SOCIOECONOMIC INPUTS VERSUS SCHOOL INPUTS RELATED TO GRADE SIX WRITTEN LANGUAGE ACHIEVEMENT IN A RURAL AREA OF NEWFOUNDLAND

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SOCIOECONOMIC INPUTS VERSUS SCHOOL INPUTS RELATED TO GRADE SIX WRITTEN LANGUAGE ACHIEVEMENT IN A RURAL AREA OF NEWFOUNDLAND

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ABSTRACT

The present study was designed to discover which of socioeconomic factors or school input factors were more closely associated with written language achievement on the part of Grade Six students in a rural Newfoundland area. Complete data was secured and used for 361 boys and 323 girls.

Two measures of language achievement were selected. They were, the Canadian Tests of Basic Skills Language subtests and a paragraph writing test. Ten hypotheses were set up and tested.

The first hypothesis predicted sex differences in language achievement and that girls would achieve more highly than boys. This proved to be an acceptable hypothesis. Subsequent hypotheses were tested for boys and girls separately as well as for both groups combined.

The second hypothesis predicted that higher verbal intelligence would be associated with higher pupil language scores. This proved to be an acceptable hypothesis. Subsequent hypotheses were tested with the effects of intelligence controlled by the statistical technique of partialing. The acceptance of the first two hypotheses

determined the format for testing and reporting the remainder. That is, the remaining hypotheses were tested for boys and girls separately and with intelligence statistically controlled.

Hypothesis 3 predicted that fathers' occupations would be positively associated with pupils' language achievement, and Hypothesis 4 predicted that mothers' education would be positively associated with pupils' language achievement. Both proved to be acceptable hypotheses for both sexes on both language measures until intelligence was partialled out. Then the significance disappeared.

Hypothesis 5 predicted that children from larger families would do less well on each of the language measures than children from smaller families. This proved to be true for the sub-group of girls and the whole group on the language skills measure, but not on the paragraph writing measure. With the effects of intelligence removed the significance disappeared.

Hypothesis 6 predicted that absenteeism would be negatively associated with pupils' language achievement, and Hypothesis 7 predicted that teachers' qualifications would be positively associated with pupils' language achievement. With the effects of intelligence removed, both hypotheses were rejected.

Hypothesis 8 predicted that class size would be positively associated with pupils' language achievement. This hypothesis was rejected for the sub-group of boys but accepted for the girls. Even with intelligence partialled out, the association was statistically significant.

Hypothesis 9 predicted that older school buildings would be associated with lower pupils' achievement in language. This hypothesis was rejected. However, it should be noted that the median age of the schools was only 13 years, and that only 24 per cent were over 20 years old.

The major part of the study concentrated on Hypothesis 10 which predicted that the socioeconomic factors of the pupils environment would be more closely associated with language achievement than the school input factors. This hypothesis was tested and accepted. An overall conclusion, therefore, of the study is that socioeconomic factors of the pupil's environment cannot be ignored by school authorities if they are genuinely interested in preparing programs that will provide the best learning opportunities for all their pupils. The quality of the education is not measured only in terms of school buildings, smaller classes and higher teachers' qualifications. A far greater impact on language achievement was found to be made by a child's family and home background.

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CHAPTER I

THE PROBLEM

It is generally believed that a child's language facility reflects his home background.[1] This study deals with the achievement in written language of Grade Six pupils in rural Newfoundland. Its major purpose is to test the theory that variables in the social and economic environments are more closely related to language achievement than are certain school variables.

I. BACKGROUND TO THE PROBLEM

Language is a social process concerned largely with communicating ideas and feelings. It is also a tool man uses in his thinking, in his communicative acts, and in his social intercourse.[2] Variations in language are related principally to geographical differences within the language community and to differences in socioeconomic status and occupation, with the kind of language a child

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[1]Stinson E. Worley and William E. Story, "Socio-economic Status and Language Facility of Beginning First Graders," The Reading Teacher, 20 (February, 1967), 400-3.

[2]Walter T. Petty and Robert J. Starkey, "Oral Language and Personal and Social Development," Elementary English, 43 (April, 1966), 386-94.

learns apt to be most like that of his parents.[3]

Structuralists claim that language is a habit man acquires by imitating other men, and that it should be studied by analyzing sounds and how they are manipulated to create sentences. With this belief there is no "wrong" or "right" grammar. Others contend that the study of language should start with sentences and an attempt to discern the rules by which a sentence conveys meaning.[4]

While this controversy is exciting for those involved in the study of language per se, it will not receive any great amount of attention in this study. Since the schools by their present curricula and teaching methods seem to assume that there is a right grammar which can be taught and caught, the same assumptions about written language will underlie the problems investigated by this study. The present study will be concerned with certain aspects of language achievement as measured by the usual instruments employed by the schools, that is, standardized tests of language ability and a subjective rating of each pupil's writing.

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[3] Ibid., 389.

[4] ---------, "Academic Disciplines: The Scholarly Dispute Over the Meaning of Linguistics," Time, 91 (February 16, 1968), 45.

While the term "language arts" refers to a quarternary discipline involving reading, writing, speaking and listening, this study deals only with the written language.

There can be no doubt that lack of ability in language is a serious deterrent to educational and other forms of success. If a child's language skills are inadequately developed, he is not well prepared to cope with the complex and confusing stimuli that the school offers.[5] Children from poor social and economic backgrounds especially need good language usage if they are to be prepared for life situations.[6]

A student in a Newfoundland school spends more time studying "English" than he does any other subject. English is a required subject in all grades and into at least two years of university if the pupil should attend. Yet, despite all this emphasis, we are led to believe that desirable standards are not being met. One reason given for the new Foundation Program at Memorial University was the general low level of language ability on the part of

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[5]Hilda Taba and Debora Elkins, Teaching Strategies for the Culturally Disadvantaged (Chicago, Ill.: Rand McNally and Company, 1966).

[6]Mary G. Sweet and Marian Wozencraft, "What about Grammar in the Special Class?" Elementary English, 40 (January, 1963), 52-5.

Newfoundland high school students, particularly those from the rural areas or outports.

English language ability is important enough to receive all this attention because of its connection with both personal and social development and success, and because it is the native language used in most of the Newfoundland homes. In addition, experience has shown that skills in reading and writing it well require years and years of instruction and practice.

The "why" of the difficulty with the language arts has been partially answered by much of the research that has been done in the past two or three decades, but little of that research has been done in Newfoundland, or in Canada. And, unfortunately, none of the research has yet come up with a solution applicable to all situations. The partial failure may be due to the concentration of the researchers on methods of teaching and learning instead of upon other equally, and perhaps more important variables associated with the environment of the learner and generally classified as socio-cultural factors.

Bernstein, writing about the development of a public and a formal language code in British social classes, says that linguistic differences occur in the normal social environment, and that status groups may be

distinguished by the forms of language they use.[7] The differences in language ability are naturally most apparent at the extremes of the socioeconomic levels, and the degree to which a person succeeds in our present school and social systems will, in general, depend to a large extent on his linguistic abilities.

In addition to the studies done by Bernstein in Britain there have been many studies in the United States in which social class or socioeconomic factors have been related to school achievement in general and to language achievement in particular. A study by Marge involving one hundred forty-three preadolescent students and their parents was aimed at determining the effects of certain home background variables on the development of speech and language skills. While he didn't talk about social class as such, he found that the better performers usually came from homes in which the usual middle class or higher child-rearing practices were found.[8]

Other important contributors to this field

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[7]Basil Bernstein, "Aspects of Language and Learning," Language in Culture and Society, Dell Hymes, editor (London: Collier-MacMillan Limited, 1961), 251.

[8]Michael Marge, "The Influence of Selected Home Background Variables on the Development of Oral Communication Skills in Children," Journal of Speech and Hearing Research, 8 (September, 1965), 291-309.

include Davis,[9] Ruddell,[10] Hill and Giammatteo,[11] and Deutsch.[12] All the above support the theory that socioeconomic factors are very important in determining pupil success in schools and in helping teachers recognize that these differences in background need consideration whenever decisions regarding the curriculum and teaching methods have to be made.

As indicated above, there is sufficient research available to show that in general children from lower class homes are retarded in language development with regard to basic skills, speech development, extent of vocabulary, and grammatical usage. The middle class family has and uses a different type of language pattern from that of the lower class homes. As Bloom wrote:

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[9]Allison Davis, "Teaching Language and Reading to Disadvantaged Negro Children," Elementary English, 43 (November, 1965), 791-7.

