text, rather meaning is constructed out of the interaction between a reader's activated background knowledge and what is in the text. If a reader is not actively using his background knowledge the construction of meaning suffers because a significant part of the reading process is not taking place.

Schemata embodying knowledge about a topic have strong effects upon comprehension. Anderson (1977) has pointed out that the use of a relevant schema can

assist at the point of comprehension specifically by clarifying ambiguous elements in a text (Anderson, Reynolds, Schallert, and Goetz, 1977) and by providing the ideational scaffolding for assimilating text information (Anderson, Spiro and Anderson, 1978). Prior knowledge of the topic can also allow the reader to develop an appropriate plan for searching memory (Anderson and Pickert, 1978) and to fill in gaps and to resolve inconsistencies (Steffensen, Joag-Dev, and Anderson, 1979).

Within the theoretical framework of what has been labelled the schema-theoretic view of reading, Carrell (1983) investigated background knowledge and its role in the way in which native and non-native speakers of English read, understand and recall passages. Her findings were: (1) native speakers utilize content in a top-down processing mode to make cognitive predictions of what a text is going to be about as it is being read; (2) they use textual clues in a bottom-up processing mode to confirm these cognitive predictions and to build up a mental representation of what a text is about from the information in the text itself; and, (3) they are influenced by their prior knowledge of the text's content.

In contrast, non-native speakers of English did not read like native speakers: they do not process the text as native speakers do and they do not make use

of content and textual clues. Further, they are not efficient top-down processors as they do not make appropriate predictions based on context. In addition, they are also poor bottom-up processors as they do not build up a mental representation of the text based on the textual and lexical information in the text.

These findings suggest that English second language readers are linguistically bound to a text. Although they seem to be processing the literal language of the text (propositional meaning), they do not make the necessary connections between the text and the appropriate background information. A further feature of second language readers is that they do not utilize background information even though they may be explicitly provided with that appropriate background information. They also appear to be poor text processors as they do not use context as a top-down cognitive processing mode to make appropriate predictions about the meaning of a text and they do not use textual or lexical clues as a bottom-up processing mode to build up a mental representation of the meaning of the text [see, for example, Carrell (1983), Carrel and Eisterhold (1983), Ghadessy (1985)].

Perhaps a reason that second language readers do not make competent use of first language reading strategies is because their second language competence level is not sufficient. It seems that

when second language readers read the amount of linguistic processing required to establish propositional meaning takes up so much time and requires so much effort that the other levels of reading (conceptual, contextual and pragmatic) are not being created in their minds (Clarke, 1980).

2.4 Language and Home Background

Since this study is concerned with some of the problems second language learners encounter in content subject areas, it would seem desirable to examine the language and background of pupils because the experience of language that they have had at home could affect their understanding of the ways in which it could be used.

There are several factors related to language and home background which are of relevance such as: socio-economic influence, cultural differences, mother-tongue influence, language deprivation, educational deprivation and cross-linguistic influence. Also of relevance is the work of Bernstein (1961/1966/1971), Erickson (1969) and Labov (1969) who worked with Blacks in the United States, Bereiter and Engelman (1966), Vernon (1971) and Swanepoel (1978). But in a larger study of this kind a fuller understanding of the language situation of the pupils would be necessary.

Since this whole area is outside the scope of this present study, this study will confine itself to a description of the sample in question which will be found at the beginning of chapter four.

CHAPTER 3 METHODOLOGY OF THE STUDY

In order to discover whether a second language Ciskeian student has understood the text that he has read, it became necessary to search for those reading strategies which form the basis of competent reading. However, in order to produce an inventory of reading strategies, we should first look at the kind of meanings a text embodies and that a reader must understand.

Understanding a text involves understanding different kinds of meaning at the same time. At least four levels of meaning exist.

3.1 Four Kinds of Meaning

3.1.1 Conceptual Meaning

Very simply, this is the meaning a word can have on its own. All other kinds of meaning rest on conceptual meaning.

3.1.2 Propositional Meaning

It is the meaning a clause or sentence can have even if it is not being used in context. A word on its own carries no propositional meaning as we cannot affirm it, deny it, question or doubt it. But as soon as it is put into a proposition, these operations become possible.

Crucial to the discussion of propositional meaning is Widdowson's (1978) distinction between "signification" and "value". He distinguishes between two kinds of meaning. He calls the first kind of meaning signification which refers to the meaning a sentence can have even if it is not being used in context as it expresses propositions by combining words into structures in accordance with grammatical rules. The second kind of meaning is that which sentences and parts of sentences assume when they are put to use for communicative purposes. Widdowson refers to this as "value". The concept of value is important, because it is possible to understand the signification of a sentence without interpreting its value correctly.

A skilled reader should be able to grasp not only the signification of what he reads but also its value. This involves understanding the writer's presuppositions sufficiently to recognize what he means by a particular statement: the reader must understand not only what the writer says, but why he says it and what he means by it.

3.1.3 Contextual Meaning

As soon as a sentence is used in a given situation of context, it takes on a value derived from the writer's reason for using it, and from the relationships between one sentence and others in the same text.

3.1.4 Pragmatic Meaning

This is the meaning that reflects the writer's feelings, attitudes and so on, and his intention that the reader should understand these.

Every sentence has these four kinds of meanings when it is used in a text, though sometimes one is more important than the other. Therefore, the ability to understand every sentence in a text and its relation to other sentences in these four ways is vital for competent reading.

3.2 Reading Strategies

Many attempts have been made to classify reading strategies and to this day it continues to be a subject of speculation, investigation and disagreement. One of the earliest attempts was that of Davis (1944) who posited nine strategies, but later reduced them to four (Davis, 1972), namely: (1) identifying word meanings, (2) drawing inferences, (3) identifying the writer's technique and recognizing the mood of the passage, (4) finding answers to questions. A subsequent analysis of Davis's data by Thorndike (1973) resulted in him concluding that there is only one basic or common ability (p. 146), viz: reasoning in reading.

However Spearritt (1972) re-analysed the same set of data and found four strategies: (1) recalling word meanings, (2) drawing inferences from content, (3) recognizing the writer's purpose, attitude, tone and mood, (4) following the structure of the passage.

These were similar to those originally described by Davis, except for the last, which was identified as "the ability to follow the structure of a passage", this being quite different from "answering questions".

Partly because of the weight attached to the work of Davis, and partly due to the attractiveness of the skills hypotheses, this view has tended to prevail among educationists (Grellet, 1982; Nuttall, 1982; Williams, 1985), who have no doubt that reading involves a multiplicity of skills. The New York Board of Education, for example, supports this view, for in their publication, Reading in Subject Areas, Grades 7-8-9 (cited in Lunzer and Gardner, 1979) they suggest several reading skills. These are shown in Table I.

However, a review of the literature has revealed conflicting hypotheses. Many researchers (Goodman, 1970; Guthrie, 1973; McNeil, 1974; Stennet, Smythe and Hardy, 1975; Artley, 1980) have examined the nature of reading comprehension to determine if the process is best described as a unitary ability or in terms of multiple skills that can be identified and measured. Some researchers (Downing and Leong, 1982) claim that the term, "skills", as found in educational books and articles on reading instruction in the 1970s and 1980s is vague and ambiguous and, therefore, mean little more than "whatsits" and "thingamies". In other words, they maintain that these so-called "reading skills" are largely mythical.

Samuels (1976) believes that it may be possible to determine a hierarchy of subskills in reading but he recognizes that the task is so complex that a validated reading hierarchy does not exist. Stennet, Smythe and Hardy (1975) ask the questions: "What to teach?" and "In what order?"

Goodman (1970) specifically rejects the concept of reading as a hierarchy of subskills and argues that all systems must be used independently in the reading process.

TABLE 1. READING IN THE SUBJECT AREAS, GRADES 7-8-9

READING SKILLS	SUBJECT AREAS				
	Language Arts	Social Studies	Science	Maths	Industrial Arts
Word recognition					
1. Recognise basic sight words	x				
2. Use phonetic analysis	x				
3. Use structural analysis	x				
4. Use contextual clues for word meaning	x	x	x	x	x
5. Use dictionary to check meaning	x	x	x	x	x
Comprehension					
1. Understand word and sentence meaning	x	x	x	x	x
2. Find main idea and related details	x	x	x	x	x
3. Organise and classify facts	x	x	x	x	x
4. Perceive sequence of ideas	x	x	x	x	x
5. Draw inferences and conclusions	x	x	x	x	
6. Understand problems	x	x	x	x	x
7. Form judgements	x	x	x	x	
8. Predict outcomes	x		x	x	
9. Read critically - distinguishing fact from opinion	x	x	x		
10. Read for appreciation	x				
11. Understand relationships	x	x	x	x	x
12. Follow directions	x	x	x	x	x

Work Study

1.	Understand parts of a book	x	x	x	x	
2.	Understand the index of a text	x	x	x	x	
3.	Use of the dictionary	x	x	x	x	
4.	Use of the encyclopaedia	x	x	x		
5.	Understand library techniques	x	x	x		
6.	Interpret maps	x	x	x	x	
7.	Understand charts	x	x	x	x	x
8.	Interpret graphs	x	x	x	x	
9.	Understand diagrams	x	x	x	x	x
10.	Adjust reading rate-skimming	x	x	x	x	x
11.	Select and evaluate information	x	x	x	x	x
12.	Use techniques of retention and recale	x	x	x	x	x

(The x under each subject area indicates that the reading skill is relevant to that particular subject.)

Similarly, Lunzer, Waite and Dolan (1979) give little support to the notion of reading strategies. They argue that when a student reads intelligently he forms a sequence which is repeated as he goes through the text. In explaining their hypothesis they stress that not all the elements in the sequence need be present at each repetition; it is possible that some of these things can go on simultaneously; and not all of them are conscious. The sequence that they posit is represented in the rows of Table 2: decoding, making sense, questioning, judging, and revising one's notions.

Each of these elements can be described at any level. Three of these levels are indicated in the columns of Table 2. The first level is the common sense level. The second is the level of initial analysis: spelling out what is meant, but still in layman's terms. The third is the level of functional psychological description: it is an attempt to list the kinds of functions that need to be performed by operations in the reader's brains (Lunzer and Gardner, p.66).

TABLE 2. THE PROCESS OF READING: THREE LEVELS OF DESCRIPTION
(cited in Lunzer and Gardner (1979, p.67)

LEVEL 1	LEVEL 2	LEVEL 3
Decoding print	identifying letters, words, phrases	scanning, fixating, anticipating, categorizing, testing, matching, verifying
Making sense	assigning meaning to phrases and sentences	anticipating syntactic and semantic categories, matching, verifying
Questioning	noting discrepancies between different statements or between what is read and what is known	retrieving material from long-term memory, comparing, inferring
Judging	weighing evidence, reconciling discrepancies, hypothesis-testing, deciding	retrieving, comparing, re-formulating, re-ordering, accepting, rejecting
Revising notions	accepting, rejecting	modifying semantic structures in long-term memory

Lanham (1986), on the other hand, suggests that there are three main cognitive strategies in competent reading. These are: (1) fitting information present in the text into a background of previous experience; (2) anticipating what is to come on the basis of probabilities arising from what has already been read and; (3) constructing for oneself the coherence of the text (pp. 10, 11). It is interesting to note that although Lanham concertinas his strategies into three categories, there is a great deal of similarity to the list of strategies (see Table 1, pp 37,38) published by the New York City Board of Education (1964).

In order to give more clarity to what Lanham means by "fitting information present in the text into a background of previous experience", it is necessary to return to the schema-theoretic view of reading. This view claims that what is comprehended in reading depends not only on the reader's linguistic knowledge, but also on general knowledge of the world and the extent to which that knowledge is activated during reading. This means, for example, that a second language Ciskeian student will interpret what he reads in terms of its relevance to, and closeness of fit with, the components of his cultural and life experiences. Therefore, the schema theory view of reading would claim that interpreting a text relying only on information which flows from the sentences present in the text is, in effect, not to comprehend.

The second cognitive strategy which Lanham claims to form the basis of competent reading is "anticipating what is to come on the basis of probabilities arising from what has already been read". Put simply, this is the reader's ability to predict what comes next in a passage. In terms of the schema theory view of reading this entails both top-down and bottom-up processes in reading. Consequently, the reader's understanding of the text will depend not only on his ability to relate it to his own previously acquired knowledge but also on cues coming from words, structures and meanings which themselves predict the words, structures and meanings that lie ahead (Lanham, 1986, p.9).

Lanham's third cognitive strategy is constructing for oneself the coherence of the text. In terms of the schema theory view approach to reading this strategy allows for the proper storage and recall of the content of a lengthy text and an ability to inter-relate different parts of the text.

The effective use of reading calls for a good deal more than the ability to substitute the spoken form of words for their written form as one goes through a text. It is my contention that effective reading depends on the application of appropriate reading strategies in terms of the schema-theoretic view of reading (seepp 7-31).

The term "reading strategies" is an all-embracing concept, and includes an analysis of the various modes of reading which a student can call upon when reading a particular text. These modes are procedures which need

to be deployed effectively if a student wants to get the most benefit from the act of reading. This chapter will not touch on all these issues as it is far beyond the scope of a half-thesis. My brief is limited to an analysis of some of the reading problems second language Ciskeian students encounter in content subject areas, with particular reference to Geography. With this in mind, it is, perhaps, appropriate to look first at some of the demands made on learners by Geography texts as this has important implications for diagnosing reading problems.

3.3 Some Demands Made on Learners by Geography Texts

A fundamental requirement, if pupils are to understand and use Geography texts, is that they develop and learn to use appropriate content/formal schemata. An appropriate schema is one which fits the type of topic; it enables the learner to make sense of the information in it by fitting what is new into an established, or old framework. By the time pupils enter secondary school they should have well-developed schemata for comprehending narrative and simple descriptions and instructions, but they will need to develop new schemata for making sense of the new subject matter. They will need to do this in nearly all the subjects they encounter in secondary school, but particularly in Geography because the subject matter of Geography is not only relatively new to pupils but it also deals with concepts which are complex and abstract. As a consequence, pupils are required to study phenomena

which are:

- outside their immediate experience;
- dynamic and unpredictable;
- expressed in a special vocabulary.

3.3.1 Concepts which are Outside Pupils' Immediate Experience

The phenomena which are described in Geography textbooks are not only outside pupils' immediate experience, but are also difficult to exemplify in the classroom. In science, pupils are ideally exposed both to description of phenomena and to observation and investigation of these phenomena; for example, pupils will not only read descriptions, they will also construct and observe them. This means that they experience both the phenomena of the description and the methods of scientific investigation. The phenomena of Geography, on the other hand, are not readily demonstrated in the classroom. This means that the geographical description is a very important source of information for pupils because the description, more often than not, has to substitute for rather than support practical investigation. Perhaps this is one reason why the verbal descriptions in Geography textbooks are so substantially supported by non-verbal means, such as photographs, maps, diagrams and tables. Thus a very real demand on pupils using Geography texts, is that they engage actively with both verbal and graphic descriptions and exemplifications.

3.3.2 Phenomena which are Dynamic and Unpredictable

In addition to learning about phenomena which are outside their immediate experience, pupils are also required to learn about phenomena which are dynamic and unpredictable. Photosynthesis, transpiration and osmosis which pupils are introduced to in Biology are unchanging, generalisable and their descriptive framework remains relatively constant. By contrast, countries, cities and peoples of the world which pupils study in Geography are constantly changing, and as they do, so does the framework for describing and investigating them. Such changes cannot easily be represented in text-book descriptions. This is a particular problem when children are issued with textbooks which have been published for some time. Consequently, pupils learning Geography are required to embrace dynamic and unpredictable phenomena from descriptions which may be at variance with current facts and perceptions. Thus an essential requirement of pupils in Geography is that they read critically.

3.3.3 Vocabulary used in Special Ways

It is not only the concepts of Geography that impose demands on the cognitive and linguistic capacities of pupils. So, too, does the vocabulary of Geography. There are two aspects worth considering with regard to the vocabulary in Geography texts: They are, technical terms and familiar words with technical meanings. Some technical terms are going to be essential in any academic subject; learning them is

part of learning the subject. A study by Milburn (1972), for example, suggests that there are about 300 technical terms that are in common use in Geography lessons in secondary schools. There is no doubt that too great a density of technical terms creates problems for the struggling reader, especially if he is a non-native speaker of English. There is also the danger that understanding Geography comes to be thought of as acquiring a facility with labels, rather than grasping the concepts that underlie them. Therefore, teachers need to ask themselves about every technical term. "Is it essential, or could it be replaced by something simpler?". For example:

> Planets revolve around the sun in huge elliptical orbits.