[10]Robert B. Ruddell, "The Effects of the Similarity of Oral and Written Patterns of Language Structure on Reading Comprehension," Elementary English, 43 (April, 1965), 403-10.

[11]Edwin H. Hill and Michael C. Giammatteo, "Socio-economic Status and its Relationship to School Achievement in the Elementary School," Elementary English, 40 (March, 1963), 265-70.

[12]Martin Deutsch, "Early Social Environment: Its Influence on School Adaptation," The School Dropout, D. Schreiber, editor (Washington, D.C.: National Education Association, 1964), 89-100.

> In the deprived home, language usage is more limited. Much communication is through gestures and other non-verbal means. When language is used, it is likely to be terse and not necessarily grammatically correct. In any case, it is likely to be restricted in the number of grammatical forms which are utilized. Thus, the deprived child enters school inadequately prepared for the typical language tasks of first grade. The greatest handicap seems to be lack of familiarity with the speech used by teachers and insufficient practice in attending to prolonged speech sequences. In the long run, the language which the deprived child has learned at home is likely to be inadequate as an aid and tool in conceptualization. Furthermore, language serves as a means of social distinction which can limit opportunities for mobility.[13]

From the studies quoted above and from many others, the general impression emerges that the problem of lack of achievement in school may be closely related to or connected with many factors outside the immediate control of the school as it now exists.

A large-scale study of the influence of socio-economic factors on school achievement has never been attempted before in Newfoundland, yet it seems very probable that such factors as family income, parental education and size of family help determine who will succeed and who will continue through and beyond high school.[14]

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[13]Benjamin S. Bloom, Allison Davis, and Robert Hess, Compensatory Education for Cultural Deprivation (New York: Holt, Rinehart and Winston, Inc., 1965), 70-1.

[14]Herbert A. Smith and Lawrence L. Penny, "Educational Opportunity as a Function of Socio-Economic Status," School and Society, 87 (September 12, 1959), 342-4.

II. THE PROBLEM

The problem of this study, then, is to find out whether the level of language achievement attained by the Grade Six pupils in two political districts of Newfoundland is related more to social and environmental factors than to educational input factors. The level of language achievement in this study is measured by two instruments, a standardized language test and a paragraph writing test.

The sub-problems, stated as questions are:

1. Do boys differ from girls in language achievement?
2. Is measured verbal I. Q. associated with pupils' language achievement?
3. Is the socioeconomic status of the fathers, as measured by the Blishen Occupational Class Scale, associated with pupils' language achievement?
4. Are the formal educational attainments of the mothers associated with pupils' language achievement?
5. Is the size of the family associated with pupils' language achievement?
6. Are the number of days lost from school associated with pupils' language achievement?
7. Are teachers' qualifications as measured by years of formal training associated with pupils' language achievement?

8. Are the number of pupils in the class associated with pupils' language achievement?
9. Is the age of the school building associated with pupils' language achievement?
10. Are there social and economic factors outside the direct influence of the schools associated with pupils' language achievement to a greater extent than the factors under the direct control of the schools?

III. SIGNIFICANCE OF THE STUDY

Several recent Newfoundland studies have shown that pupils are not achieving as well as would be expected, especially in reading.[15]

In this study the emphasis will not be on how well the pupils are achieving per se, but on the factors which appear to facilitate or retard pupils' achievement in language.

Kitchen, from a study of Newfoundland and the Maritime provinces, suggested that the major factors determining school outputs might be socioeconomic and demographic variables rather than school controlled

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[15]Hector Pollard, "Socioeconomic versus Educational Inputs as Related to Grade Six Reading Achievement in Rural Newfoundland," unpublished Master's Thesis, Memorial University of Newfoundland, St. John's, 1970.

factors.[16] If that thesis is proven correct, the implications for changing the present educational system, introducing different curricula or adopting different methods of teaching geared to the different types of students found in the schools, will be far reaching. Accordingly, the present study was designed to be an intensive examination of some socioeconomic and school variables associated with pupils' language achievement in a particular rural area of Newfoundland. The results and conclusions may or may not be generally applicable.

IV. OPERATIONAL DEFINITIONS

Language Achievement. Language achievement was defined as the pupils' scores on two measures: (1) Canadian Tests of Basic Skills, Language Battery, Form 1, and (2) a subjective evaluation of the pupils' writing. For (2) the pupils were asked to write paragraphs on "What I Like Best".

Verbal I. Q. The verbal intelligence of each pupil was the deviation I. Q. derived from his score on the Lorge-Thorndike Verbal Battery, Level 3, Form A. This test was administered at the same time that the other achievement tests were given.

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[16] Hubert W. Kitchen, "A Preliminary Study of Demographic and Socioeconomic Factors in the Atlantic Provinces and their Relationship to Measures of Educational Output," unpublished mimeograph, October, 1967.

Father's Occupation. For the present study, father's occupation was the major type of employment of the father of the pupil tested. The information was secured by means of a questionnaire sent to the pupil's home following the testing of the pupil in school.[17] The occupation was then assigned the appropriate numerical rating suggested by the Blishen Occupational Class Scale.[18]

Mother's Education. Mother's education was rated according to the number of years each pupil's mother had spent in an institution of formal schooling - primary, elementary, high school and beyond. It was expected that the number of years reported would vary from 0 to 18.[19] This information was secured from the questionnaire sent to homes.

Size of Family. Size of family was the actual number of children under 18 years of age which were living at home with the pupil at the time of the survey. This Information also came from the above mentioned home questionnaire.

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[17] See Appendix D.

[18] See Appendix F.

[19] See Appendix E.

Absenteeism. Absenteeism was the actual number of days lost between the opening of school in September 1967, and April 30, 1968. This information was gathered by means of the teacher questionnaire.[20]

Teacher's Qualifications. Teacher's qualifications was the number of years of formal training for which the teacher had received credit from the Department of Education, that is, the teacher's licence or grade. This was expected to vary from zero years (P, B, C, and D Licences) through to seven years.[21] The information was gathered by means of the teacher questionnaire.

Size of Class. Number in class or size of class was the actual Grade Six enrollment in each classroom from which pupils were tested. This information also came from the teacher questionnaire.

Age of School. The age of the school was the number of years which the building had been in use as a school. The minimum score would be one year for pupils in a new building being used for the first time. The information was supplied by the teacher questionnaire.

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[20]See Appendix G.

[21]See Appendix H.

V. ORGANIZATION OF THE REPORT

Chapter I has set out the problem and indicated its importance. Chapter II introduces the ten hypotheses and reports some of the previous research that has been done in each area. Chapter III outlines the method of gathering and dealing with the data of the study. Chapter IV is a descriptive analysis of the pupils studied. It reports raw data on sex, intelligence, fathers' occupations, mothers' education, family size, time lost from school, teachers' qualifications, class size and age of school. It also gives raw scores on the various language measures used. Chapter V contains the statistical analysis of the data and compares the relative importance of socioeconomic factors and school input factors. Chapter VI gives the summary, findings, conclusions, and recommendations growing out of the study.

CHAPTER II

RELATED LITERATURE AND HYPOTHESES

This chapter will present the various hypotheses to be tested. In each case relevant literature will be quoted supporting the hypothesis or explaining it.

I. SEX DIFFERENCES IN LANGUAGE ACHIEVEMENT

A great deal of research has been carried out which demonstrates the academic superiority of girls over boys in the first six to eight years of school. The available research up to 1964 has been summarized by Wisenthal, who concluded that significant differences in favour of the girls were found in I. Q., attainment, and in attitude toward school.[1]

It appears certain that girls perform better than boys in almost all elementary school situations, including language achievement. Gallagher suggests that the superiority of girls could realistically be explained on the basis of heredity, and points to substantial differences in language ability between boys and girls as the probable

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[1]Miles Wisenthal, "Sex Differences in Attitudes and Attainment in Junior Schools," British Journal of Educational Psychology, 35 (February, 1965), 79-85.

source of reading disability.[2] Another researcher in the same field points out that her experiments have led her to the conclusion that girls, even when they are of lesser intelligence, have a superior language sense.[3]

There seems to be a natural aptitude among girls generally for language acquisition. Carmichael, in reviewing the research on the differences in achievement of boys and girls, concluded that most achievement tests show girls to be superior to boys on all kinds of language material.[4] Cardon quoted four studies to prove his ideas on sex differences in school achievement and said that there is abundant literature to support the "presence of an academic disparity favouring the girls".[5] He then went on to illustrate the superiority of girls over boys in language achievement:

> In the Book of Revelations (Chapter 8, verse 1) it is written, 'And when he had opened the seventh seal there was silence in heaven about the space of half an hour'. It has been suggested (in jest?) that this scripture is solid proof that only men will get to heaven, for, it is said, a woman could never keep quiet for that long. That girls do

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[2]J. Roswell Gallagher, "Can't Spell, Can't Read," The Atlantic Monthly, 181 (June, 1948), 35-39.