Would there be an immediate educational loss if elliptical and orbits were replaced by egg-shaped and paths?

It is sometimes thought that technical terms are long words and that it is long words that cause readers' difficulty. This is not entirely true because there are many technical terms in Geography that are monosyllables. The problem for Geography teachers is that technical terms are so familiar to them that they may not always be aware of the difficulties they can cause their pupils.

A more serious source of difficulty at word level is when words which are familiar to children are used in unfamiliar ways. For example:

> The line was chosen because there is an observatory at the small town of Greenwich, (near London), which can make the accurate observations of sun and stars that are necessary to fix the time exactly. (Example taken from Exploring Geography, p.33.) (My emphasis.)
>
> As the earth spins, those parts which fall under the moon have high tides while those parts at 90° to the moon have low tides. (Example taken from Exploring Geography, p.44.) (My emphasis.)

Children will understand the words "fix" and "fall" but it is possible that the meanings they assign to them will not enable them to interpret those particular passages appropriately. A problem with such familiar words is that the writer may take them for granted and not explain or highlight them in the text. To compound matters, the familiarity of those words is a disadvantage because the child thinks he understands them when he really does not, or rather, he understands them perfectly in a simpler conventional context.

For example:

The boy tried to fix the broken kite.

or

The girl saw the boy fall from the tree.

Support for this hypothesis is found in the writings of Jeffs (1980) who discusses the important notion of "polysemy" which denotes the property of a word to change its meaning according to the text in which it

is used. Jeffs (1980) even goes further and suggests that most words are polysemic in that they are invested with meaning entirely through their contextual use.

It is here that the teacher plays a vital role. Jeffs (1980) suggests that while teachers are often extremely diligent in their efforts to explain obviously "difficult" words such as "centrifugal" and "baricentre", they are likely to take for granted that pupils will recognise and use the more "hidden" expressions that are equally vital to learning a subject - "comprise", "primitive", "phases", "compare and contrast", and so on. Consequently it may well be that a child is able to grasp a one-to-one connection between a newly-explained term and the object or idea which it denotes but still find that this and related terms are log-jammed in his mind by his inability to use for himself the "thinking words" which mobilise these obviously technical terms and which are so much part of his teacher's vocabulary that their universal use is taken for granted.

3.4 Strategies to be Tested in this Study

This chapter, so far, contains a fairly lengthy discussion of the problems of comprehension in reading but the problem of why second language Ciskeian learners find it difficult to understand the texts that they read still remains unanswered.

The printed page is sometimes a very difficult medium of information to anyone who is unused to learning by reading. If we, as teachers and educators, wish to encourage pupils to make more use of printed material, we must be prepared to help them to cope with the problems that they encounter. We must therefore be aware of those features of a text that contribute to its difficulty: technical and specialized vocabulary, abstract ideas, density of propositions, and so on. And we must have the resources to help our pupils overcome these obstacles.

In the course of this study, it became apparent that there was no suitable test available to investigate the problems that this study is concerned with because, as has been pointed out, very little research relevant to this situation has been done to date on the role of reading strategies in second language reading comprehension. This being the case, it became essential that a test be designed and constructed. However, the constraints placed (on me) by the limitations of a half-thesis necessitated that I be selective in choosing the strategies to be tested. This study, then, is designed to test:

i) whether the subjects at the standard six level have sufficient language proficiency to know the variety of ways in which a word may be used. This type of question was designed to test: a) whether the subjects are able to know the literal meaning of words (see pp 69, 83, 84); and b) whether they are able to derive the appropriate meaning of an

ambiguous word from the context in which it appears (see pp 69, 84, 85);

ii) can pupils find answers to questions by making direct reference to the text (see pp 69, 85, 86)?

iii) do they have the necessary background knowledge and schemata to understand the text topic? Can they use these to make appropriate inferences (see pp 69, 87, 88, 89, 90)?

iv) can the subjects identify the major points and details in a text (see pp 69, 90, 91, 92)?

v) can the subjects use the information in the text to predict what the writer is going to talk about next (see pp 70, 94, 95)?

vi) can the subjects find the referent for anaphoric terms (see pp 70, 95, 96, 97)? (See pages 57, 58, 59 for explanation of anaphoric terms.)

vii) can the subjects use discourse markers to: a) predict information and / or meaning to come; and b) see the relationship between what they have just read and what they are about to read (see pp 70, 95, 96, 97). (See pages 55, 56, 57 for explanation of discourse markers.)

Having outlined the strategies to be tested in this study, it is necessary, as a preface to the discussion of the results of this test, to look at the question of readability and comment on its potential uses, and conversely, those uses for which it is not appropriate.

3.5 Readability

For the past 30 or 40 years much attention has been paid to different methods and techniques of assessing readability. For the purposes of this study it was not necessary to examine in detail all the established procedures. Instead, consideration was given to the implications of using three of these techniques, namely: readability formulae, cloze procedure comprehension tests and multiple-choice questions, not just for measuring readability but also as a guide to the comprehensibility of a text for its intended readership. These techniques are tools which can be useful, but to avoid abusing them, we need to understand something of their development and underlying assumptions, as well as their strengths and weaknessess. It is vital that teachers and publishers place readability analysis in its proper context, with some sense of its limitations.

First is the question of readability. Dale and Chall (1948) define readability as:

> The sum total (including interactions) of all those elements within a given piece of printed material that affects the success which a group of readers have with it. The success is the extent to which they understand it, read it at optimum speed and find it interesting.
>
> (Cited in Wegerhoff, 1981, p.41)

Williams (1985), on the other hand, says that writing is readable when:

- its meaning can be quickly and easily understood by the reader for whom it is intended;

- the target reader is successful in completing the task embodied in the text, e.g. passing an examination, completing an experiment, repairing a car;
- if necessary, the reader can quickly and easily recall the essentials of the text some time after reading it, e.g. the scale of allowances as explained in an income tax leaflet.

Put simply, readability may be thought of as the ease with which a text may be comprehended.

3.5.1 Readability formulae

Readability formulae have until recently been the most frequently produced and widely accepted methods for measuring readability. Klare (1963) lists 31 established procedures. To this list must be added other formulae published since that date, such as those developed by McLaughlin (1969), Bamberger and Vanecek (1982) and Bjornsson (1983).

Early researchers defined readability as "comprehensibility" and focused on linguistic elements of text. Formulae were developed using counts of language variables to provide an index of probable difficulty. All readability measures are based on two sorts of counts: the number of words per sentence, which is an indirect measure of syntactic complexity, and the frequency of words which are defined as long - a measure of vocabulary demand. To assess the readability level of any text, it is usual to sample at least three 100- word passages taken at random. A count is made of some easily identifiable characteristics, such as the average number of words

per sentence or the number of polysyllabic words in the sample, and then a calculation is performed to produce a score. This score indicates the difficulty of the sample of the text. It is then assumed that this score reflects the difficulty of the whole text. Harrison (1977) suggests that the best measures of readability (e.g. the Dale-Chall index) correlate at a level of 0.6 - 0.8 with the average judgements of groups of teachers and pupils.

Readability formulae, however, do not have the precision of chemical and mathematical formulae. Dreyer (1984) argues that the use of the word "formula" carries unfounded scientific implications. She also points out that a passage of a text placed at the third grade level by one formula may be placed at fourth grade by another and by fifth grade by still another. A single book contains passages which vary several grade levels in difficulty, even when just one formula is applied. Therefore, as predictive devices, readability formulae yield at best only estimates. Their developers realized this for Dale and Chall called their formula a short cut, and Lorge said of his that as an estimate, it should not be considered definitive or used blindly. Unfortunately, not all users of the formulae are fully aware of the limitations.

Controversy has surrounded the use of readability formulae, almost since their inception. Manzo (1970) conceived of readability research using

formulae as a "construct without a reference". Kintsch and Vipond (1978) argue that because readability formulae depend on correlational data they fail to enlighten us as to what makes a text difficult to understand. These formulae use measures such as word length, word frequency, number of syllables per word, and sentence length. Although these variables can be simply and objectively measured, and are correlated with reading speed and comprehension, they cannot tell us why texts having the same readability levels may vary widely in the degree to which they can be comprehended.

Although Bormuth (1966) maintains that readability formulae do measure factors - length and complexity of vocabulary - that reflect readability, he makes it clear that readability formulae do not point to all the features of a text that actually contribute to readability or comprehensibility. After all, a book is readable only if it is readable for the intended reader, regardless of its formula score. By focusing on just two linguistic elements (usually word length and sentence length), the formulae exclude from consideration many other significant factors, such as those which relate to syntax and complexity of sentences, unusual positioning of sentence components and number of dependent clauses.

Readability formulae do not measure the effects/influence of factors such as word frequency, inference, the appropriate use of discourse markers,

anaphoric and cataphoric reference, concept density, level of abstraction, nor appropriate organization, coherence and logical presentation of ideas. Readability formulae do not take into account the number of new words in a text and the number of words which require decoding skills not yet learned. For example, Davison and Kantor (1982) suggest that reading difficulty may be affected by the purposes and background of the reader and the inherent difficulties of the subject matter. Dreyer (1984) is much more critical of readability formulae. She maintains that readability formulae do not define readability. Rather, they measure the factors which can correlate with difficulty, but they do not point to all text features that affect comprehension.

Furthermore, readability formulae do not measure what is to be inferred. Surely information which is not explicitly expressed is a source of serious potential difficulty? Davison and Kantor (1982) continue to argue that a text can become incomprehensible or be given an extremely different interpretation from the one intended if the crucial inferences are not correctly made.

A criticism which relates to appropriate conjunctions enhancing comprehension is made by Irwin (1980). Some researchers prefer to use the terms "discourse/semantic markers" or "signpost words" instead of conjunctions. The function of a discourse marker is to indicate to the reader the general

relationship between what they have just read and what they are about to read. In other words, discourse markers help the reader to predict information and/or meaning to come. Discourse markers such as "although", "namely", "but" and so on serve to mark the functional value of a sentence: they tell you what the writer intends by using it. For example, if he uses "although", he is conceding something; if he uses "namely", he is specifying something and if he is using "but", he is contradicting something. A knowledge of discourse markers may help the pupil to unlock the meaning of a sentence and, therefore, read smoothly through the text. Therefore, the greater the appropriate use of discourse markers the more cohesive and readable a text will be. This is of vital importance when we consider less skilled readers, especially those whose mother tongue is not English.

Yet another criticism deals with text characteristics such as sentence construction, density of propositions in a text and text constructions which also influence readability. Each of these will be discussed briefly in the ensuing paragraphs.

Although readability formulae indicate that shorter sentences improve comprehension, Halliday and Hasan (1976) point out that there are times when longer sentences are actually easier to understand, because they provide needed causal links. It is also important to realize that longer words and sentences

may be correlated with difficulty while not necessarily causing difficulty. In some instances, longer sentences are less complicated and easier to understand. For example, "The best-known comet is Halley's Comet, which has been seen on and off since 240 B.C." (Example taken from Exploring Geography, p.30) is easier to understand than, "The best-known comet is Halley's Comet. It has been seen on and off since 240 B.C." In the adapted sentence the subordinate clause "which has been seen on and off since 240 B.C." is turned into a separate sentence. The connective of the subordinate clause has been removed. The original sentence expresses clearly that Halley's Comet has been seen on and off since 240 B.C. Since the subordinate clause in the adapted sentence becomes an independent sentence, the sequence of the two sentences without the connective does not make itself clear to the reader exactly what the relation is between the two sentences. The reader must infer a relation between them, which is not problematic if the reader is a competent second language reader, but it is easy for a second language learner to miss this connection and to infer just a sequential relation between the two sentences.

There are two types of reference that have an impact on readability and comprehension: anaphoric and cataphoric. Anaphoric reference occurs when certain words in a text link back to preceding, co-referent, words or phrases. The following examples are taken from Exploring Geography, p.30:

> Meteors are fragments of sold matter that move about space in an apparantly haphazard manner. They may vary considerably in size from a few metres to many hundreds of metres. They become visible to earth when they enter the top portion of the earth's atmosphere (at about 120 KM) and start to glow as they become heated.
>
> (My emphasis.)

These referring terms can often be a source of confusion expecially to second language learners.

Cataphoric reference occurs in a text when words link forward to co-referent, more explicit words, phrases or sentences. Cataphoric is much rarer than anaphoric reference and seldom poses a readability problem.

Another important variable in comprehension is the number of items in a given length of text or the density of propositions. Kintsch and Keenan (1973) have shown that two texts may have the same number of words but the one with more propositions per sentence will be harder to understand. For example:

> "Modern psychologists believe that some people are affected by the moon."
>
> "The sun pulls the low water up, reducing the high tides."
>
> (Examples taken from Exploring Geography, pages 39 and 44)

The first sentence is easy to understand as it has only one proposition. But, can the same be said for the second? Since readability formulae fail to consider density of propositions in a text they may

give unrealistic estimates of reading ease.

Text construction deals with how the text, as a whole, is organised. Coherence of a text's elements is one of the most important aspects of readability. Williams (1985) insists that for a text to be coherent, it needs to be arranged in such a way that its contents are expressed and sequenced in a logical, natural, systematic manner, in order that a writer's message is perceived by the reader in exactly the manner intended. One proposition should lead into or be related to the next, and consecutive paragraphs should have some common thread between them. Kintsch (1974) argues that texts which contain consecutive propositions with shared arguments are easier to read than those containing unconnected propositions.

3.5.2 Cloze Procedure Comprehension Tests

The cloze procedure has been used since 1953, and is rapidly growing in popularity in both English as a Second Language and Foreign Language programmes because it appears to be a quick, economical method of measuring overall language profiency. The term "cloze" is derived from the Gestalt term "clozure". It is used to describe the tendency for a person mentally to complete or make whole an incomplete pattern and to see complete patterns as figures more readily than incomplete ones.

The "cloze" procedure, as the method was called by its originator Wilson Taylor, involves deleting every 'n'th word from a prose passage and asking the person tested to supply the missing words in the blanks (usually of standard length). The procedure is justified on the assumption that a person who is either a native speaker of the language or a reasonably proficient non-native speaker who is competent at the level of the text should be able to anticipate what words belong in the blanks given the contextual and semantic clues of the passage.

Various methods have been developed for the scoring of cloze tests, the most prominent being exact-answer, acceptable-answer and multiple choice. Scoring by using the exact answer method counts only the word deleted from the original passage as correct whilst the acceptable answer method counts any contextually acceptable answer as correct. The multiple-choice scoring method provides the readers with alternative answers from which to choose the correct answer for each blank.

The question arises as to which scoring method yields the most accurate information about a student's English second language ability. Oller (1972) has suggested that the exact-word scoring method is not suitable for use with learners of a second language in spite of the fact that it is the standard cloze procedure scoring method. Instead, he suggests that an acceptable word scoring method that gives credit

for responses that violate no contextual restraints may be more suitable. This researcher is inclined towards the acceptable word scoring method because it seems much "fairer" than the exact word method to the students themselves. My experience as a teacher tells me that it is pedagogically unsound to count an answer wrong, which is actually correct, simply because the author of the original passage did not choose to use that word.

Although the cloze test has for some years now been regarded as the global method of measuring language profiency, this researcher has a few reservations of its applicability to this study.

First of all, it is not at all clear what the individual cloze items are measuring. Alderson (1979) warns researchers and teachers not to regard the cloze test as automatically valid. He argues that there is no sense of talking of a cloze test as measuring any specific item because a specific cloze test may well measure the meaning of a word in context for instance, but another test produced by the same procedure, using a different text or deletion frequency, may not result in the same measurement of that item.

Secondly, this researcher has found no strong evidence to show how cloze questions relate to the text as a whole or for that matter with each other. Research by Grundin, Courtney, Langer, Pehrsson,

Robinson and Sakamoto (cited in Journal of Research in Reading, Vol. 4, No. 2, 1981) has shown that the ability measured by cloze procedure is less text specific than the ability measured by global comprehension tasks.

Thirdly, since achievement in a cloze test depends to a large extent on background knowledge and previous reading experience (Gilliland, 1976) one has to be cautious in using cloze as a sole test of reading comprehension.

The next reservation is voiced by Klare (1966) who reports that students of English as a Foreign Language can often fill in the structure words in a cloze test without having understood what the passage was about. Berkoff (1979) supports this criticism when he reports that words may be correctly restored to the passage on the basis of familiar patterns of expression while the passage remains only vaguely understood, i.e. using largely the primary and intermediate strategies with little use of higher order strategies as defined earlier.

Yet another reservation stems from a study by Grundin et al. (1981) who came to the conclusion that although a reader may do well on a cloze test there is no guarantee of overall understanding.

3.5.3 Multiple-choice Tests

It is not my intention to embark on a lengthy discussion of multiple-choice tests as it is well-documented elsewhere (Gilliland, 1976; Berkoff, 1979; Oller, 1972; Oller, 1979). Even so, it is important to be aware of the nature of multiple-choice tests - how they are constructed, the subjective decisions that go into their preparation, the minimal number of steps necessary before they can be reasonably used in classroom contexts, the incredible range and variety of tasks that they may embody and their general impracticality for day to day classroom application. Instead this researcher will limit himself to a brief comment on the value of multiple-choice tests.

In measuring readability we are determining the extent to which a particular piece of discourse is comprehensible to a specific individual. We are thus measuring the comprehensibility of a text. Can we say that the multiple-choice test also measures comprehensibility? Certainly not. We must remember that the multiple-choice test does not refer to a particular test and that the procedure is merely another technique for producing a test.

What then, is the proper use of multiple-choice testing? Most researchers claim that it has limited application in classroom testing. Oller (1979), for example, claims that the tests are difficult to

prepare and are fraught with pitfalls. Another shortcoming of multiple-choice tests is that a pivotal element is the choice of distractors offered to the testees. Oller (op.cit.) castigates the test on the grounds that the multiple-choices offered are alternatives to trick the unwary, ill-informed, or less skilful reader when he says:

> If the text succeeds in discriminating among the stronger and weaker students it does so by decoying the weaker learners into misconceptions, half-truths, and Janus-face traps. (p.256)

If this is the case, perhaps multiple-choice tests should be re-evaluated as a procedure for educational application. The only advantages afforded by multiple-choice tests lie in the fact that they are easy to administer and score. Further, when large numbers of people are to be tested in short periods of time with few administrators and scorers, multiple-choice tests are economical in terms of effort and expense.

Before going on to a discussion of the results of the test, a summary at this point is perhaps desirable. This chapter has attempted to:

- summarise some relevant views on the reading process;
- highlight some demands made on learners by Geography texts;
- outline the strategies to be tested in this study;
- briefly look at the question of readability.

CHAPTER 4 DISCUSSION OF RESULTS

4. DESCRIPTION OF THE SAMPLE

4.1 Participating Schools

All the data to be reported were obtained from a sample of 250 Standard 6 children in four secondary schools (referred to hereafter as schools A, B, C and D) in Zwelitsha, Ciskei. They were all tested in October 1987 after all the teachers had completed their syllabi and were busy with revision. Furthermore, these teachers were approached in March 1987 and the rationale of the study was explained to them. It was stressed that these children would be tested in October 1987 just prior to their end of year examinations on the Astronomical section of their Geography syllabus.

A considerable part of 1987 was spent in the schools that had agreed to participate in this study, talking to pupils as well as teachers and familiarising myself with the problems as they appeared to those most directly involved.

It was found that the teaching methods used by these teachers made a great deal of reliance on the prescribed text, "Exploring Geography". It was also found that the amount of reading involved in lessons varied from school to school and from teacher to teacher, with considerable differences in the quantity and type of reading assigned to children. When questioned, these teachers replied that they were

reluctant to rely on reading as a major vehicle for learning because they felt that children at the Standard 6 level are not very skilled readers in English . They also drew attention to the fact that because the syllabus was so compact they felt compelled to feed children with information rather than let them discover through reading. Most of these teachers stressed that when they assigned reading tasks to their classes they did it to get the children to do something and keep them occupied rather than to read to learn. Nevertheless, all the teachers were interested in the work of this study and all were willing to collaborate.

Since these are the only secondary schools in Zwelitsha, the subjects from these schools form a representative sample of the population upon which this study is to focus. The sample was chosen randomly, 50 children (25 boys and 25 girls) each from schools A, B and C where a single teacher was responsible for teaching Geography but a 100 (50 boys and 50 girls) from school D where two teachers shared the teaching load. It was intended that this would minimize teacher influence.

The four schools had a total population of 2976. The percentage ratio of boys to girls in these schools was 45 : 55. Geography was offered at the Standard 6 level in all four schools, but not all the pupils did Geography. Of a total of 933 Standard 6 students, 804 did Geography. The percentage ratio of boys to girls was 45,5 : 55,5. We now turn to consider the

individual schools selected for further study. Statistics for the entire sample are found in Table 1 of Appendix E (p124).

4.1.1 School A

334 boys and 430 girls made up the total population (764) of this school. 266 of these children (122 boys and 144 girls) were at the time of the study doing their Standard 6 and took Geography as a subject. They were accommodated in 4 classrooms, each housing an average of 66,5 pupils. One teacher with a Primary Teacher's Certificate and 18 years' teaching experience was responsible for teaching the subject to all these children. This represented 12 of the teacher's 42 teaching periods per week. In the remaining 30 periods this teacher taught two other subjects to Standard 7 pupils.

4.1.2 School B

The 356 children in this school were made up of 158 boys and 198 girls. The total Standard 6 population of 136 (59 boys and 77 girls) took Geography as a subject. These children were divided into three class groups, each accommodating an average of 45,3 students. The Geography teacher has a M.A. degree in Geography and at the time of this study had eight years of teaching experience. He is a senior member of the staff.

4.1.3 School C

This was the largest of the sample schools and had a total student population of 1049. Of this 486 were boys. There were 279 Standard 6 students but only 201 of these students (99 boys and 102 girls) did Geography. There were four classes with an average of 50,25 children per class. At the time of the study the Geography teacher had less than a year's experience, having recently graduated with a B.A.; H.D.E. He also taught two other subjects to Standard 7 pupils.

4.1.4 School D

Of the 807 children in this school 252 were in Standard 6. 201 of these students (96 boys and 105 girls) did Geography as a subject. They were housed in five classrooms with an average of 40,2 children per class. Two teachers shared the teaching of Geography. For this reason two groups of children were included in the study and from now on these groups will be referred to as D(1) and D(2).

At the time of the study the first teacher had a M.Ed. degree and four years' teaching experience whilst the other had a Secondary Teacher's Diploma and had been teaching for three years. Both teachers taught subjects other than Geography. The first teacher was responsible for teaching Agriculture to the Standard 7's and Geography to the Standard 10's whilst the second teacher taught English and Geography to the Standard 7's.

4.2 Tests and Procedures

Since very little research has been done to date on the role of reading strategies in second language reading comprehension amongst Ciskeian second language learners there was no suitable test available to investigate the problems that are the concern of this study. This necessitated that an appropriate test be designed and constructed. Consequently, a single test was constructed with a view to fulfilling the aims of this study. The test was constructed and piloted over a period of a year.

The test has a few distinctive features: It consists of three parts.

Part A consists of a passage and is followed by twenty questions. The questions are divided into five groups to test certain reading strategies, viz.:

i) whether the subjects have the knowledge of the meanings of words and whether they have sufficient language proficiency to give the literal meaning of words;

ii) whether they are able to derive an appropriate word-meaning for adequate comprehension in context;

iii) whether they can find answers to questions when the answers are explicit in the text;

iv) whether they can make appropriate inferences (including the use of background knowledge);

v) whether the subjects can find the main points and details in a text.

Part B consists of three questions which are designed to test the pupils' ability to hypothesize and predict meaning.

Part C is a modified cloze test which is designed to test cohesion (i.e. semantic/discourse markers; references; substitution; ellipsis). This section was included to test whether the subjects could find the referent for anaphoric terms and whether they could use discourse markers to (i) predict information and meaning to come, and (ii) see the relationship between what they have just read and what they are about to read.

The test was not easy to construct. Three trial-runs were conducted, each with a sample of twenty children (not included in the final sample). After each administration of the test the questions and answers were discussed with the pupils and their teachers. Consequently, each question in the test went through a number of revisions. The test in full is shown in Appendix A.

4.3 Discussion of the Results of the Tests

Table 3 gives a comparison between schools in terms of their performance in percentages.
It contains the following information:

4.3.1 School A

In this sample the percentage of correct responses on Part A of the test was 39.

Part B saw a similarly low correct response percentage of 38 whilst a slight improvement was seen in Part C with 49,4% of the pupils' responses being correct. The performance of this school on the entire test was slightly above the average for the four schools with a percentage of 42.86 of pupil responses being correct.

4.3.2 School B

School B seemed to have performed best on the entire test with 46,9% of pupils' responses being correct. The percentages of correct responses for parts A, B and C of the test were 45,2%, 42% and 50,4% respectively.

4.3.3 School C

The percentages of correct pupil responses on parts A, B and C of the test were 44,5%, 40% and 40,6% respectively. 43.2% of the pupils' answers on the overall test was correct.

TABLE 3

COMPARISON OF SCHOOL PERFORMANCE IN PERCENTAGES

SCHOOL	PERCENTAGE PART A	PERCENTAGE PART B	PERCENTAGE PART C	PERCENTAGE ON ENTIRE TEST
A	39	38	49,4	42,86
B	45,2	42	50,4	46,9
C	44,5	40	40,6	43,2
D(1)	42,4	38,6	47	43,8
D(2)	43,6	32	49	44,7

4.3.4 School D(1)

Pupil performance on Parts A and C of this test was slightly above the average of the four schools with pupil scores of 42,4% and 47% respectively. Most pupils in this sample seemed to falter in Part B of the test with only 38,6% of their responses being correct, The percentage of correct responses on the overall test was 43,8%.

4.3.5 School D(2)

There is a close similarity between the performance of this sample and the former. These pupils also found Part B difficult. The percentage of correct answers on this part of the test was 32%. The subjects seemed to perform better on Parts A and C of the test with correct responses of 43,7% and 49% respectively. 44,7% of their answers were correct on the entire test.

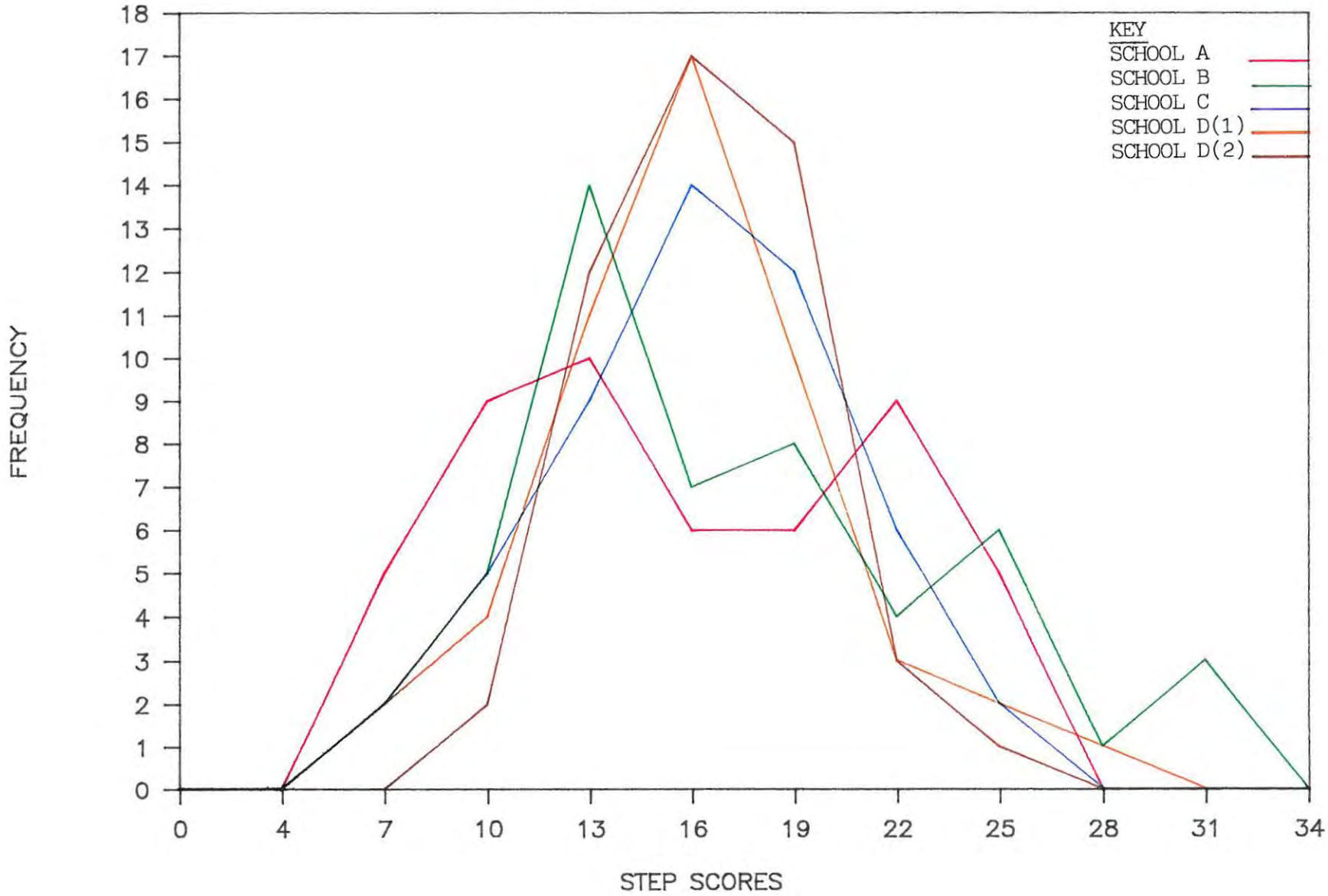
4.3.6 Overall Sample

250 pupils were involved in the test. 43,14% of these pupils supplied correct answers to Part A of the test whilst 38,12% and 47,28% of these pupils supplied correct answers to Parts B and C of the test.

Appendix B (i)-(vi) consists of the histograms for the five sample groups and for the whole sample whilst Appendix C (i)-(v) gives the frequency polygons for the five sample schools (Figure 3 shows

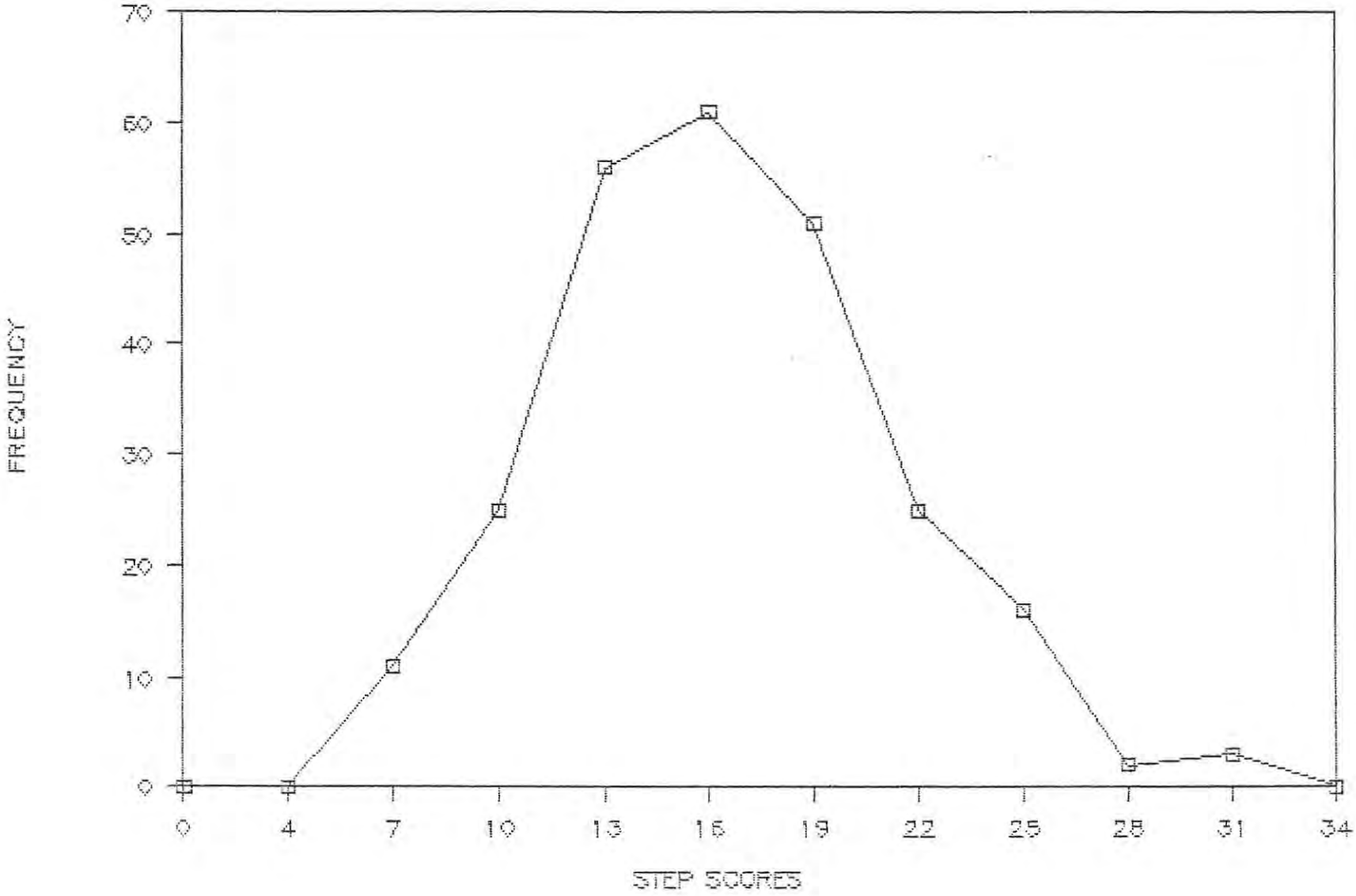
a comparison of frenquency polygons) and that for the entire sample (Figure 4) reveals that although most curves appear to approximate to the normal distribution curve, they are skewed in a positive direction. From a maximum possible score of 37 a mean of 16,39 and a range score of 24 for the entire sample shows just how disturbing the situation is.