[3]Mary D. Sheridan, The Child's Hearing for Speech (London: Methuen and Co., Ltd., 1948).

[4]Leonard Carmichael (editor), Manual of Child Psychology (New York: John Wiley and Sons, 1954), 1070-75.

[5]Bartlet W. Cardon, "Sex Differences in School Achievement," Elementary School Journal, 68 (May, 1968), 427-34.

> talk more, and that they start sooner, is well substantiated in the literature. The evidence indicates that boys are slightly behind girls in practically all aspects of language development.[6]

Arnold experimented with the Iowa Tests of Basic Skills as a measure of language achievement and concluded that in the upper elementary-school grades girls received higher marks than boys in spelling and language.[7]

It has sometimes been said that the schools are more attuned to the girls than to the boys, especially at the primary level. While the question of motivation is outside the scope of this study, the results of an experiment conducted in the United States appear to be worth noting. The researchers concluded: "In comparing boys and girls there is no evidence that one, more frequently than the other, showed higher achievement motivation or performance". However, they expressed doubt in their own conclusions which were different from that which they had hypothesized.[8]

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[6] Ibid., 430.

[7] Richard D. Arnold, "The Achievement of Boys and Girls Taught by Men and Women Teachers," Elementary School Journal, 68 (April, 1968), 367-72.

[8] Donna M. Schell, Joseph Veroff, and Robert E. Schell, "Achievement Motivation and Performance Among Second-Grade Boys and Girls," The Journal of Experimental Education, 33 (Summer, 1967), 66-73.

Hypothesis 1: (a) Girls will score on the average more highly than boys on the language skills test battery.

(b) Girls will score on the average more highly than boys on the paragraph writing test.

II. VERBAL I. Q. AND LANGUAGE ACHIEVEMENT

Because of the nature of verbal I. Q. tests and their heavy dependence upon language ability, many studies have shown a high relationship between the two.

Hypothesis 2: (a) There will be a positive correlation between the pupils' verbal I. Q. scores and their total scores on the language skills battery.

(b) There will be a positive correlation between the pupils' verbal I. Q. scores and their scores on the paragraph writing test.

III. FATHERS' OCCUPATIONS AND PUPILS' LANGUAGE ACHIEVEMENT

There have been a number of studies from which one could predict that pupils' language achievement is related to the socioeconomic status of fathers' occupations.

Collins and Douglass, in a study of socioeconomic status and its relationship to success or failure in the junior high school, found that fathers of pupils in the failure group are chiefly unskilled labourers, two-thirds appearing in Class V, the lowest on the Sim's Score Card.

At the same time, more than half of the fathers of pupils in the success group follow occupations that fall in the top two occupational classes. They concluded that if the father's occupation is considered as an index of the socioeconomic status of the home, it would seem that the pupils of the failure group are coming from homes which are socially, economically, and educationally less favoured than are those of the success group.[9]

Similarly, Worley and Story, using the per annum income of the parents as measures of socioeconomic status, found that children from the more favoured homes achieved better in language than did the children from the lower socioeconomic homes.[10]

In Petty and Starkey's research it was found that when the father's occupation was such that the family was regarded as being in the higher socioeconomic levels, generally the language development of the child was much faster.[11] Research evidence strongly supports the viewpoint that the quality of a child's early language

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[9]Joseph H. Collins and Harl R. Douglass, "The Socioeconomic Status of the Home as a Factor in Success in the Junior High School," The Elementary School Journal, 38 (October, 1937), 107-13.

[10]S.E. Worley and W.E. Story, op. cit., 402.

[11]Walter T. Petty and Robert J. Starkey, op. cit., 392.

environment is the most important external factor affecting the rate of language development. This early language environment is largely that of the family.[12]

A major study in this area is that of Bernstein. He found that in lower class homes the child's language environment is mostly a restricted language with

1. Short, gramatically simple, often unfinished sentences with a poor syntactical form stressing the active voice.
2. Simple and repetitive use of conjunctions (so, then, and).
3. Little use of subordinate clauses to break down the initial categories of the dominant subject.
4. Inability to hold a formal subject through a speech sequence; thus a dislocated informational content is facilitated.
5. Rigid and limited use of adjectives and adverbs.
6. Infrequent use of impersonal pronouns as subjects of conditional clauses.
7. Frequent use of statements where the reason and conclusion are confounded to produce a categoric statement.
8. A large number of statements/phrases which signal a requirement for the previous speech sequence to be reinforced: "Wouldn't it? You see? You know?" etc. This process is termed sympathetic circularity.
9. Individual selection from a group of idiomatic phrases or sequences will frequently occur.

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[12] Ibid., 394.

10. The individual qualification is implicit in the sentence organization: it is a language of implicit meaning.[13]

On the other hand, in higher socioeconomic homes there tends to be an "elaborated" language with the following characteristics:

1. Accurate grammatical order and syntax regulate what is said.

2. Logical modifications and stress are mediated through a grammatically complex sentence construction especially through the use of a range of conjunctions and subordinate clauses.

3. Frequent use of the propositions which indicate logical relationships as well as prepositions which indicate temporal and spatial contiguity.

4. Frequent use of the personal pronoun "I".

5. A discriminative selection from a range of adverbs and adjectives.

6. Individual qualification is verbally mediated through the structure and relationships within and between sentences.

7. Expressive symbolism discriminates between meanings within speech sequences rather than reinforcing dominant words or phrases, or accompanying the sequence in a diffused, generalized manner.

8. It is a language use which points to the possibilities inherent in a complex conceptual hierarchy for the organizing of experience.[14]

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[13]Basil Bernstein, "Social Structure, Language, and Learning," Education of the Disadvantaged, A. Harry Passow, et. al., editors (New York: Holt, Rinehart and Winston, Inc., 1967), 233.

[14]Ibid., 233-4.

As Bernstein's studies have indicated, the type of language found in lower socioeconomic homes is likely to be radically different from that found in higher socio-economic class homes.

Despite the large amount of research showing the importance of the home background in promoting school achievement in general, and language achievement in particular, some researchers have warned that the association is, while significant, relatively low. It is apparent that while a certain student might rate low in socioeconomic or home status, his school achievement may be satisfactory. Evidently the school facilities compensate somewhat for the home deficiency in this relatively important area.[15]

However, investigations of the relationship between socioeconomic status and pupil achievement have been going on for about sixty years, and all of them have indicated the existence of a definite relationship between socioeconomic status and scholastic achievement.[16]

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[15]Merlin R. Chauncey, "The Relation of the Home Factor to Achievement and Intelligence Test Scores," Journal of Educational Research, 20 (September, 1929), 88-90.

[16]Duane C. Shaw, "The Relation of Socioeconomic Status to Educational Achievement in Grades Four to Eight," Journal of Educational Research, 37 (November, 1943), 197-201.

Hypothesis 3: (a) There will be a positive correlation between the pupils' socioeconomic status as measured by the application of the Blishen scale to the fathers' occupations and the pupils' total scores on the language skills test battery.

(b) There will be a positive correlation between the pupils' socioeconomic status and their scores on the paragraph writing test.

IV. MOTHERS' EDUCATION AND PUPIL LANGUAGE ACHIEVEMENT

Other factors associated with the home and parents bear upon pupils' language achievement. Lower class mothers employ training techniques that include considerably more physical punishment but little use of praise, positive models, and reasoning. The failure to discipline in terms of language symbols as well as the related dependence upon physical means of punishment reduces the necessity for cognitive mediation in impulse control. To the lower class mother, being "good" very often means that the child is being physically inactive, verbally non-participative, and non-observant.[17] This kind of environment creates language problems that lie not only in the expressive domain, but in the receptive as well.

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[17]Fred L. Strodtbeck, "The Hidden Curriculum of Middle-Class Homes," Education of the Disadvantaged, op. cit., 258.