COMPARISON OF FREQUENCY POLYGONS FOR THE FIVE SAMPLE SCHOOLS



75

FREQUENCY POLYGON FOR THE ENTIRE SAMPLE



The median, mean and range for each of the sample groups and for the overall sample is shown in Table 4.

TABLE 4

SCHOOL	MEDIAN	MEAN	RANGE
A	15,5	15,86	20
B	16,5	17,36	24
C	15,5	15,96	17
D(1)	16	16,22	23
D(2)	16	16,54	14
Entire Sample	16	16,39	24

The mean of the entire sample of 250 children is 16,39. Since this is the estimated mean of the entire Standard 6 Geography population in Zwelitsha, the Standard Error of the Mean was used to test whether this mean could be considered a reliable estimation. It was found with 68% certainty that the population mean is between the sample mean and $\pm$ 1 standard error, with 95% certainty that the population mean is between the sample mean and $\pm$ 2 standard errors and with 99,7% certainty that the population mean is between the sample mean and $\pm$ 3 standard errors (see Appendix D). Thus at the 68% level the true mean of the population will lie between 16,08 - 16,70 marks out of a possible total of 37; at the 95% level the true mean of the population will lie between 15,77 - 17,01 marks out of a possible total of 37 and at the 99,7% level the true mean of the population will lie between 15, 46 - 17, 32 marks out of a possible total of 37.

The percentage of correct answers on the overall test was 42,84. These scores were achieved at the end of October, just before the end of year examinations. Since the teachers and the children were told well in advance that they were going to be tested at the end of October, after the Geography syllabus had been completed and while they were in the process of revision, these pupils were exposed to the items during the handling of the astronomical section of their Standard 6 syllabus. This being the case, the performance of the pupils is a cause for concern (Table 5 shows the raw scores for each school).

The results of the data to be described here affected all subsequent analyses. It was noted, while scoring the test, that a significantly large proportion of the subjects were scoring well below 40%. Because of this, an item by item analysis of the entire test was undertaken. The results of this procedure are presented in Table 6.

Table 6 also provides a breakdown of the difficulty levels and discriminatory efficiency for each of the items in the test. The method used here compared the highest 27% (68) of the testees with the lowest 27% (68), leaving the middle 46% (114) out of account. It was then determined how many testees in each of these two groups answered each item correctly.

TABLE 5

NUMBER OF CORRECT ANSWERS PER SCHOOL

	School A	School B	School C	School D(1)	School D(2)	TOTAL
	n=50	n=50	n=50	n=50	n=50	n=250
Part A						
1 a	35	29	32	27	21	144
b	13	17	12	26	17	85
c	10	15	14	18	12	69
d	10	9	14	10	12	55
2 a	35	35	33	32	40	175
b	15	21	18	19	20	93
c	16	22	22	16	14	90
d	15	20	18	11	20	84
3 a	31	35	31	33	32	162
4	33	35	33	37	36	174
5	21	28	28	23	24	124
6	26	29	32	27	22	136
7	31	36	34	29	31	161
8	0	0	0	1	0	1
9	15	18	15	10	14	72
10	24	23	26	25	30	128
11a	14	23	20	13	17	87
b	14	20	18	14	18	84
12a	16	18	30	27	28	119
b	16	19	25	26	28	114
Part B						
1	18	15	22	19	17	91
2	23	32	31	24	23	133
3	16	16	7	15	8	62
Part C						
1	37	38	33	35	31	174
2	19	19	15	13	14	80
3	24	27	15	16	26	108
4	32	41	36	42	45	196
5	5	4	0	1	1	11
6	20	8	8	10	17	63
7	29	31	26	25	29	140
8	31	35	33	40	37	176
9	17	22	13	13	20	85
10	24	32	24	39	26	145
11	28	24	22	19	29	122
12	35	37	37	39	41	189
13	29	27	17	25	19	117
14	16	8	5	12	8	49
TOTAL	793	868	799	811	827	4098

TABLE 6

TABLE SHOWING DIFFICULTY AND DISCRIMINATION INDICES

COMPARISON BETWEEN HIGHEST (H) AND LOWEST (L) GROUPS

ITEMS

	PART A																				PART B			PART C													
GROUP	1a	b	c	d	2a	b	c	d	3	4	5	6	7	8	9	10	11a	b	12a	b	1	2	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14
H	47	26	32	24	53	28	33	35	52	54	53	53	56	1	37	50	34	33	44	47	40	54	30	61	40	44	61	10	34	57	61	35	52	42	60	34	15
L	31	16	9	7	29	16	19	16	40	40	17	24	30	0	10	14	12	9	17	15	10	19	10	31	12	15	35	0	3	18	28	11	21	27	45	16	13
H + L	78	42	41	31	82	44	52	51	92	94	70	77	86	1	47	64	46	42	60	62	50	73	40	92	52	59	96	10	37	75	89	46	73	69	105	60	28
H - L	16	10	23	17	24	12	14	19	12	14	36	29	26	1	27	36	22	24	27	32	30	35	20	30	28	29	26	10	31	39	33	24	31	15	15	8	2
DIFF.	57	31	30	23	60	32	38	38	68	69	51	57	63	1	35	47	34	31	45	46	37	54	29	68	38	43	71	7	27	55	65	34	54	51	77	44	21
DISC.	24	15	34	25	35	18	21	28	18	21	53	43	38	1	40	53	32	35	40	47	44	51	29	44	41	43	38	15	46	57	49	35	46	22	22	12	3

Table 6 indicates how many testees in each group (H and L) answered the items correctly. The row (H + L) indicates how many testees (out of 136) answered the item correctly and therefore denotes the difficulty index. These values appear in row "Diff." without decimals.

The row (H - L) shows how the highest and lowest groups differ and denotes, therefore, the discrimination index. These values appear in row "Discr." without decimals.

Ideally, all items should have a difficulty index of 50, but the majority should fall between 20 and 80. Similarly, the index of discrimination should range between 40 and 60. Since the index of discrimination of approximately 60% of the items tested in this test is below 40 they should have been deemed unsatisfactory and should have, therefore, been excluded from the test. However, this researcher believes that statistical considerations (difficulty and discrimination indices which are used to reflect the reliability and validity of tests) are not the only criteria for deciding the appropriateness of an item. These items were deliberately included in the test because they deal with important aspects in the field of investigation, as will be revealed by the ensuing discussion. Nevertheless, it must be pointed out that although the inclusion of these items in the test might suggest that the test is invalid, it is not, because (see Chapter 2) the test was not only designed to find out the reading competence level of these pupils, but

TABLE 7

COMPARISON OF CORRECT ANSWERS IN PERCENTAGES OF READING STRATEGIES ON PART A OF TEST

QUESTION TYPE	SCHOOL A	SCHOOL B	SCHOOL C	SCHOOL D(1)	SCHOOL D (2)	TOTAL PERCENTAGE OF CORRECT ANSWERS
LITERAL MEANING OF WORDS	34	35	36	40,5	31	35,3
MEANING OF WORDS IN CONTEXT	40,5	49	45,5	39	47	44,2
LITERAL COMPREHENSION	55,5	63,5	62	60	57	59,6
INFERENCE	35	38,5	37,5	32,5	37,5	36,2
SALIENT POINTS	30	40	46,5	40	45,5	40,4
TOTAL PERCENTAGE OF CORRECT ANSWERS	39	45,2	44,5	42,4	43,6	43,14

also to compare their reading competence against the desired reading competence level (i.e. that demanded by the prescribed text).

In order to clarify Table 6 its main features have been modified in Tables 7, 8 and 9 which show a comparison of correct answers in percentages of reading strategies on Parts A, B and C of the test. These tables narrow the focus still further as it is important to look at a detailed strategy by strategy analysis.

i) Literal Meaning of Words

The data contained in Tables 5 and 7 produced some interesting results. Questions la, b, c and d tested the pupils ability to give the literal meaning of words. This item was correctly answered by 353 (35,3%) of the children. 144 (57,6%) of the testees answered item la correctly whilst items lb, c and d proved difficult for most students as is evident in scores of 85 (34%), 69 (27,6%) and 55 (22%) respectively.

A possible explanation for these poor results is that the items in the test were too difficult for the majority of the sample population probably because of their poor productive competence in English. Or, perhaps there is another explanation. Since the majority of students fared better on question la than on lb, c or d, could it be likely that they are more familiar with that word because they have come across it more frequently in Science and most of their school subjects? These children should certainly be

familiar with the word, "observing" because it is used on more than one occasion in the prescribed Standard 5 Geography and General Science textbooks (see bibliography for details).

ii) Word Meaning in Context

As can be seen in Tables 5 and 7, word meaning in context proved just as difficult for most pupils as did the literal meaning of words. Item 2 was answered correctly by 44,2% of the pupils. Closer scrutiny of the data reveals that pupils fared better on question 2a where 175 (70%) of the pupils supplied correct answers, whereas questions 2b, c and d were answered poorly and only 93 (37,2%), 90 (36%) and 84 (33,6%) pupils respectively supplied correct answers.

There is previous research, such as that by Neville and Pugh (1975), which indicates that readers perform poorly because they do not make use of contextual clues. Also in 1975, The Bullock Report (1975) pointed out that a reader, by making use of the linguistic context, can reduce the number of possibilities he need consider when he encounters an unfamiliar word. By doing so he has a greater chance of identifying that word, especially if his decoding skills, grammatical, semantic, linguistic, conceptual and background knowledge is poor. The same notion may be applied to the results of this test. However, it is virtually impossible in a study such as this to determine whether readers who do not make good use of the context simply lack the necessary knowledge or

whether they have this knowledge but fail to apply it. It is possible that these pupils fail to use their background knowledge because they lack the strategies which are necessary for bringing their background knowledge into play.

Nevertheless, it appears that these testees are not making full use of their knowledge. Since poor readers tend to have less linguistic ability and less ability to use conceptual knowledge they are doubly handicapped if they do not apply their knowledge successfully. Furthermore, as their other word-attack skills (e.g. phonic skills) will also tend to be inferior they are the ones who most need to make use of the contextual clues.

iii) Literal Comprehension

Questions 3, 4, 5 and 6 were designed to test whether the pupils can find answers to questions by making direct reference to the text. The data in Table 7 indicates that the testees performed best on this question with 59,6% of the pupils supplying correct answers. Table 7 also gives the proportion of children in percentages in each of the five sample schools who supplied correct answers to this question. However, a detailed, question by question analysis of the questions that made up this category revealed that pupils performed better on questions 3 and 4 than on questions 5 and 6. The percentage of correct responses for these questions were 64,8, 69,9, 49,6 and 54,4 percent respectively for questions 3, 4, 5 and 6.

A possible explanation as to why pupils scored badly on questions 5 and 6 even though the information was stated explicitly in the text can be derived from the schema-theoretic approach to reading. The results of this study suggest that English second language readers in the Ciskei tend to be linguistically bound to the text. Although they seem to be processing the literal language of the text, they are not making the necessary connections between the text and the appropriate background information even when that information is provided explicitly in the text. They appear to be poor text processors. This could be because they do not use top-down processing (see pp 12, 13, 29, 30) to make appropriate predictions about the meaning of the text. Also their conceptually-driven schemata are not brought to bear on their bottom-up processing and for this reason they fail to use textual cues to build up a mental representation of the meaning of the text (see pp 12, 13, 28, 29, 30). For example, only 124 children were able to answer question 5 correctly. Presumably, the 126 children who supplied wrong answers did so because their bottom-up processing told them from the text that moons and satellites are not the same thing, most probably because they misunderstood the text. But, their background knowledge ought to have told them that moons and satellites are the same thing.

It is suggested that they failed to recognize this because they were not using their background knowledge (see pp 26-31).

iv) Inference (including Background Knowledge)

A simple comparison of correct answers in percentages of reading strategies on Part A of the test was performed, and the results, reported in Table 7, show that only 36,2% of the sample population gave correct responses to questions that tested their ability to make inferences. An examination of the raw scores of testees, as listed in Table 5, shows that the pupils performed badly on question 8 in Part A of the test. Of major concern is why did only one pupil out of 250 score correctly on this question? This score could lead to objections to question 8 on the grounds that:

i) the validity of the question is suspect;

ii) the difficulty and discrimination indices of 01 (decimals omitted) warrant the exclusion of this question from the test. Difficulty and discrimination indices without decimals are listed in Table 6 on page 80;

iii) it is pointless administering pilot tests when questions like question 8 are included in the final test.

In answer to these objections, it must be pointed out that these are not the only criteria for deciding upon the appropriateness of an item. Question 8 was deliberately included in the test because:

i) Halley's Comet had appeared as recently as 1986 and was the topic of much discussion on

television and radio and extensive coverage was given to it by newspapers, magazines and periodicals;

ii) the teachers concerned stated categorically that they had brought this to their pupils' attention. All of them emphasized the fact that when the lesson was taught they made extensive use of newspapers, magazines and periodicals (this researcher saw evidence of extensive use) because there was an abundance of these teaching aids available to them;

iii) the correct answer could be inferred from the text (see page 88-90).

It is interesting to note that although only 1 pupil gave the correct answer to question 8, 89 pupils gave the answer as 1986. This seems to indicate that these 89 pupils did understand the question. In a sense it is the right answer because the text tells us that Halley's Comet will appear again in 1986. But, it seems that the pupils did not look at it in an historical context and, therefore, did not realize that 1986 was the previous year. This seems to indicate some sort of misinterpretation and, therfore, it can be understood why 1986 was a possible interpretation of the text.

Nevertheless, the passage contains several clues which should help pupils to infer the correct answer.

Firstly, the text tells us that Halley's Comet had been seen "on and off" since 240 B.C. In addition, it tells us that it was last seen in 1910 and would be expected again in 1986. The text requires that pupils go beyond the literal meaning of the sentence and infer that there is a time gap and that Halley's Comet is seen only once every 76 years. Since only 1 pupil was able to supply the correct answer we could hypothesize that when a second language reader reads a text there is no link between the text and his prior knowledge and even when that background knowledge is presented explicitly in the text he reads the text as something entirely new and in isolation (see pp 27-31). This could be because the problems they experience at the decoding level take up so much cognitive time that they are unable to apply their background knowledge.

There are two factors to be discussed here. The first is the pupils' reading competence and the second is the question of the readability of the text. Results such as that achieved in question 8 reflect on the readability of the text. It seems that the authors of the text concerned were oblivious of the fact that their target population consisted mainly of non-native speakers of English and that they were writing for pupils at the Standard 6 level. Surely the text would have been more readable to second language readers at the Standard 6 level if the authors had been more explicit and included something to the effect that Halley's Comet is seen

once in every 76 years? If that were done then the sentence reading "It was last seen in 1910 and can be expected again in 1986." would be more readable and, therefore, more comprehensible to non-native readers at the Standard 6 level. A justification for the inclusion of the question which appears to be too difficult for the sample is that it reflects the desirable and/or assumed reading competence of the target population in terms of this particular text.

v) **Saliency**

As can be seen in Table 7, performance on questions 11 and 12 was not much better than on the previous ten questions with only 40,4% of the pupils tested supplying correct answers. Table 5 shows us that most pupils fared extremely poorly on questions 11a and b. The raw scores of 87 and 84 for those questions shows just how poor pupil performance was.