Pupils need to hear language that is considered good or acceptable, and they need to have opportunities to speak it.[18]

While the mother's education is only a rough indication of the degree of cultural deprivation of the home, there can be no question of the importance of the mother-child relationship in creating environments likely to influence for good or evil a child's intellectual growth and educational motivation. Havighurst and Neugarten reported a study by Hess and Shipman (1965) in which they studied the ways in which mothers teach their four-year-old children. They found that the techniques used by mothers vary according to the amount of education the mothers have had. The better educated mothers talked almost twice as much to their children in teaching them, and used more abstract words, more adjectives, more complex grammar, and longer sentences than did the less well educated mothers. The lesser educated mothers were more likely to teach the child to obey because it was a child's role to "obey" his parents, whereas, the better educated mothers gave the child reasons or explanations for what was expected of him. The latter procedure requires a more elaborate language

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[18]Miriam L. Goldberg, "Methods and Materials for Educationally Disadvantaged Youth," Education of the Disadvantaged, op. cit., 385.

and permits responses from the child that require him to think about his behaviour and to take the needs of others into consideration.[19]

An apparent assumption underlying the next hypothesis is that the more education a mother has, the more she is likely to find the time and make the effort to talk, read, and listen to her children. Thus, the mother's education can stimulate a pupil's language achievement.

Hypothesis 4: (a) There will be a positive correlation between the number of years of formal schooling of the mothers and the pupils' total scores on the language skills test battery.

(b) There will be a positive correlation between the number of years of formal schooling of the mothers and the pupils' scores on the paragraph writing test.

V. FAMILY SIZE AND PUPIL LANGUAGE ACHIEVEMENT

The size of the family, like the father's occupation and mother's education, is also considered a socioeconomic variable. It is generally true that the larger families are found in the lower socioeconomic strata of society. Apart from its connection with socioeconomic

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[19]Robert J. Havighurst and Bernice L. Neugarten, Society and Education (Third Edition; Boston: Allan and Bacon, Inc., 1967), 160-2.

status, however, the number of siblings in the family has other effects on the language development of each child in that family. The single child develops language facility more rapidly than does the child with siblings; twins develop more slowly than any other family groupings; orphan children have the same problems as the prolonged hospitalized children, and our child rearing practices appear to facilitate a slight advantage in language development in girls over that in boys.[20]

It would appear that in the larger families children tend to communicate more with each other than with adults. This does not retard or limit their communicative abilities, but it does often retard their achievement of the skills and practices of a formal language code which Bernstein and others have shown to be a basic requisite for success in schools and in society at large. It is further believed that the number of children in the family is related to the mother's education, in that the mothers of larger families tend to have married earlier and to be below average in number of years of formal schooling. It also seems reasonable to expect that mothers of larger families do not have the time to devote to any one child in so far as reading to him, correcting

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[20]Walter T. Petty and Robert J. Starkey, op. cit., 389.

his speech errors, discussing things with him or listening to him, as do mothers of smaller families. This limits the amount of child-adult interaction in language and the child's language development suffers accordingly.

Hypothesis 5: (a) There will be a negative correlation between the number of siblings of the pupils and the pupils' total scores on the language skills test battery.

(b) There will be a negative correlation between the number of siblings of the pupils and the pupils' scores on the paragraph writing test.

VI. PUPILS' ABSENCES AND LANGUAGE ACHIEVEMENT

The more time a pupil loses from school, the less likely is he to do well on any measure of achievement, including achievement in the language arts. Studies have suggested that the actual amount of time spent in school, within wide limits, has little or no effect on the standard of work done by healthy children. Shortening the school year by as much as a month has not affected the performance of some pupils, when all in the particular group lost the same amount of time and when a child, after being away from school for a time, did not have to catch up with the work of the class. It has been shown that children who were often absent, however, were less successful than their classmates and that the extent to which children fall behind depends on their character and

abilities. The dull ones may be seriously hampered by minor absences, and a child who, with effort, has been keeping up with a class of children of average ability, may no longer be able to do so when he rejoins the class after a period of illness.[21]

The study referred to above also revealed that lower class children were more affected by absences than were middle or higher class children. The record of absences seemed to be about the same for all social classes, but the effects were felt more strongly by the lower or working class pupils.

Collins and Douglass found that pupils who were failing in the junior high school generally came from poor socioeconomic environments. They suggested that among such enduring unfavourable home conditions usually associated with poor socioeconomic environments, frequent absences occur.[22]

It must not be forgotten, however, that abler children from better homes are naturally more apt to attend school regularly, hence the causal effects of

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[21]J.W.B. Douglas and J.M. Ross, "The Effects of Absences on Primary School Performance," British Journal of Educational Psychology, 35 (February, 1965), 28-40.

[22]Joseph H. Collins and Harl R. Douglass, op. cit., 113.

schooling as such are difficult to disentangle.[23]

Hypothesis 6: (a) There will be a negative correlation between the number of days lost from school by each pupil and the pupils' total scores on the language skills test battery.

(b) There will be a negative correlation between the number of days lost from school by each pupil and the pupils' scores on the paragraph writing test.

VII. TEACHERS' QUALIFICATIONS AND PUPILS' LANGUAGE ACHIEVEMENT

It would be expected that the more years of training a teacher has, the better the achievement of his pupils. If teachers are to overcome the detrimental effect of social environment with respect to language development of disadvantaged children, they have to devise their own ways of working with children's language problems. To do this, speech patterns have to be analyzed, problems diagnosed, and procedures for attacking the problems planned. Teachers with little or no formal training cannot reasonably be expected to, and generally do not, perform, in this area.[24]

Yet, in some respects, the formal qualifications of the teachers are a measure of the socioeconomic status of the community in which the child lives. The better

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[23]Philip E. Vernon, "Environmental Handicaps and Intellectual Development: Part II," British Journal of Educational Psychology, 35 (June, 1965), 117-26.

[24]Miriam L. Goldbert, op. cit., 386.

qualified teachers tend to gravitate towards those communities in which the socioeconomic levels are highest.

Hypothesis 7: (a) There will be a positive correlation between the number of years of formal training the teachers have received and the pupils' total scores on the language skills test battery.

(b) There will be a positive correlation between the number of years of formal training the teachers have received and the pupils' scores on the paragraph writing test.

VIII. NUMBER IN CLASS AND PUPILS' LANGUAGE ACHIEVEMENT

The number in class will be a sort of gross measure of educational input. It is expected that the greater the number of pupils in the class the greater will be the overall achievement of the pupils in general and the greater will be the individual achievement in language. While a great deal of research has been done to prove that smaller classes are usually more productive in terms of pupil achievement, it is expected that in the area of Newfoundland being studied, just the reverse condition will be found. The geographical area under study has mostly small schools with overcrowded classrooms with only a small number of pupils in any one particular grade or class. Where grade enrollments are large (about twenty or more), there is a good possibility that the students are or have been in a single-grade classroom and thus will

have had a better chance to achieve. As the class enrollments drop below twenty it is most likely that Grade Six is not the only grade in the classroom. Since the average enrollment is above thirty per classroom in Newfoundland elementary schools, where the average enrollment for Grade Six is low, there must be at least one other grade being taught in the room at the same time. When the class enrollment is extremely low, it is not unusual to find three, four, five, or even more grades being taught in the same classroom by the same teacher.

If all the Grade Sixes studied were in schools in which Grade Six was the only grade occupying the teacher's time, then a negative correlation between class size and pupil achievement would be expected.

Hypothesis 8: (a) There will be a positive correlation between the number of pupils in the class and the pupils' total scores on the language skills test battery.

(b) There will be a positive correlation between the number of pupils in the class and the pupils' scores on the paragraph writing test.

IX. AGE OF SCHOOL AND PUPILS' LANGUAGE ACHIEVEMENT

Another gross measure of educational input is the age of the school building in which the pupils are taught. The age of the school building might also be related to the general socioeconomic level of the community. Most of

the literature available on the effects of age of buildings on pupils' achievement supports the contention that pupils in older buildings do not achieve as well as pupils in newer buildings, but all the available studies seem to deal with the problem in the urban context and may be of little relevance to this particular study.

Hypothesis 9: (a) There will be a negative correlation between the ages of the schools and the pupils' total scores on the language skills test battery.

(b) There will be a negative correlation between the ages of the schools and the pupils' scores on the paragraph writing test.