Perhaps a possible explanation for the poor pupil performance on questions 11a and b could lie in the readability level of the paragraphs (Gilliland, 1972). It seems that most pupils experienced difficulty in defining the central ideas in each of the three relevant paragraphs (See Appendix A, pages 105 and 106 for the relevant paragraphs under the sub-heading Comets and Meteors).

Close scrutiny of these paragraphs supports the argument that a possible explanation for the poor pupil results on questions 11a and b lie in the

readability level of the paragraphs as discussed earlier. It appears that the authors have over-estimated the reading ability of their target population in assuming that these children were familiar with the schemata in terms of content and form of expository texts (see pp 25, 26, 43, 57, 58, 59, 97, 98, 99). They wrongly assume that the sub-heading "Comets and Meteors" would tell these second language readers that the ensuing paragraphs would deal exclusively with comets and meteors.

Although the authors used the cohesive tie, "In addition to", in the first paragraph, these second language readers appear to have failed to interpret the cohesive tie correctly. These readers failed to read into this illuminated signpost that <u>besides</u> the sun and its planets there are other heavenly bodies that pass through the solar system.

It also seems that the authors failed to remember that there is connectedness between paragraphs, just as there is connectedness between sentences (Palmer, 1980). There is previous research, such as that by Gilliland (1972), Halliday and Hasan (1976) and Williams (1985) which shows that the larger the presence of sentence connectors in the text, the better the readability since connectives save readers time and effort in the process of reading in order to achieve comprehension. Therefore, the apt use of sentence connectors at the beginning of paragraphs 2 and 3 would have definitely improved its readability.

It seems that when these second language readers at this level of competence read paragraphs 2 and 3 they failed to see any connection between these paragraphs and the the first paragraph and the sub-heading and for this reason they failed to realize that the comets and meteors, which are the central ideas in paragraphs 2 and 3, are heavenly bodies that pass through the solar system.

Competent readers, on the other hand, most probably would have been able to cope with this passage. They, most probably, would have incorporated an inference-based strategy when they read the title and the first paragraph and would then have made tentative predictions as to what other heavenly bodies could pass through the solar system (see page 29). Through the remainder of the passage, these competent readers most probably would have looked for information that would support or change their predictions. They would have used top-down processing to make predictions of what the text was going to be about as it was being read and they would have used textual clues in bottom-up processing to confirm these predictions and to build up a mental representation of what the text is about from the information in the text itself. They also would have been influenced to predict meaning by their prior knowledge of the text's content (see page 29).

TABLE 8

COMPARISON OF CORRECT ANSWERS IN PERCENTAGES OF READING STRATEGIES ON PART B OF TEST

QUESTION TYPE	SCHOOL A	SCHOOL B	SCHOOL C	SCHOOL D(1)	SCHOOL D (2)	TOTAL PERCENTAGE OF CORRECT ANSWERS
PREDICTION	38	42	40	38,6	32	38,12

TABLE 9

COMPARISON OF CORRECT ANSWERS IN PERCENTAGES OF READING STRATEGIES ON PART C OF TEST

QUESTION TYPE	SCHOOL A	SCHOOL B	SCHOOL C	SCHOOL D(1)	SCHOOL D (2)	TOTAL PERCENTAGE OF CORRECT ANSWERS
DISCOURSE MARKERS	46	46,5	35,3	39,5	44,8	42,4
ANAPHORIC REFERENCE	54	55,6	47,6	57	54,6	53,8
TOTAL PERCENTAGE OF CORRECT ANSWERS	49,4	50,4	40,6	47	49	47,28

vi) Prediction

Part B of the test was designed to test the pupil's ability to hypothesize and predict meaning. The data contained in Tables 5 and 8 indicate that the testees performed badly on this reading strategy. Table 5 contains the raw scores of the testees and scores of 91 and 62 on questions 1 and 2 tell us that the activity proved too difficult for most of the testees. Likewise, Table 8, which gives a comparison of correct answers in percentages of reading strategies on Part B of the test, tells us that only 38,12% of the testees supplied correct answers to all the questions that tested their ability to predict.

The work of researchers such as Hansen (1981), Langer and Nicolich (1981), Hare (1982) and Anderson et al. (1977) suggest a possible explanation for poor pupil performance. Hansen, Langer and Nicolich and Hare stress the importance of prior knowledge and previous experience. These researchers maintain that prior knowledge is a vital ingredient in reading comprehension and is a pre-requisite for predicting. Hansen goes one step further and maintains that a lack of prior knowledge may handicap students in their ability to draw inferences and, therfore, affect their ability to predict. Anderson et al. (1977), on the other hand, maintains that readers who fail to "read between the lines" may not be able to predict content and may, therefore, suffer from comprehension problems (see also discussion on pp23-31).

Another possible explanation could be that these pupils are not using the context of the text to best advantage. Rumelhart (1980) claims that presence of context should facilitate what in schema theory is called the reader's top-down processing of the text (i.e. conceptually-driven schemata). It seems that these pupils did not use top-down processing to make predictions of what the writer was going to say next. It seems that they did not use the textual clues provided by the author in bottom-up processing to confirm these predictions and, for this reason, they were not able to build up a mental representation of what the writer was going to talk about next (see page 30).

vii) Discourse markers and anaphoric reference

Part C of the test consists of a modified cloze test which was designed to test the pupils' ability to create the discourse or text meaning. Table 9 gives a comparison of correct answers in percentages of reading strategies on Part C of the test. It shows that while 42,4% of the testees supplied correct discourse markers, 53,8% did the same for anaphoric reference. On the average 47,28% of the testees were able to give the correct discourse marker and anaphoric reference. But, close scrutiny of the raw scores in Table 5 gives cause for concern. The data from Part C of Table 5 tells us that questions 3, 5, 6, 7 and 11 which tested discourse markers were poorly answered. Furthermore, it is extremely disturbing to see that only 11 testees out of 250

scored correctly on question 5; 63 out of 250 scored correctly on question 6 and 85 out of 250 scored correctly on question 9.

As can be seen in Table 5, anaphoric reference proved just as difficult for most pupils as did discourse markers.

It seems that in order to explain why cohesive ties proved difficult for most students the terms "coherence" and "cohesion" must be properly understood. Williams (1985) says that for a text to be coherent, it needs to be arranged in such a way that its contents are expressed and sequenced in a logical, natural, systematic manner, in order that the writer's message is perceived by the reader in exactly the manner intended. Cohesion in the text, on the other hand, refers to the relationships that exist within and between sentences, and which make a text an integrated unit rather than simply a list of independent sentences.

Moe (1979) makes an interesting distinction between the two terms. He argues that "cohesion" is something that exists within the text and is a component of a coherent text, but "coherence" is in the mind of the reader as he derives the meaning from the text.

If we accept Moe's distinction between coherence and cohesion we can argue that a reader must perceive

the cohesion in the text in order to establish (for himself) the coherence of the text. As a reader reads a text he is creating text meaning stage by stage i.e. he is creating coherence for the text.

But it seems that a reader has to perceive the cohesion of the text in order to create the coherence. So, for a reader's representation of a text to be accurate it has to be on the basis of correctly established coherence which is on the basis of correctly perceived cohesion.

Therefore, a possible explanation for poor pupil performance on cohesive ties could lie in the fact that these children's representation of the text is inaccurate or inappropriate. It seems that the propositions in the text are not combining correctly in the minds of the readers to create the discourse or text meaning.

The aim of this complex and wide-ranging study has been to find out whether Ciskeian L2 students' reading competence in English matches the reading competence demands in English of Geography Standard 6 textbooks and a number of criticisms and recommendations have been made and it will be tedious to repeat them here. However, a few particular observations are picked up in and discussed in further detail in the next chapter.

CHAPTER FIVE CONCLUSION

Implications for Teachers, the Education Department and for Further Research.

This study sought to address the question of why second language Ciskeian students find it difficult to understand the texts that they read. The extent of this problem was examined at the Standard 6 level and one aspect of their school subjects, viz. the astronomical section of the Geography syllabus was considered. It was not just a reading test but a test against an inventory of reading strategies (see Chapter 3, pages 37, 38) of what pupils at the Standard 6 level ought to be able to do with this kind of text. Pupils did under-achieve and the results of the test, as indicated in Chapter 4, have important implications for the teaching of reading in English Second Language.

Firstly, the majority of these children were unable to cope competently with their prescribed Geography textbook because, it seems, that they are unfamiliar with the structure of the text that they are confronted with. Students' ability to recognize and use text structure is an important aid to their reading comprehension (McGee, 1982; Meyer, Brandt and Bluth, 1980; Taylor, 1980; Whaley, 1981). It is, therefore, imperative that teachers teach text structure (e.g. expository structure) to organize and improve the pupils' ability to comprehend (see pp 25-26). Since particular emphasis is placed on expository reading at the secondary level, consistent practice with this type of text in the primary school could result in pupils, when they

reach secondary school, having less trouble when they read the more formal expository texts (i.e. reduce the "register-shock" encountered at Standard 6).

A second comment concerns the fact that most of these pupils are not using appropriate reading strategies (see pp 48, 49, 50) that would enable them to read the type of text under study with comprehension. For example, the results of this study show that these second language readers are severely handicapped by their poor vocabulary (see pp 83, 84, 85). They appeared to concentrate on words and process word by word. They are, therefore, comprehending, at best, at word and sentence level and for this reason they are unable to establish discourse meaning. There is also strong evidence which supports the view that these students did not use the linguistic clues in the larger context to determine meaning of unfamiliar words (see pp 84, 85). Teachers should, therefore, concentrate on training students to take advantage of the larger context. In this way, students might be lured away from their obsession with words and encouraged to exploit their powers of inference and prediction. Authors and editors could help in this respect. They should see to it that the text contains enough known information for students to use to interpret the unknown. Teachers should also emphasize the purpose of reading, because if children do not know what they are reading for, then they might be more likely to try to understand everything - word - by - word.

If we add to this the fact that this study has shown that these second language readers have limited background

knowledge and that inappropriate and/or insufficient background knowledge (see pp 87-90, 94-95) limits the pupil's ability to make appropriate inferences and predictions, then it is clear that further research should be undertaken to ascertain whether such a state of affairs extends to the other content subjects like Agricultural Science, Biology, History and Physical Science. Another significant finding of this study is the fact that many of these pupils do not use the background knowledge that they do have (see page 88). It seems that whenever these students read a text it is a new experience. It is imperative, therefore, that we, as educators, find ways of helping pupils activate for themselves background knowledge both in content and form. Nevertheless, the situation as revealed in this study goes some way towards explaining why pupils in the Ciskei achieve low marks in examinations and why the failure rate among these pupils continually causes concern on the part of the education authorities.

Chapter 2 discusses the role of prior knowledge and background experiences in the light of insights gained from the schema-theoretic view of reading and the ability of pupils to activate that knowledge. Therefore, teachers should provide background information that is missing and activate background knowledge which is there before assigning reading on unfamiliar subjects. In addition, teachers must make pupils aware that the attitude and knowledge they bring with them to the classroom are valuable. This will not only lay the foundations for the understanding of new concepts, but also give pupils the confidence to approach issues critically.

Teachers must also develop reading activities in the classroom which involve active analysis, interrogation and investigation of the text rather than passive reading and answering of questions.

This involves teacher and pupil discussion of the context and purposes of reading, pupil-pupil discussion of what they read, and teacher and pupil review of what has been read. This should result in the teacher finding out what pupils really think because by letting the pupils do the talking, and by letting them make mistakes, their ideas can be better understood by the teacher. Perhaps this would also result in teachers finding out that what they have taken for granted, pupils find confusing. This information could help uncover potential problems and in this way could be of benefit to teachers, writers, editors and publishers.

Teachers must also be more critical in their evaluation of (Geography) textbooks. They must adopt a more objective view of world issues and must also supplement textbooks with current authentic geographical materials: reports, newspaper articles, novels and academic papers.

This type of classroom teaching holds certain implications for the Ciskei Department of Education because it seems necessary to get teachers to change their classroom methodology from one based on teacher-centredness to one in which the pupil is at the centre of a programme of activity and involvement. This means that all teacher activity in the classroom should be focused on the fact that learning

takes place in the mind of the child. Teachers should, therefore, try to set up situations in the classroom that will place children into activity cycles which will encourage learning. As far as textbooks are concerned, teachers should try to put children into situations and give them tasks that will take them into the text.

The obvious vehicles for such a change would be through the existence of pre-service and in-service training programmes. One wonders, however, how successful such attempts at changing classroom methodology in Geography are likely to be if the other content subjects continue to exhibit evidence of teacher-centredness. There exists a need for research in this direction.

Chapter 3 criticizes the traditional methods for determining readability because they are based on such factors as sentence length and number of syllables in words. It seems that the traditional formulae ignore many of the relevant findings from the schema-theoretic view of reading which are described in this study. Readability research should go beyond the traditional readability formulae in an exhaustive search for the factors which influence readability. More research could be done in the following areas:

1) methods for assessing content difficulty;
2) methods for acquiring insight into the extent of prior knowledge;
3) methods for acquiring better insight into the impact of style;
4) methods of acquiring better insight into the impact of organisation;

5) methods of acquiring better insight into the interaction between the reader and the text;
6) methods of acquiring better insight into the learning strategies of the reader.

Although the question of readability falls outside the jurisdiction of the Ciskei Department of Education the Department could liaise with the various publishers who supply them with books whenever a new syllabus is introduced. The publishers, in turn, should give more guidance to their textbook writers and editors who should take cognizance of the problems associated with readability and the present low English proficiency of their target population who are second language readers.

There are, however, several other areas which need further research, some of them being:

- pre-service and in-service training;
- the writing of textbooks;
- the selection of textbooks;
- the teaching of reading in secondary schools;
- the introduction of compulsory reading periods in secondary schools;
- the teaching of learning skills;
- ways of improving the language competence of second language readers.
- the need for considerable research and development and the training of language teachers so that they understand reading far better than they do now so that

the classroom practice is transformed along the lines that have shown to be necessary by the research in this study.

Education is largely a text based activity. Children are exposed to discourse in a variety of ways but a major strategy of educational input is in terms of written texts which pupils are required to read. This study has investigated a problem area that has been identified as the inability of Ciskeian second language students to understand a text that they have read and has attempted to throw light on the nature of the skills that are needed and the shortfalls that these students have. Only when the consequences of this type of research are addressed can we really expect a Standard 6 Ciskeian English second language student to be able to cope with the language of the textbook in his Geography classroom.

APPENDIX A

PART A

Read the following passage and then answer the questions that follow.

Passage

The Planets

Astronomers first studied the planets by observing their light. Planets shine because they reflect the light of the sun. When we see the fully illuminated surface, the planet will appear brighter than when only part of the illuminated surface is visible. Today astronomers use other methods such as radio waves to study the behaviour of planets.

Planets revolve around the sun in huge elliptical (egg-shaped) orbits (or paths). These orbits do not change, so that astronomers are able to predict where the planets will be any any one time. The time taken for a planet to move around the sun once is called a period of revolution.
The earth's period of revolution is one year.

As they revolve around the sun the planets also spin around. The spin of earth is called rotation. Rotation causes day to follow night and will be discussed in more detail later. Some of the planets have moons (also known as natural satellites). Earth has one moon, but certain planets, for example Jupiter, Saturn and Uranus, have many moons. (Jupiter has 12).

Comets and Meteors

In addition to the sun and its planets, other heavenly bodies occasionally pass through the solar system.

Comets have peculiar orbits around the sun. Sometimes they pass very close to it and sometimes they are extremely far away. The best-known comet is Halley's Comet, which has been seen on and off since 240 BC. It was last seen in 1910 and can be expected again in 1986.

Meteors are fragments of solid matter that move about space in an apparent haphazard manner. They become visible to earth when they enter the top portion of the earth's atmosphere (at about 120 km) and start to glow as they become heated. When meteors reach the earth's surface they become known as meteorites. Meteorites make holes in the ground called craters. The largest known crater in the world is the Great Crater in Arizona, USA, which is 1 220 metres deep and 175 metres wide.

Our Planet Earth

The earth is one of the smaller planets. As far as scientists can tell it is the only planet with any forms of higher life. (Mars and Venus may have primitive forms of life such as algae, but nothing like plants and animals).

It is thought that the earth is at exactly the correct distance from the sun, neither too hot nor too cold, for life to develop. If it were any closer, temperatures would

be too high for life as we know it to survive, and if it were any further away, the planet would be much too cold.