X. SOCIOECONOMIC FACTORS VERSUS EDUCATIONAL FACTORS IN PUPILS' LANGUAGE ACHIEVEMENT

The overall problem of this study is to determine whether the social and economic factors outside the direct control of the school are more closely associated with pupils' written language achievement than are school controlled factors.

The socioeconomic factors involved in this study are fathers' occupations, mothers' education, size of family, and number of days absent from school. The school input variables are teachers' qualifications, enrollment in class, and age of school. Intelligence is also considered as it related to both socioeconomic and

educational variables.

Burkhead said as a result of experiments in the United States that variations in educational outcomes in large-city high schools, measured in terms of test scores are almost wholly conditioned by the socioeconomic environment of the neighborhood.[25] Other researchers, including Coleman[26] and Kitchen,[27] have come to similar conclusions.

Hypothesis 10: The statistical analysis of the data will reveal that socioeconomic factors are more closely associated with language achievement than are school input factors.

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[25]Jesse Burkhead with Thomas G. Fox and John W. Holland, Input and Output in Large-City High Schools (Syracuse: Syracuse University Press, 1967), 88.

[26]James S. Coleman, Equality of Educational Opportunity (Washington, D.C.: U.S. Department of Health, Education and Welfare, 1966).

[27]Op. cit.

CHAPTER III

THE METHOD

Information for this study was collected by three graduate students in educational administration at Memorial University. The three spent about a month in the area visiting the schools and collecting the data during the spring of 1968. This chapter sets forth the methods used to conduct the study. It describes in detail the sample, the instruments together with a discussion of their reliability and validity, the procedures used to collect data and to process them.

I. THE SAMPLE

After much discussion with the faculty advisor, the three researchers decided to accept all the Grade Six students in the political districts of Trinity North and Trinity South as their subjects of study.

Why Trinity North and Trinity South?

A fairly large (over 500) pupil population was considered necessary for a study of this type, and that size population was found in the two areas combined. Neither area by itself would supply over 500 Grade Sixes,

but in the combined area the Grade Six population was just over 800.

A variety of socioeconomic conditions were required for comparison purposes, and these were believed to exist in the area selected, although subsequent investigation revealed a lower average condition in most factors than was suspected when the study was being planned. Also, it was thought that there would be a relatively wide spread in the mothers' education, family size, and teachers' qualifications. That the whole area could be covered by private car was also an important factor in its selection.

Why Grade Six?

The general consensus of all graduate students in educational administration at Memorial University in 1967-8 was that far too little attention was being given to the very important question of the elementary schools, and it was agreed that all thesis work done that year would be concerned with some important aspect of those schools. The three researchers concerned with this and the two companion studies decided to concentrate their efforts on achievements in the three basic areas of reading, language, and arithmetic in the elementary schools. Since the study was to be restricted to rural and rural-urban areas, it was necessary to select a grade level that

would be found in most elementary schools and in most of the communities in the district. In areas with Central High Schools, Grade Seven and Eight pupils had been taken out of the elementary schools; thus the highest grade in some elementary schools was Grade Six. Very young pupils were not suited for this particular study. If the schools do overcome some of the handicaps of poor home environments, they need a reasonable amount of time. If only young pupils were considered, the result would be biased in favour of the socioeconomic variables. Thus it was decided to do the testing on the highest possible grade to be found in the elementary schools of the area.

II. THE INSTRUMENTS

The three categories of instruments used in this study measured: (a) pupil achievement, (b) social and economic factors in the pupils' background, and (c) the various school factors contributing to pupil achievement. The latter two categories overlap to some extent, since the school factors included are in part a reflection of the general socioeconomic level of the pupil's community.

The Lorge-Thorndike Intelligence Test

The Lorge-Thorndike Intelligence Test was employed to give a measure of verbal intelligence. This test had received favourable reviews in the Fifth Mental Measurement

Yearbook. It had been standardized on more than 136,000 children in 44 communities in 22 states of the United States. The alternate forms reliabilities for the various levels and batteries range from .76 to .90, while split-half reliabilities are given as being over .90 for all but two of the sub-tests.

While the reliability of the test is not doubted by the reviewers in Buros, the test validity is not so well established. However, the general impression given by the reviewers is that the professional reputations of the authors as well as their claims that the test is indeed valid, does ensure validity.[1]

The test has a mean I. Q. score of 100 and a standard deviation of 16 I. Q. points.

Another reason for the use of the Lorge-Thorndike Intelligence Test in the present study is the fact that it is a group intelligence test which is quite simple to administer. The compilers say that the time limits are fairly liberal, which means that the tests should get at a student's knowledge more than at his rate of working. The four subtests of the verbal battery used in this study require a total of 34 minutes working time on the part of the pupils. The first subtest requires 9 minutes; the

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[1]Oscar K. Buros (editor), The Fifth Mental Measurement Yearbook (New Jersey: The Gryphon Press, 1960), 479-84.

second, 8 minutes; the third, 10 minutes; and the fourth, 7 minutes.[2] The two or three minutes required between each subtest for the giving of instructions permitted the students a short rest.

The Language Skills Test Battery

To test the pupils' achievement in language the Canadian Tests of Basic Skills were used. These tests are Canadian adaptations of the Iowa Tests of Basic Skills, carried out by Dr. Ethel M. King from the University of Calgary in cooperation with E.F. Lindquist and A.N. Hieronymus of the University of Iowa.

Thomas Nelson and Sons (Canada) Limited, the distributor of the Canadian Tests of Basic Skills, say in their advertisement of the tests.

> The Canadian Tests of Basic Skills are concerned wholly with the fundamentals of elementary school instruction - with basic skills essential to success in any type of school work. Since the test battery measures the pupil's ability to put to use his acquired skills, no test or sub-test is concerned with repetition or identification of formal facts or rules. In the test situation the pupil is required to use his skills just as he does in his regular school work.
>
> Tests for each grade are adapted specifically to that grade using from adjacent grades some of the test items which are appropriate for measuring the extreme ranges in the grade tested. All the tests for all grades (grades 3 through 8) are in one spiral-bound re-usable test booklet.

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[2]Irving Lorge and Robert L. Thorndike, Examiner's Manual: The Lorge-Thorndike Intelligence Tests, Level 3 (Boston: Houghton Mifflin Company, 1957), 2, 6-7.

> The Canadian Tests of Basic Skills were standardized to represent English-speaking Canadian students in all 10 provinces. More than 30,000 pupils were tested in over 200 schools - separate and public schools, rural and urban schools, small one-room schools, large city and suburban schools. The norms are nationally representative.[3]

The authors believe that the reliability and validity of the tests are adequate.

The Iowa Tests of Basic Skills, from which the Canadian Tests were adapted, have also received favourable comment from Buros. Moreover, it should be remembered that the tests were used primarily to give raw scores for correlational purposes rather than for grade equivalents or any other types of norms although the grade equivalents are used in Chapter IV for descriptive purposes.

The language skills battery requires a total of 67 minutes pupil working time. Test L-1: Spelling requires 12 minutes; L-2: Capitalization, 15 minutes; L-3: Punctuation, 20 minutes; and L-4: Usage, 20 minutes. The number of items in each sub-test are L-1, 46; L-2, 42; L-3, 42; and L-4, 32.

The Paragraph Test

The instrument used to measure the pupils' achievements in other than the mechanical aspects of the

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[3]Ethel M. King (Editor), Canadian Tests of Basic Skills (Advertisement) (Don Mills: Thomas Nelson and Sons - Canada - Limited).

English language was a paragraph written by each pupil. The person administering this part of the tests was instructed to say to the students:

> You will be given fifteen minutes to write a paragraph telling what you like best. Here is the title for your paragraph (tester will write on board) 'What I Like Best'. Please try to write as well as you can. Pay attention to your spelling, capitalization, punctuation, etc., but try to make your paragraph very interesting.[4]

The foregoing instructions were given to each group of students, and any student questions were answered before the students started working. For example, some students asked: "Does that mean what food I like best?" to which the tester replied: "Not necessarily. It could be what book you like best, or which T.V. program, sport, game, person, way of spending a holiday, or anything you think you like best". Students then usually spent two or three minutes thinking before starting to write. At least ninety per cent of the students found the fifteen minutes to be ample time for writing the paragraph.

A paragraph was required in addition to the Canadian Tests of Basic Skills because it was felt that language ability could not be measured adequately by a mere test of the child's ability in the mechanics of the language. It was felt that a test should be devised and

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[4]See Appendix J.

used which would give the pupil a chance to use his imagination and his own particular mode of expression.

Three variables were considered in selecting and marking the paragraph; (i) the assignment variable, (ii) the writer variable, and (iii) the rater variable. Each of these variables is discussed in the following paragraphs.

The assignment variable. It is an accepted fact that the topic assigned to be written about must be selected with a great deal of care. It is a well-documented fact that if several topics are assigned as alternative topics from which one or two could be chosen by the student, a student's rating might depend on the topic he chose more than on how well he wrote.[5] Accordingly, it was decided to control the effects of the topic on the quality of writing by presenting the students with a single topic. This meant that a topic had to be found which would not be too abstract for the students, would be sufficiently familiar to all, and would be of interest to the whole group of examinees.

The writer variable. It seems to be an obvious fact that many researchers purporting to measure writing ability, actually measure a student's performance on a

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[5]F.I. Godshalk, F. Swineford, and W.E. Coffman, The Measurement of Writing Ability (New York: College Entrance Examination Board, 1966).

given topic on a given day. Braddock, et. al. point out that composition examinations, although they are often referred to as measures of writing "ability", are "always measures of writing performance; that is, when one evaluates a sample of student's writing, he cannot be sure that the student is fully using his ability, is writing as well as he can".[6] The student in any testing situation is subject to a broad but finite range of distractions: he may suffer from personal concerns, annoyances with the examination room, etc.

Kincaid, in his study, concluded that:

> A single paper written by a student on a given topic cannot be considered as a valid basis for evaluating his achievement in a writing course any time, unless that student's writing ability was rather low; and, even then, a single paper would not provide an infallible basis for such an evaluation.[7]

Kincaid also found that an individual's daily writing performance varies considerably, especially the performance of better writers.[8] In 1964, Diederich wrote

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[6]R. Braddock, R. Lloyd-Jones, and L. Schoer, Research in Written Composition (Illinois: National Council of Teachers of English, 1963), 6.

[7]G.L. Kincaid, "Some factors affecting Variations in the Quality of Student's Writing," Research in Written Composition, R. Braddock, et al. editors (Illinois: NCTE, 1963), 83-95.

[8]Ibid., 84-5.

that about one fourth of a group of University of Chicago students changed their marks as a result of writing a second test, but that less than five per cent changed their marks as a result of writing a third. The above studies are examples of many that point to the existence of a writer variable.[9]

Despite the overwhelming arguments in favour of more than one example of each student's writing, it is common practice in the schools to set or require only one essay or paragraph at examination time and to use the mark on that paper as part of the evaluation of the student's writing ability. Under ideal conditions, this researcher would have gone to the students on at least two different occasions and required them to write on at least two different topics. However, the size of the geographical area covered and the obvious limitations of time and money made this impossible, so the researcher decided to emulate the usual school practice and evaluate the students on the basis of one example of their writing while fully admitting that in many individual cases the results obtained may not be a true measure of the child's performance or achievement. One paragraph was decided upon in preference to two because of the number of tests

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[9]For most of the studies quoted in connection with the three variables being considered here, the researcher is indebted to Dr. E. Jones who at the time was pursuing doctoral studies at the University of Alberta.

involved in the whole project. The total project already involved about five hours of testing.

The rater variable. That inter-rater variations in composition marking exists is a well documented fact. Literally thousands of studies have shown that different markers will assign widely varying scores to the same composition, and that the same marker will assign different scores at different times. When researchers have taken the time to devise ways to mitigate the subjectivity and reduce some of the biases that occur in evaluating essays, the unreliability of scores can be reduced appreciably. Many researchers have obtained high reader reliabilities in analytic reading by following carefully defined criteria. The following are examples: Buxton reported reader reliabilities ranging from .88 to .91, Kincaid, from .77 to .91, and Finlayson, from .79 to .96.[10]

Similarly, with holistic or impressionistic grading of essays, high inter-rater reliabilities have been obtained when researchers have established standards for the ratings by furnishing readers with copies of sample essays for inspection and discussion and by having readers do some practice marking.

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[10] Ibid.

It thus seems highly desirable that more than one rater be used to get the most reliable scores on each student's writing. However, the necessary resources to employ a second rater were not available, and so the decision was made to use the one holistic rating made by the researcher himself. With due consideration to the arguments about analytic versus holistic rating, and considering the pressures of extra time and the availability of money that analytical reading and the employment of extra readers would require, the researcher adopted single, holistic rating for purposes of this investigation.

After the decision to use one rater and the holistic method of rating, the decision was made to use a twenty-point scale. Many arguments could be advanced for using a more compact scale, even a three or four-point one, but a wider distribution of scores was thought desirable for correlation purposes and it was felt that finer discriminations could result from the use of the larger scale. In Grades Nine and Ten, the Public Examination essay question is marked according to a thirty-point scale. In many elementary schools with which the researcher has had contact, twenty per cent or twenty marks are given for the essay or paragraph, depending on the grade level involved. Since a conscious attempt was being made to use evaluative procedures that could be or

were being used in the schools, the twenty-point scale for evaluating the paragraphs was finally selected.

To gain practice in the marking of the Grade Six paragraphs, and to confirm his impressions of what might reasonably be expected from a pupil in that grade, the researcher, with the cooperation of the principal and the Grade Six teachers of a United Church elementary school in St. John's, obtained about 240 Grade Six written paragraphs on a variety of topics. These paragraphs were arranged by topic, scored, and put away for several weeks. At the end of that time, the paragraphs were scored a second time and a comparison of the two marks was made. On factual paragraphs, the correlations between the first and the second readings ranged from .89 to .95, while on imaginative topics the correlations ranged from .75 to .90.

These results were sufficient to convince the researcher that his marking was reasonably consistent, and that it could be relied on to give a crude indication of the student's writing abilities. The fact that another and more objective measure of language achievement was also being used in the study, made the acceptance of the single paragraph, scored holistically according to a twenty-point scale, more palatable.

Home Questionnaire

As explained elsewhere, the testing project was divided into two groups of tests, those to be given in an afternoon session and those to be given in a morning session. When a child had completed one lot of tests he was given a copy of the home questionnaire and asked to take it home and have it completed so that he could hand it in before he wrote the second lot of tests.[11] The majority of students followed this procedure, but naturally a few forgot. The latter were instructed to give their completed forms to their class teacher with whom mailing instructions had been left. Even then a number of home questionnaires were not received. Most of these were collected by the researcher a week later.

Some of the home questionnaire forms were checked by teachers or principals who had spent a number of years in the community, and according to them the information reported seemed to be correct. This type of informal checking was only done where there was real evidence that the person consulted did know the families concerned. No attempt was made otherwise to check the truth of the parents reporting on this form. However, the researchers feel that the parents did give reliable information on the forms, and that the questions asked were valid ones.

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[11] See Appendix D.

Teachers' Questionnaire

Sometime during the first testing session in her classroom, the teacher was given a copy of the teachers' questionnaire and asked to have it completed before the end of the second testing session.[12] When the testing was done in a place other than a particular teacher's classroom, that teacher was sent a copy of the form, usually via one of the pupils from her class. The completed form was either returned the same way or mailing instructions were left with the teacher.

Whenever a teacher was not sure of the answer to some question, particularly the one asking the age of the school, she was asked to consult board members, school records, or older people in the community so that the question could be answered as accurately as possible. The general condition of the building and the type of structure also enabled the researchers to make an informal check on the accuracy of the information supplied.

All but two teacher questionnaires were returned to the researchers. The teachers appeared interested and most helpful in contributing to the whole project, and as far as could be determined had no reason to report information incorrectly. It is believed that the questionnaire gave the researchers reliable information.

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[12]See Appendix G.

III. DATA COLLECTION

Three separate studies were being conducted using the same sample population so that much time was saved by having each researcher administer the whole bloc of tests to about one third of the pupils while the other two researchers did likewise, at the same time.

Gathering Information About The Schools

After the decision was made to use the Grade Six pupils of Trinity North and Trinity South, the five Superintendents of Education and the Director of Amalgamated schools were contacted. Permission was sought from, and granted by them for the three researchers to go to the Department of Education in Confederation Building to examine the various lists of schools maintained by the several groups. From Departmental records, with a great deal of assistance from the Superintendents, their Assistants and staffs, the researchers compiled a list of all the schools in the two districts. Listed at the same time were the names of the various principals, the names of the school board chairmen, and the Grade Six enrollment in each school.