The earth has one natural satellite, the moon. The moon is approximately a quarter of the size of the earth. It revolves around the earth once every 28 days (approximately). The moon shines, as the planets do, by the reflection of the sun. A full moon is when we see the fully illuminated (lit up) face of the moon. During the other phases we see only sections of this face, decreasing in size until it can hardly be seen, and then increasing until it is full again.

1. Underline the word/phrase on the right which is correct in meaning to:

a) observing — taking notice of; recognizing; knowing.

b) reflect — pass for; send back; take after.

c) fragments — rocks; pieces broken off; fragrance.

d) predict — indicate; foretell; record.

2. Now do the same for these words as they are used in the passage.

a) The time taken for a planet to move around the sun is called a period of <u>revolution</u>.

i) rebellion

ii) movement in orbit

iii) complete change

b) Comets have <u>peculiar</u> orbits around the sun.

i) unusual

ii) funny

iii) crazy

c) They become visible to earth when they enter the top portion of the earth's atmosphere (at about 120 km) and start to glow as they become heated.

i) warm

ii) become hot

iii) burn without flame

d) Today astronomers use other methods such as radio waves to study the behaviour of planets.

i) conduct

ii) features

iii) good manners

3. Name one method which astronomers use to study the behaviour of planets.

.....

4. What is the spin of the earth called?

.....

5. How many natural satellites has earth?

.....

6. What is a crater? .....

.....

7. When was Halley's Comet first seen? .....

8. When will Halley's Comet be seen again? .....

9. How do the orbits of a planet differ from the orbits of a comet? .....

.....

10. Which is bigger? The earth or the moon. .....

11. "In addition to the sun and its planets, other heavenly bodies occasionally pass through the solar system." Name two of these heavenly bodies.

    a) .....

    b) .....

12. What are the two important movements of the earth?

    a) .....

    b) .....

PART B

Here are three sentences.

Study each sentence carefully and decide what the writer will talk about next. Indicate your choice of answer by making a tick ( ) in the relevant box.

1. Because of the vast distances in space, astronomers (people who study the stars) cannot use kilometres as a unit of measurement.

The writer will probably talk about:

a) why astronomers cannot use kilometres as a unit of measurement ☐

b) another unit of measurement that can be used. ☐

2. Because time changes with longitude, the international community decided to choose one line of longitude as the main line of reference for world times.

The writer will probably

a) describe how time changes with longitude ☐

b) tell us which line of longitude was chosen. ☐

3. People in ancient times believed that the earth was flat, and that .....

The writer will probably talk about

a) the fact that the earth is really round 

b) what happened to people when they sailed too far. 

PART C

Underline the word/phrase in brackets which best fits the meaning of the sentence.

The Equinoxes

The noon sun shines vertically on the equator. The southern hemisphere is cooling down and the northern hemisphere is warming up. All the places on earth have 12 hours of darkness (or; and; also) 12 hours of light. (That; This; It) is called "equinox", (therefore; and; because) the night is just as long as the day - (they; it; this) are the same length.

Six months later, in September, the earth has passed through the June solstice, and is once more at the equinox position. (Although; Since; Once more) the sun is vertically overhead at the equator and the days and nights are the same length. The southern hemisphere is warming up (while; because; and) the northern hemisphere is cooling down.

The Angle at which the Sun Shines

The Tropics of Cancer and Capricorn are exactly 23 1/2^{o} from the equator (because; so that; if) (then; this; those) is the furthest from the equator that you can find the

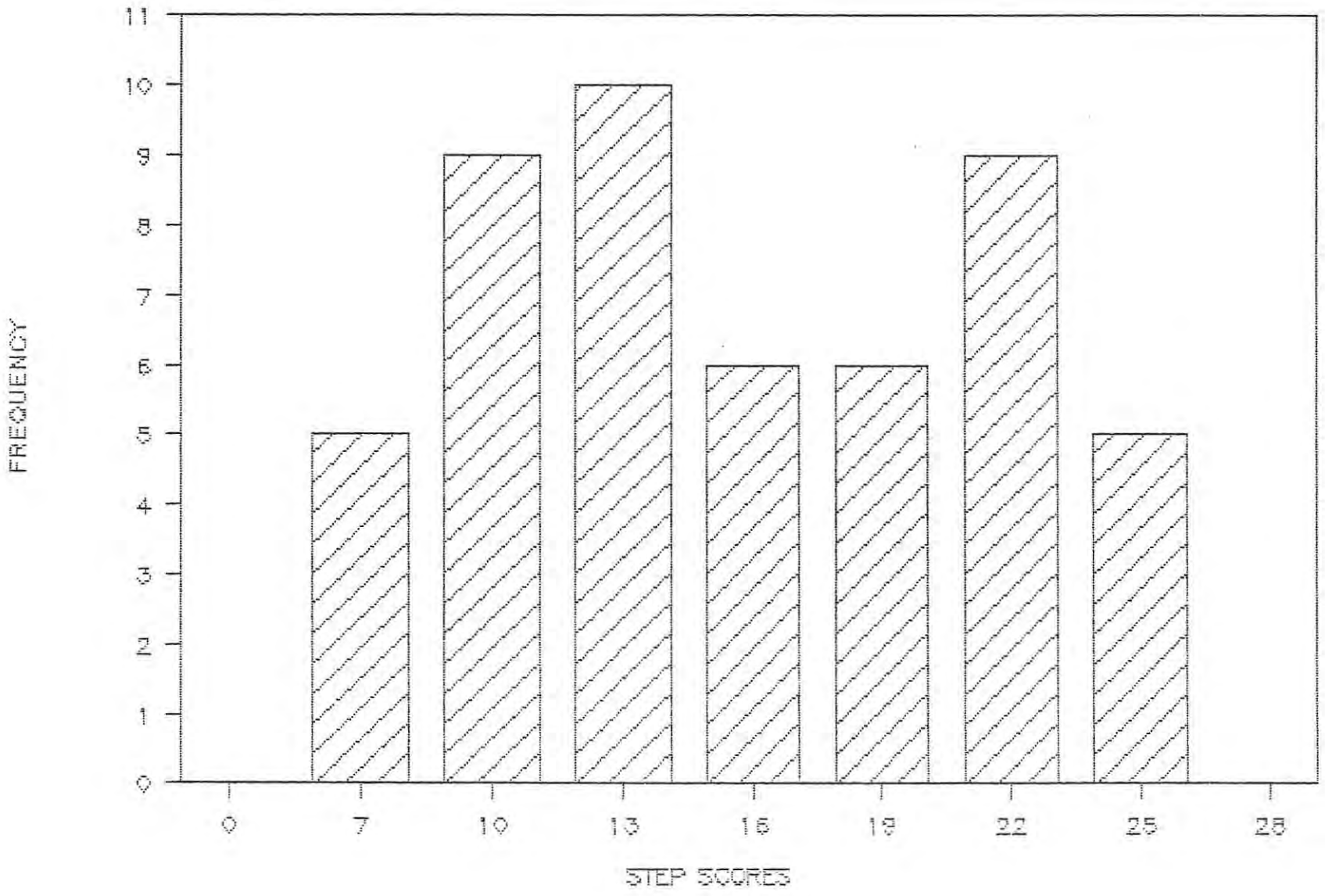
vertical noon sun - that is when the sun is directly overhead at noon, (because; so than; although) a vertical pole casts no shadow.

(For example; Similarly; This means that) as you go further and further from the tropics the noon sun gets lower and lower in the sky. (In other words; For example; On the other hand) on 22 December, when the noon sun is vertically overhead at the Tropic of Cancer (it; this; that) shines at an angle of only 79^{o} at Cape town, and only $66\ 1/2^{o}$ at the South Pole.

The lower the angle of the sun, the less (it; that; this) can heat up the earth. (It; This; That) is why places that are far from the equator are usually cooler than places closer to the equator.