Letters were written to the Superintendents requesting permission for the researchers to contact the school boards and principals. A copy of the letter to

the Superintendents is included in the appendix.[13]

All of the Superintendents replied, assuring the group of their interest and cooperation and granting permission to contact the necessary people in the schools. The replies from the Superintendents have been included in the appendix.[14]

Contacting The Schools

A form letter was then drafted and mailed to each school board chairman.[15] The letter was so worded that only those boards which had any objections to, or questions about, the study needed to reply. No reply was considered permission to go ahead with the next phase of the study. Happily, not one negative reply or objection was received from the boards.

As the letter to the boards stated, the researchers were to make personal contact with the various school principals in the latter part of April or early May of 1968. Personal contact with the principal was preferred for a number of reasons. The study could not be done well without their cooperation, so the personal

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[13]See Appendix A.

[14]See Appendix B.

[15]See Appendix C.

contact enabled the researchers to explain in detail the nature and the purpose of the proposed study, and at the same time the researchers and the principals were able to set up a mutually acceptable testing schedule.

On April 25, 1968, the three researchers travelled to separate parts of the selected area and began contacting the school principals and the Grade Six teachers in the region from Sibley's Cove to George's Brook, including Random Island and South West Arm. The whole of this region was covered in the three days, April 25, 26, and 27. The principals and teachers were presented with a pre-arranged testing schedule and asked to make comments or suggestions regarding its feasibility. The modifications suggested were incorporated into a revised schedule which was subsequently followed. The purposes of the studies were explained to the principals and teachers involved and, with few exceptions, all assured the researchers of their cooperation and assistance.

Grouping

Where possible and convenient, pupils were brought together in central locations for testing. Centres readily accessible to all pupils were selected and transportation arranged for the students needing it. The usual form of transport was the researchers' own cars, but in several cases buses and taxis were hired. A number

of teachers and principals volunteered their cars to assist in pupil transport. A list of the schools involved and the testing centres is included in the appendix.[16]

The Testing Schedule

The testing schedule was arranged to begin on April 30, 1968, but because of a delay in receiving the necessary testing materials, the first day was missed and the actual testing began on the second day of the pre-arranged schedule, May 1. The missed day was picked up at the end of the schedule.

The test material was divided into two major groups. The morning testing period began with the Canadian Tests of Basic Skills, language tests. The Spelling subtest, L-1, was given first. This was followed by the Capitalization subtest, L-2; then the Punctuation subtest, L-3; and the Usage subtest, L-4. Each of these subtests was separated by a two or three minutes rest period in addition to the time taken by the test administrator to deliver the necessary instructions. The instructions were given exactly as in the accompanying Administrator's Manual. Upon completion of the language battery, the pupils were allowed a ten to fifteen minute recess period. At the end of the recess period the pupils

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[16]See Appendix I.

returned and completed in order the two mathematics subtests. Thus the language and the mathematics part of the Canadian Tests of the Basic Skills took up the whole morning session.

The afternoon testing session was taken up by the Nelson Reading test, the Paragraph Writing Test, and the I. Q. test, in that order. The three major tests were separated by two four or five minute rest periods. The two subtests of the reading test were separated by a two or three minute rest period, as were the four subtests of the intelligence test used.

The testing schedule was set up so that no student spent more than one half a day at a time writing the tests. A pupil who started by writing the morning lot of tests did not write again until the following afternoon, while a student who started with the afternoon lot of tests completed his contribution the following morning. This procedure was strictly adhered to with one or two minor exceptions.

IV. PROCESSING THE DATA

Scoring

As far as possible, at the end of each day the three researchers got together to sort out the day's intake of tests and to begin marking. All commercial tests

were hand scored by the individual researchers for each particular part that concerned his study. The company-supplied, hand scoring masks were used for the Canadian Tests of Basic Skills, and the Reading tests were self scoring. The paragraphs, written as part of the measure of language achievement, were all scored by the researcher doing this particular study. Since this is one area of the study involving subjective marking, the method of treatment of the paragraph has been treated in detail in the preceding section.

Coding

Within two days of the completion of the testing programme, all the tests had been scored. The results were then tabulated and coded for processing by the Memorial University Computer Centre.

Each pupil was assigned a computer number starting with 001 and finishing with 770. However, some of these students were later dropped from the final analysis because certain information about them had not been obtained.

Mother's education was coded as shown in Appendix E according to an eighteen-point scale (0 - 18), with a number being assigned to each pupil to indicate the number of years of formal education his mother had received.

On the Blishen Scale the father's occupation was assigned a number between 32.0 (low) and 90.0 (high).[17] The scale has a mean of 50 and a standard deviation of 10. To avoid working with decimals, each number assigned to individual pupils as their "score" on this measure, was multiplied by ten. Thus, the occupation of fisherman, which according to the scale has a score of 36.9, was coded as 369 for the computer.

The number of children under eighteen years of age and living at home was merely recorded directly off the home questionnaire. No manipulating was necessary. The number reported on the questionnaire became the pupil's score on this measure.

Because the number of days lost by each pupil was not always a whole number, the results reported by the teachers were again multiplied by ten to avoid decimals. Thus, a pupil who had lost 12 1/2 days had his score coded as 125 on the computer data sheets.

The I. Q.'s were simply recorded as determined by the test. No manipulation of scores was necessary. The same applied to the scores for total reading, spelling, capitalization, punctuation, usage, total language and

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[17]See Appendix F.

paragraph writing. The class enrollment and the age of the school were similarly treated.

The teachers' grades or licences were coded according to an eleven-point scale (1 - 11) as shown in Appendix H. Each pupil was assigned an appropriate "score" according to his teacher's number of years of formal training as a teacher.

Computing

After the data had been coded and recorded on the appropriate sheets, the information was punched onto IBM cards by employees of the Memorial University Computer Centre. The inter-correlation matrices presented in Appendix K were then computed by the Centre on its IBM 1600 machine. Random samples were selected and computed by hand to confirm the accuracy of the data supplied by the Centre.

Later, multiple correlation coefficients were computed at the Centre.[18] Each criterion, total language, and paragraph writing, was treated against the various predictors for boys and girls separately and then for the total group. The results of the multiple correlation

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[18]Stepwise regression procedures were used, with the ten independent variables added in the order indicated in Tables XL to XLV. At each step a coefficient of multiple regression was computed to indicate the importance of adding each successive variable. See Jesse Burkhead et al. Input and Output in Large-City High Schools (Syracuse: Syracuse University Press, 1967), 49.

analysis are used in Chapter V, mainly in connection with Hypothesis 10. It will be noted that in Tables XL to XLV there is a difference in the order in which the predictor variables were added to the model. In this type of analysis, the order in which the variables are added does not affect the result.

CHAPTER IV

DESCRIPTIVE ANALYSIS

This chapter reports the distribution of pupils classified by each of the several variables used in the study, that is, by sex, intelligence, fathers' occupation, mothers' education, family size, days absent, teachers' qualifications, classroom enrollment, age of school, spelling scores, capitalization scores, punctuation scores, usage scores, total language scores, and paragraph writing scores. Some relationships among variables are noted. However, the testing of hypotheses is deferred until the next chapter.

A check with the Department of Education records showed that as of January 31, 1968, there were 805 pupils in Grade Six in the various schools of Trinity North and Trinity South. At the time of the testing project it was found that the number of students available for study was 791. Part of the difference is due to the possible excess of transfers out over transfers in plus the fact that one school could not be included because of a local problem at the time the testing was carried out.

I. SEX

Naturally, some of the students were absent from class for all or part of the testing. Some part at least of the total testing programme was done by 770 of the 791 students available in the area. However, complete information on all variables, test scores, parent questionnaires and teacher questionnaires, were found for 684 pupils, made up of 361 boys and 323 girls. The foregoing data are presented in Table 1.

TABLE I

GRADE SIX POPULATION - TRINITY NORTH AND TRINITY SOUTH

Time		Number
Dept. of Ed. Records, Jan. 31, 1968		805
School Registers, April 30, 1968		791
Included in Test Program, May 1 - 16		770
Complete Data Secured		
Boys	361	
Girls	323	
Total		684

As shown in Table II, 760 wrote the language test, including 404 boys and 356 girls. Since the language test was not written in the same session as the paragraph test, the number writing the latter was 743 made up of 389 boys and 354 girls.