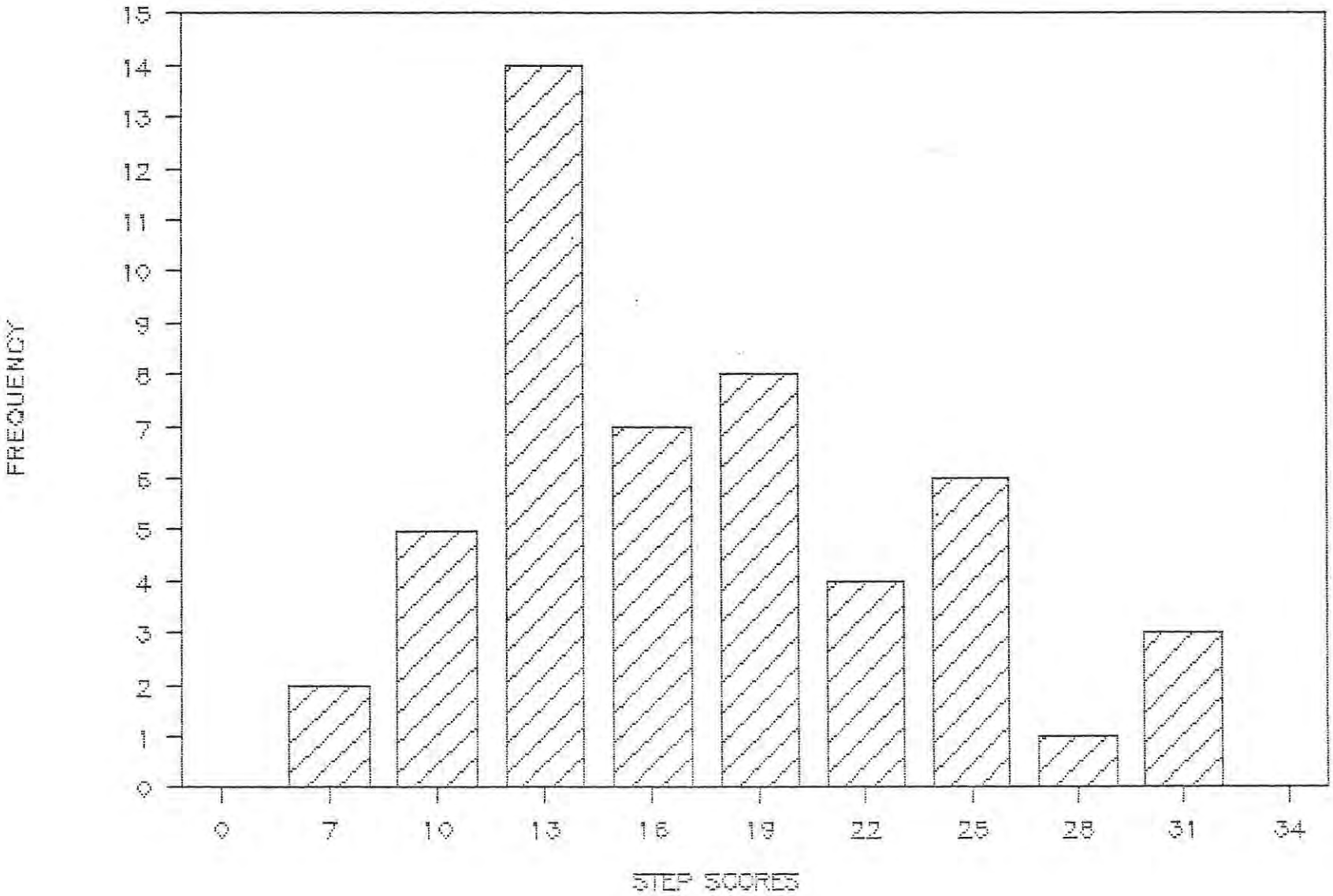
APPENDIX B i

SCHOOL A : HISTOGRAM



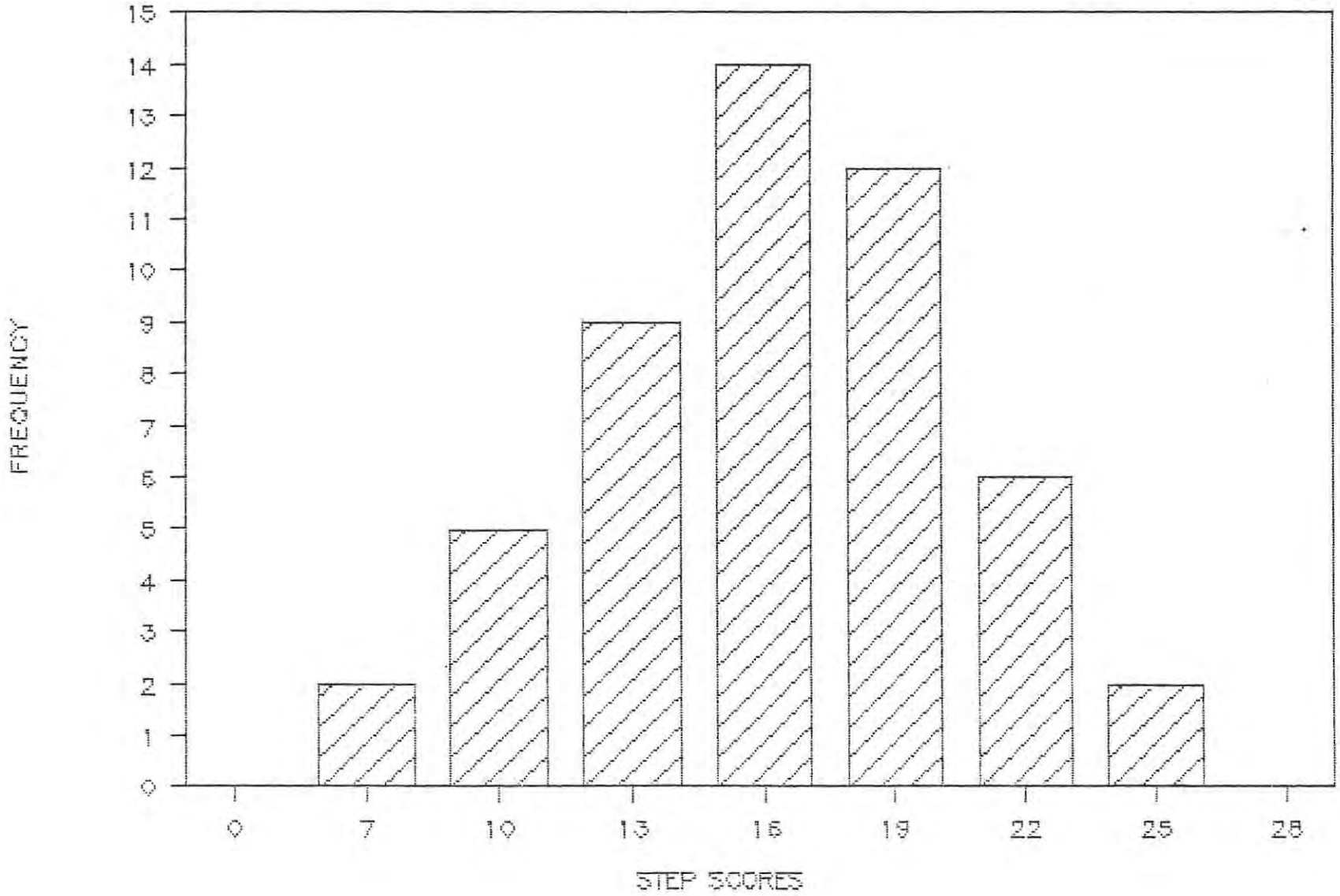
APPENDIX B ii

SCHOOL B : HISTOGRAM



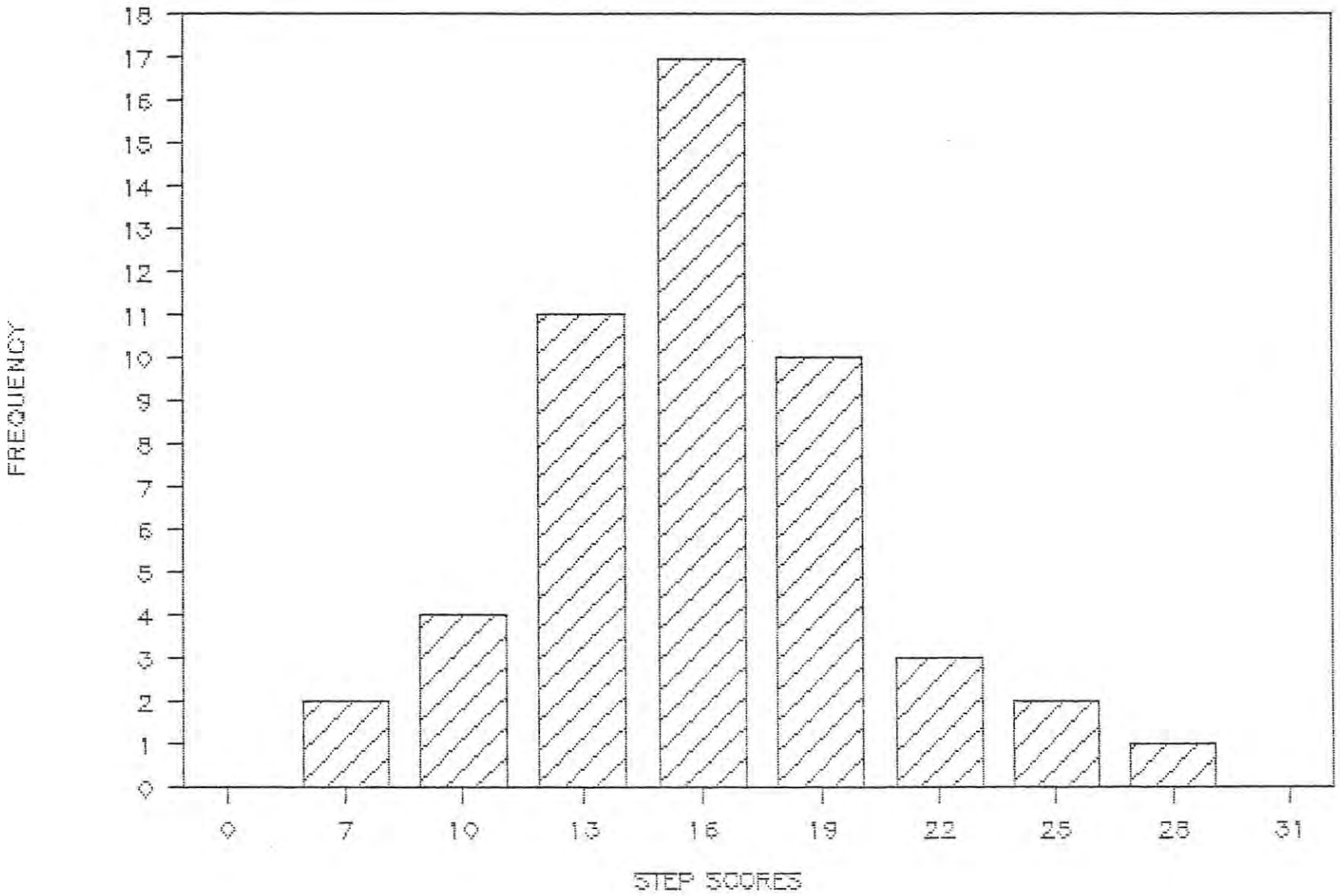
APPENDIX B iii

SCHOOL C : HISTOGRAM



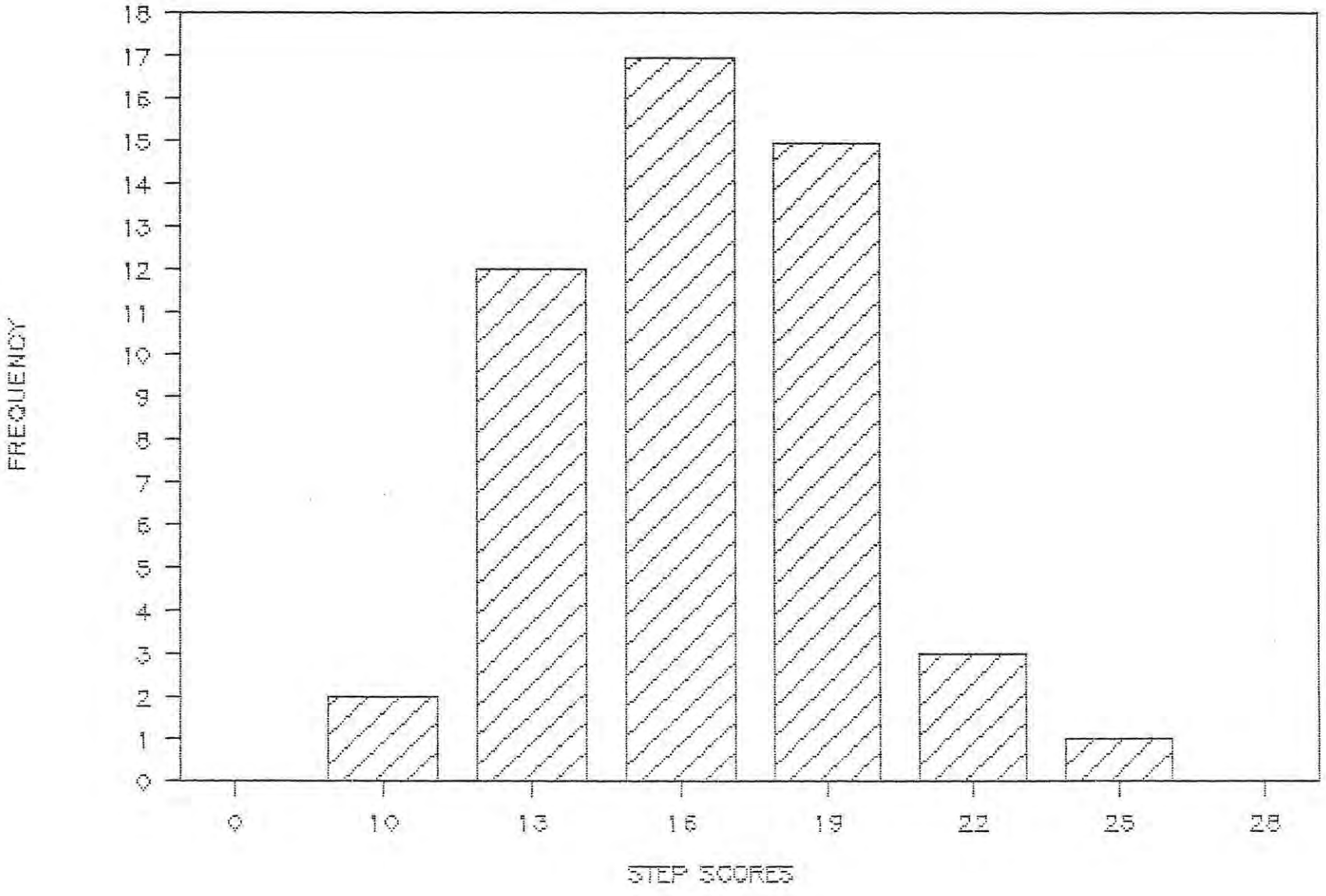
APPENDIX B iv

SCHOOL D (1) : HISTOGRAM



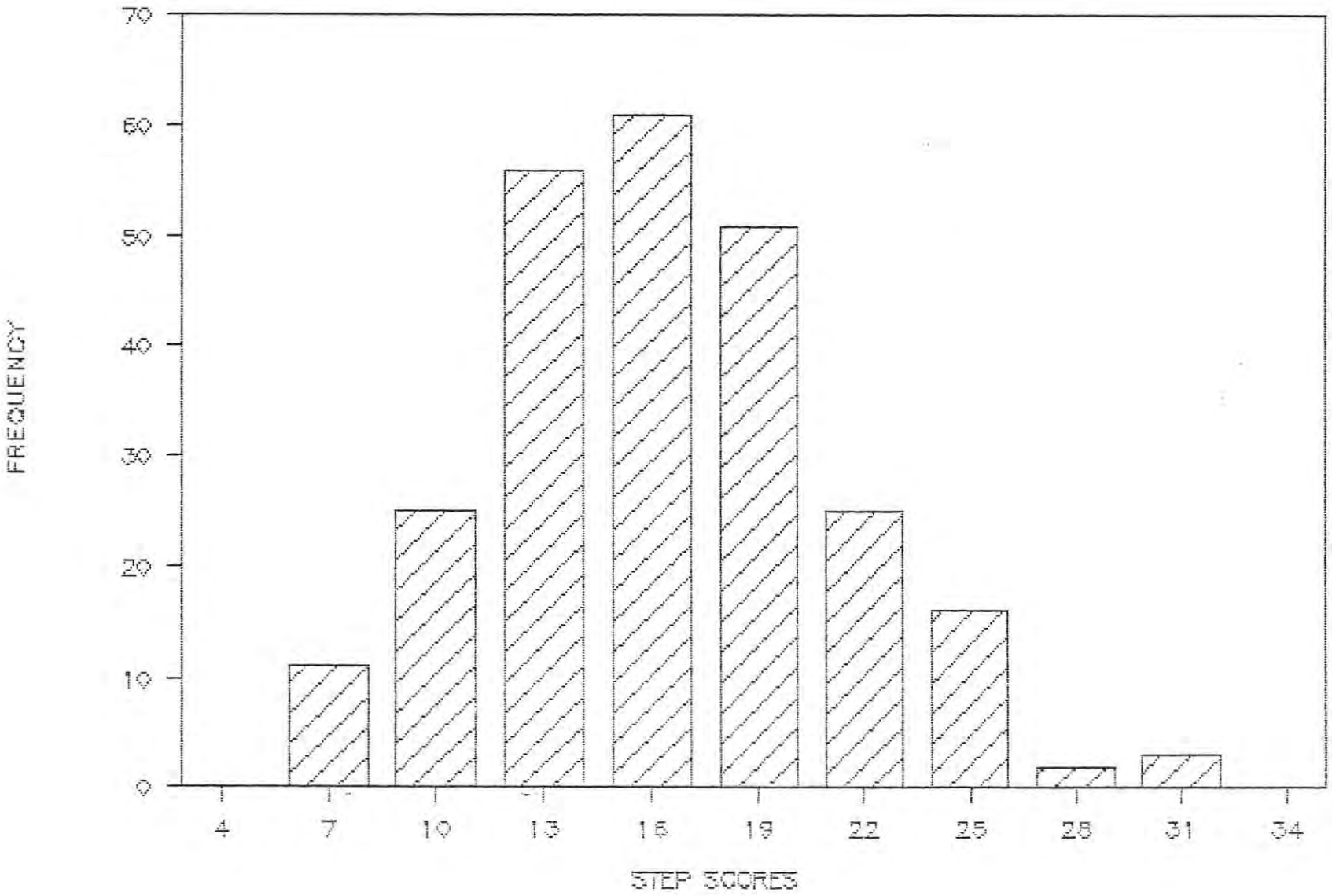
APPENDIX B v

SCHOOL D (2) : HISTOGRAM



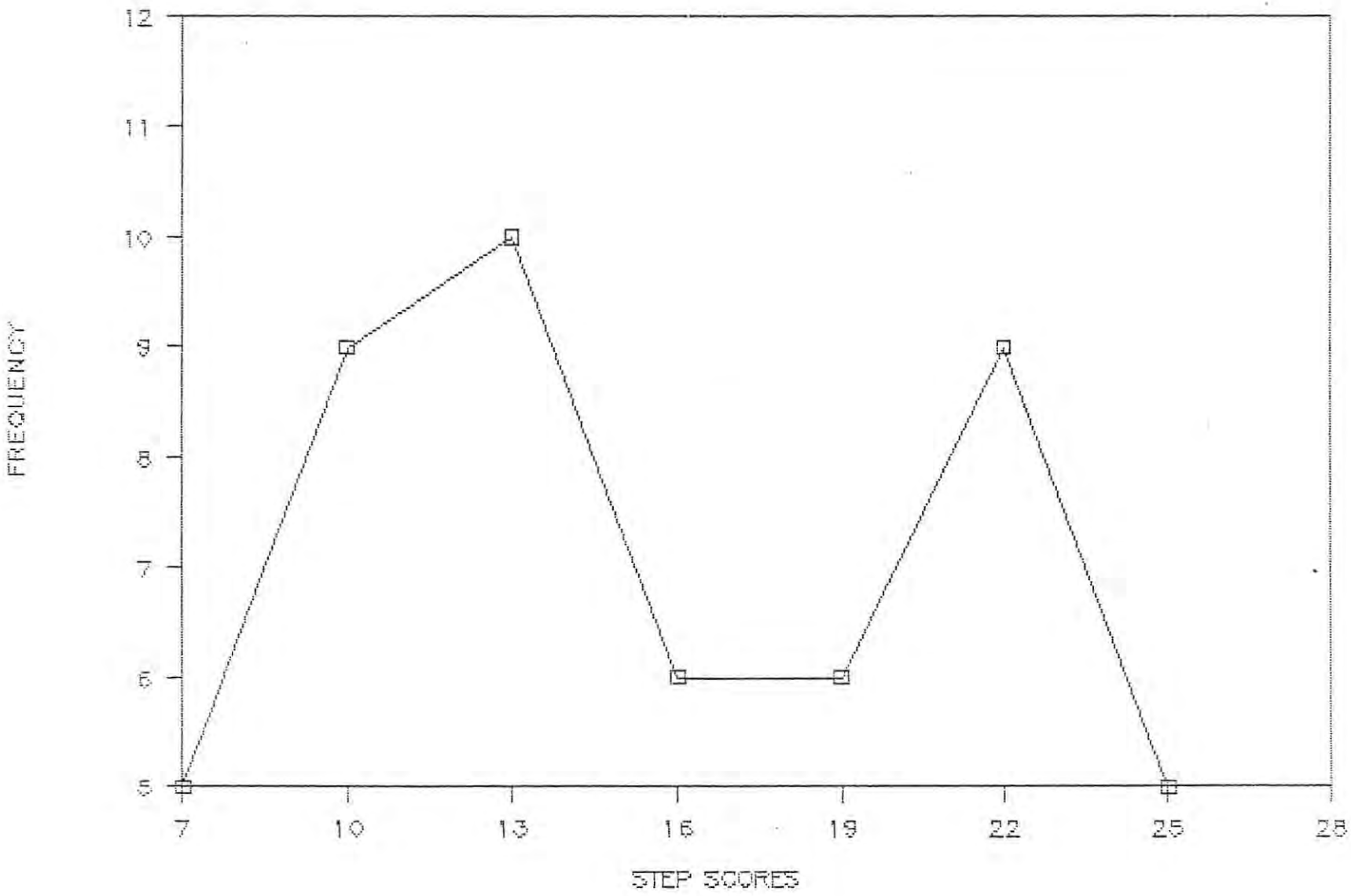
APPENDIX B vi

HISTOGRAM FOR THE ENTIRE SAMPLE



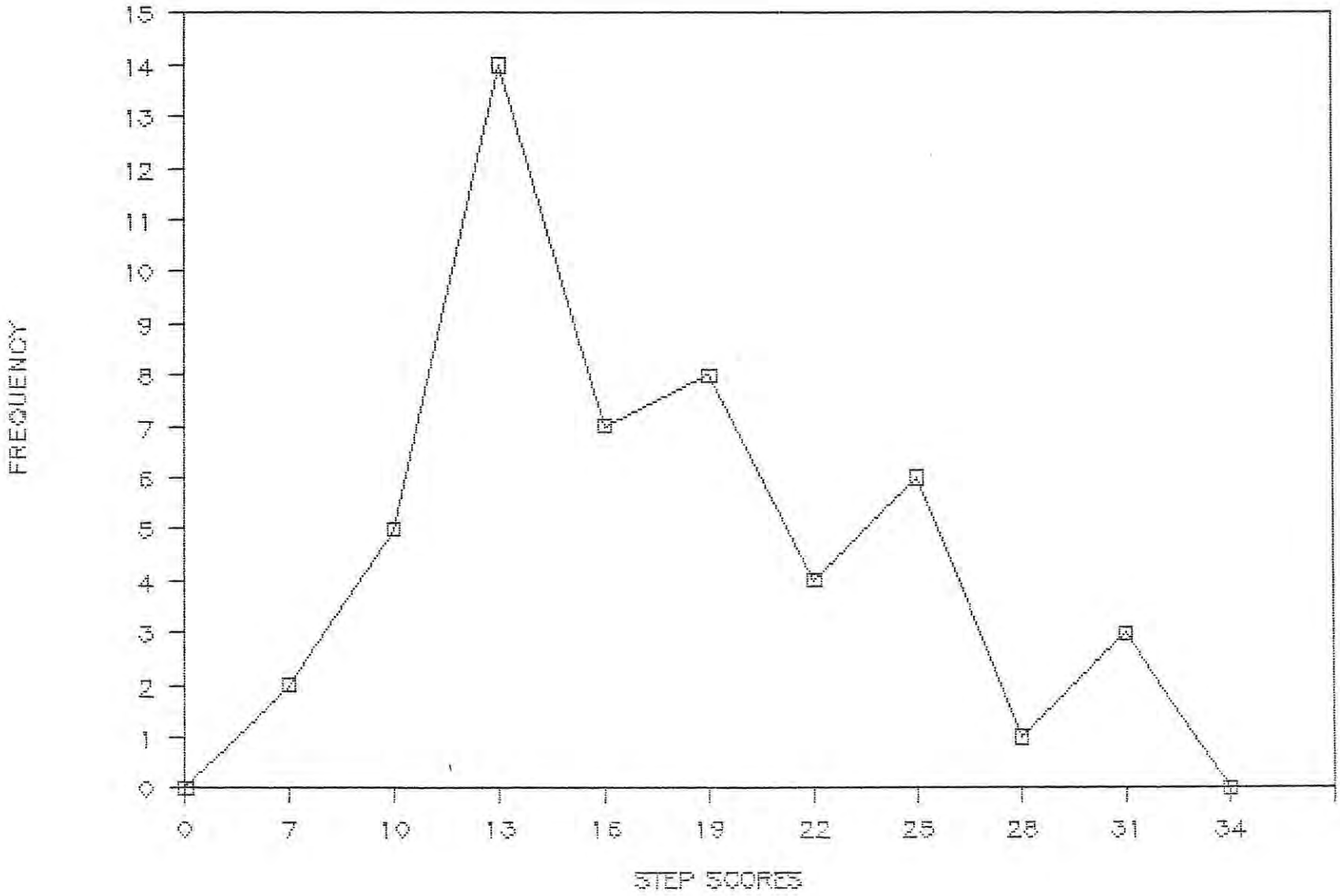
APPENDIX C i

SCHOOL A: FREQUENCY POLYGON



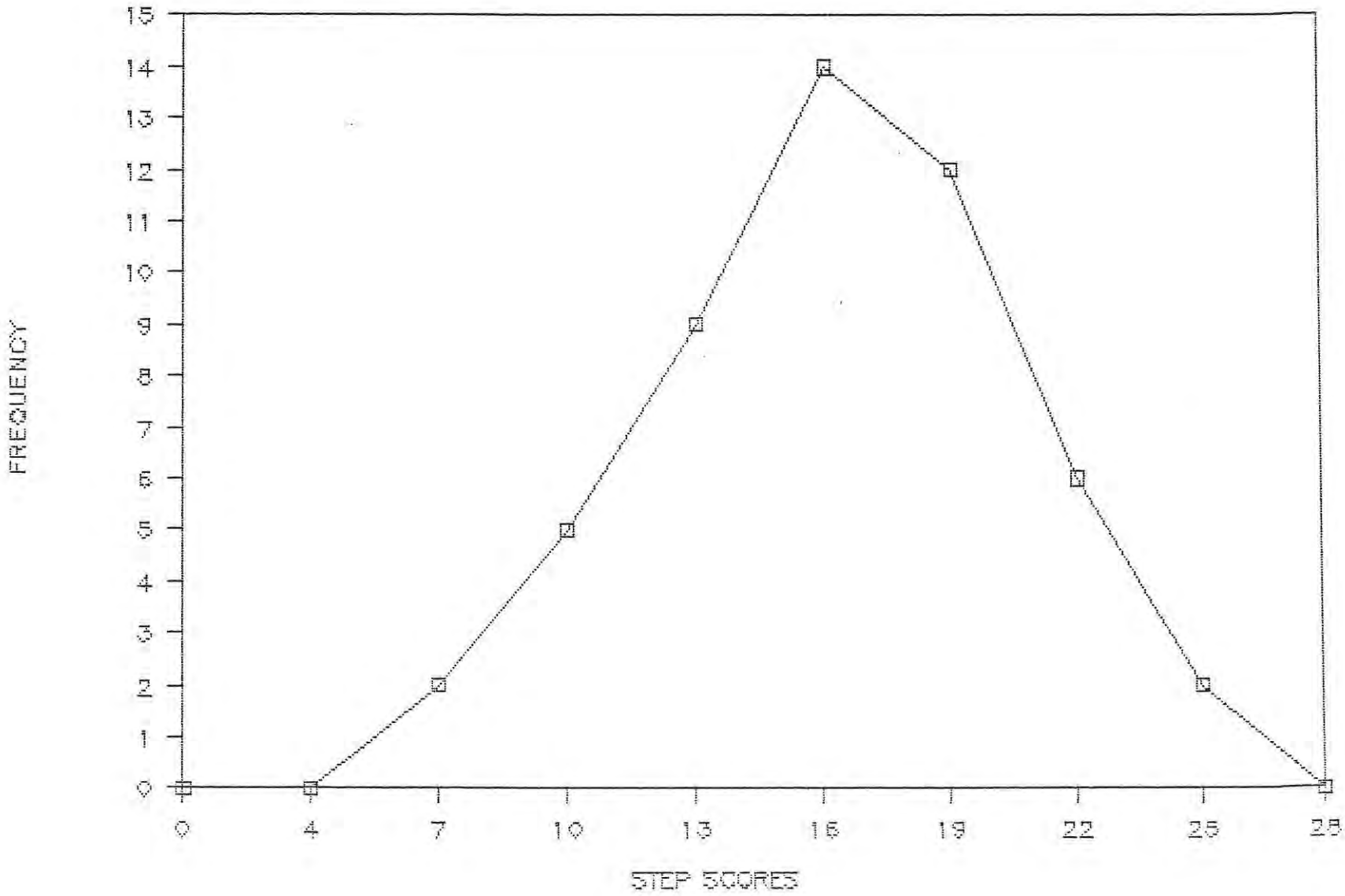
APPENDIX C ii

SCHOOL B : FREQUENCY POLYGON



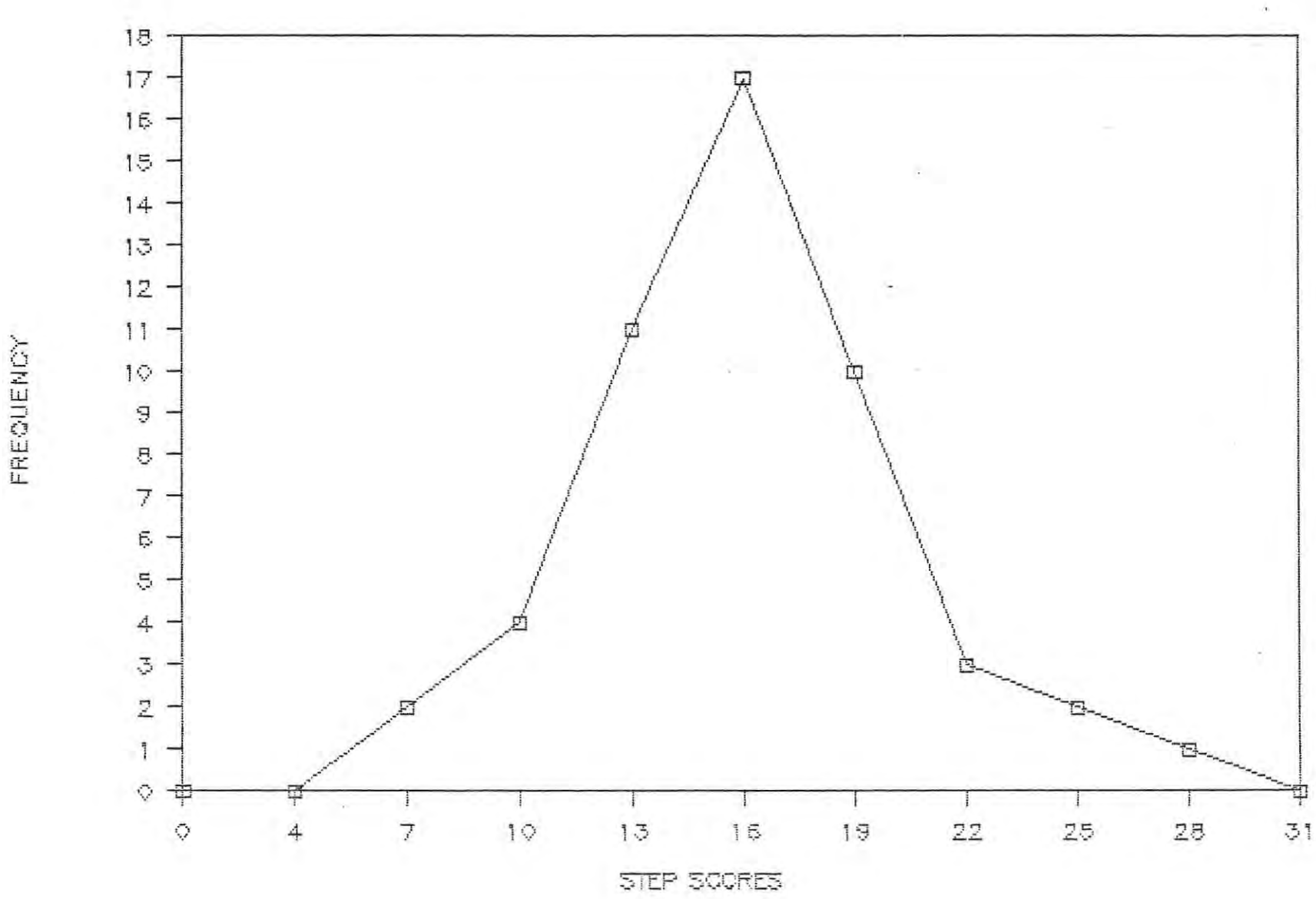
APPENDIX C iii

SCHOOL C : FREQUENCY POLYGON



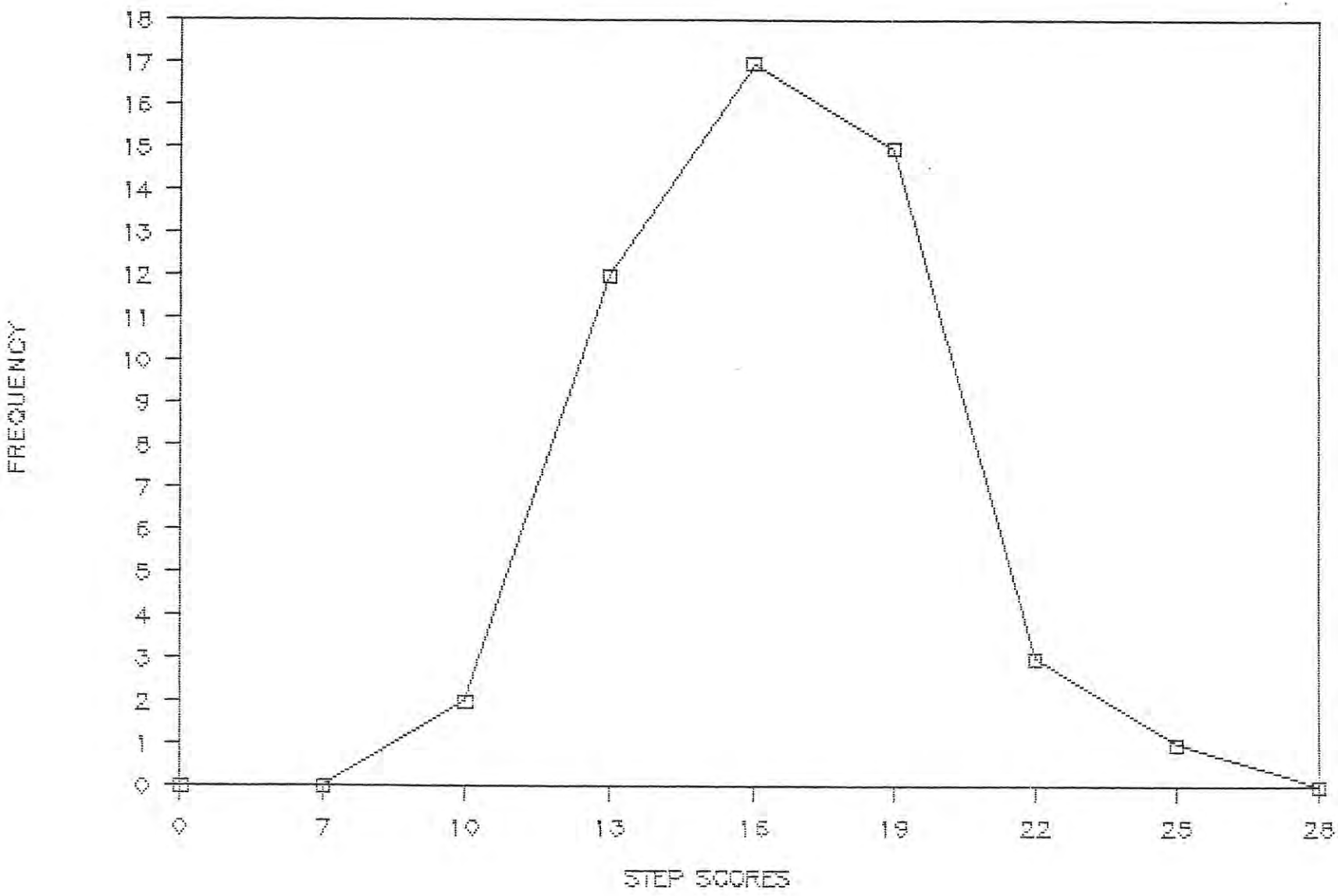
APPENDIX C iv

SCHOOL D(i) : FREQUENCY POLYGON



APPENDIX C v

SCHOOL D(2) : FREQUENCY POLYGON



APPENDIX D

$$SD = \sqrt{\frac{\Sigma(x - x)}{N - 1}}$$

$$= \sqrt{\frac{5826,84}{249}}$$

$$= \sqrt{23,400}$$

$$= 4,83$$

$$SE_{\bar{X}} = \frac{SD}{\sqrt{N - 1}}$$

$$= \frac{4,83}{\sqrt{249}}$$

$$= \frac{4,83}{15,77}$$

$$= 0,31$$

At 68 % confidence level $= \bar{X} \pm 1\ SE_{\bar{X}}$

$= 16,39 \pm 0,31$

$= 16,08 - 16,70$

At 95 % confidence level $= \bar{X} \pm 2\ SE_{\bar{X}}$

$= 16,39 \pm 2\ (0,31)$

$= 15,77 - 17,01$

At 99,7 % confidence level $= \bar{X} \pm 3\ SE_{\bar{X}}$

$= 16,39 \pm 3\ (0,31)$

$= 15,46 - 17,32$

APPENDIX E

PERCENTILE RANK OF OVERALL SAMPLE

Scores	Frequency (f)	Com.Frequency (cf)	Cum. % (c%)	Percentile (%-ile)
30	3	250	100	99,4
29	1	247	98,8	98,6
28	0	246	98,4	98,4
27	1	246	98,4	98,2
26	6	245	98,0	96,8
25	6	239	95,6	94,4
24	4	233	93,2	92,4
23	8	229	91,6	90,0
22	8	221	88,4	86,8
21	9	213	85,2	83,4
20	18	204	81,6	78,0
19	9	186	74,4	72,6
18	24	177	70,8	66,0
17	16	153	61,2	58,0
16	24	137	54,8	50,0
15	21	113	45,2	41,0
14	21	92	36,8	32,6
13	19	71	28,4	24,6
12	16	52	20,8	17,6
11	10	36	14,4	12,4
10	8	26	10,4	8,8
9	7	18	7,2	5,8
8	6	11	4,4	3,2
7	2	5	2,0	1,6
6	3	3	1,2	0,6

APPENDIX: TABLE 1

	SCHOOL A	SCHOOL B	SCHOOL C	SCHOOL D	TOTAL
Total population	764	356	1049	807	2976
Number of Boys	334	158	486	361	1339
Number of Girls	430	198	563	446	1637
Total Std. 6 population	266	136	279	252	933
Number of Boys (Std 6)	122	59	123	111	415
Number of Girls (Std 6)	144	77	156	141	518
No. of Std 6 Geog. pupils	266	136	201	201	804
No. of Std 6 Geography pupils (Girls)	144	77	102	105	428
No. of Std 6 Geography pupils (Boys)	122	59	99	96	376
No. of Std. 6 classes	4	3	4	5	16
Average no. of Geography pupils per class	66,5	45,3	50,25	40,2	
No. of Geography teachers (Std 6)	1	1	1	2	5
Qualification of teacher(s)	PTC	M.A.	B.A.;HDE	1) M.Ed. 2) STD	
Years of Experience	18	8	-1	1) 4 2) 3	
Criteria used to divide pupils per classes	Random selection				

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