For each section of this chapter, the number of subjects for whom data are reported will be stated in each case and in the individual tables. As some data were available for 791 students but complete date for only 684, the number included in each report and in each table will vary according to the amount of information available.

In Chapter V only those 684 pupils for whom complete data were available could be analyzed with locally available computer programs.

TABLE II

GRADE SIX PUPILS INCLUDED IN LANGUAGE STUDY, MAY 1968

Pupils	Total Language	Paragraph Writing
Boys	404	389
Girls	356	354
Total	760	743

II. INTELLIGENCE

The following table presents a frequency distribution of the I. Q.'s of the Grade Six pupils in the area studied, and compares them with the population on which the test was standardized.

Two main points are apparent from the following table. First the mean I. Q. for the Grade Six pupils of the area studied was five points below that of the norming population. The norms with which the pupils are being compared are those established on the basis of the performance of 136,000 children in forty-four communities in twenty-two states of the United States, and such a comparison may not be justified.

The second significant point apparent in Table III is that the mean I. Q. of the boys was six points below that of the girls.

III. FATHERS' OCCUPATIONS

Table IV classifies the 722 pupils for whom data were obtained according to the Blishen categories of fathers' occupations. The Blishen scale may be used in two ways, for correlational analysis and for classification. For correlational analysis the scale supplied a number or score for each occupation, as for example-fisherman 36.9.

TABLE III

PUPILS CLASSIFIED BY I. Q.

I. Q. Range	Pupils in study						Normal Population %
	Boys		Girls		Total		
	N	%	N	%	N	%	
132 or more	4	1.0	10	2.8	14	1.9	2.0
116 - 132	30	7.7	33	9.5	63	8.4	14.0
100 - 116	72	18.4	104	29.5	176	23.6	34.0
84 - 100	175	44.6	155	44.0	330	44.3	34.0
68 - 84	99	25.0	46	13.1	145	19.5	14.0
Less than 68	13	3.3	4	1.1	17	2.3	2.0
Total	393	100.0	352	100.0	745	100.0	100.0
Mean	92.3		98.3		95.1		100
S. D.	14.8		14.9		15.1		16

TABLE IV

FATHERS' OCCUPATIONS GROUPED INTO SOCIAL CLASSES OF THE BLISHEN SCALE

Fathers' Occupational Classes	Range of each Class	Number in each Class	Per cent of Total	Cumulative Per Cent
1	73.2-90.0	3	.4	100.0
2	57.0-72.9	37	5.1	99.6
3	52.0-56.9	8	1.1	94.5
4	50.5-51.9	19	2.5	93.4
5	54.1-50.4	110	15.2	90.9
6	41.8-45.0	207	28.7	75.7
7	32.0-41.8	339	47.0	47.0
Total		722	100.0	

For purposes of dividing the occupations into status groups the scale provides seven classes. The seven occupational classes range from a high of class one to a low of class seven.

When the fathers were divided into classes according to this scale, some very revealing figures emerged. Less than one-half of one per cent of the fathers were in class one while forty-seven per cent or almost half were in class seven.

A commentary on the occupational levels in the districts of Trinity North and Trinity South is contained in the fact that classes six and seven, the two lowest occupational classes on the scale used, account for over 75 per cent of the 722 fathers of whom the occupations were known. People in these low occupational classes cannot reasonably be expected to allocate large amounts of money for schooling for their children. While they may be aware of the value of an education for themselves and their children, they lack the necessary means and often the knowledge to do anything constructive about the situation.

Of the various measures of socioeconomic status considered for use in this study, it was felt that the Blishen scale was the best. However, there are some obvious weaknesses which lessen its value. For example, the scale assigns all fishermen the score of 36.9 regardless

of whether they have a large investment in boats and gear or are simply employees of other fishermen. The necessity of a revised scale with peculiar adaptations to fit the Newfoundland scene will be considered again in the section dealing with recommendations for further study and research. With better instruments for the classification of fathers' occupations, a researcher would probably find an even closer association between pupil I. Q. and this measure of socioeconomic status.

IV. MOTHERS' EDUCATION

A tabulation of the education of the mothers of the Grade Six students tested revealed that the information was available for mothers of 754 of the total number of students. The distribution of that 754 is presented in Table V. Included in the same table are comparative education data for women in a roughly similar age group and place of residence in the Province of Newfoundland and Labrador as a whole.

About 18 per cent of the mothers in the study have less than grade five education, which would make them functional illiterates as defined by the 1961 census. More realistically, two-thirds have never entered high-school and a bare five and one-half per cent have received any schooling beyond Grade Eleven. This low level of

TABLE V

EDUCATION OF THE MOTHERS OF THE GRADE SIX PUPILS IN TRINITY NORTH AND TRINITY SOUTH

Number of Years of Schooling	Number in each Category	Per Cent in each Group	Cumulative Per Cent	Schooling of Nfld. Rural Non-farm Women age 25-64. Cumulative Per Cent.[1]
0	5	.7	.7	5.6
1	5	.7	1.4	
2	18	2.4	3.8	
3	32	4.2	8.0	
4	72	9.5	17.5	
5	73	9.7	27.2	30.3
6	90	11.9	39.1	
7	75	9.9	49.0	
8	143	19.0	68.0	68.9
9	95	12.7	80.7	
10	56	7.4	88.1	87.4
11	49	6.5	94.6	95.1
12	35	4.6	99.2	
13	3	.4	99.6	
14	2	.3	99.9	99.9
15+	1	.1	100.0	100.0
Median	Mothers' Education . . . 7 years.			
Mean	Mothers' Education . . . 7 years.			
Total	754	100.0	-----	-----

[1]The percentages quoted in this column have been calculated from the Dominion Bureau of Statistics reports for 1961.

formal schooling is similar to that for all rural non-farm women between the ages of 25 and 64 in Newfoundland.

A number of studies have suggested that the quality of a child's language development is directly related to his opportunities to interact verbally with adults. They point out that children raised in institutions are more retarded than are children in normal homes and that twins develop in language areas more slowly than single children. The more sophisticated the child-adult interaction, the more will be extended the child's power of verbalization and use of the language.[1]

The usual Newfoundland child-rearing practices give the child a far greater opportunity to communicate verbally with the mother than with the father, thus, the education of the mother should be a large factor in determining the level of sophistication of the communication. Less well educated mothers tend to communicate more in non-verbal ways and to be less concerned with answering a child's questions or explaining things to him.

Of course there is also a definite association between father's occupation and mother's education as can be seen in Table VI which presents the correlation coefficients between these two variables. It seems from

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[1]Strodtbeck, loc. cit.

Table VI that the pupils with the better educated mothers are also the ones with fathers in the better occupational classes. The combination of these two factors would appear to give some students certain advantages over other students.

TABLE VI

CORRELATION COEFFICIENTS BETWEEN FATHERS' OCCUPATION AND MOTHERS' EDUCATION

Pupils	N	r	Level of Significance
Boys	361	.34	.001
Girls	323	.30	.01
Total	684	.32	.001

V. Size of Family

Table VII classifies the pupils according to the number of siblings in each pupil's home. It is worth noting from the table that 63 per cent of the pupils belong to families of four or more children.

For the 684 students used in the correlational analysis in Chapter V some means for family size were made available by the Computer Centre of Memorial University. The mean family size for the total population was 4.7 with a standard deviation of 2.4. The median family size, as shown in Table VII, was 4.6.

TABLE VII

SIZE OF FAMILY

Number of Children	Total N	Total %	Cumulative Per Cent
1	56	7.4	100.0
2	84	11.1	92.6
3	141	18.7	81.5
4	111	14.7	62.8
5	119	15.8	48.1
6	84	11.1	32.3
7	59	7.8	21.2
8	47	6.2	13.4
9	29	3.8	7.2
10	12	1.6	3.4
11	11	1.5	1.8
12+	2	.3	.3
Total	755	100.0	
Mean	4.7		
S. D.	2.4		
Median	4.6		

As shown in Table VIII, size of family bears no reliable relationship to father's occupation or mother's education. There is, however, a statistically significant correlation between size of family and pupil I. Q.

TABLE VIII

CORRELATION COEFFICIENTS BETWEEN FAMILY SIZE AND THREE OTHER VARIABLES (N = 684)

1	2	3	4		
1.00	-.04	-.07	-.17	1.	Family Size
	1.00	.32	.32	2.	Mothers' Education
		1.00	.27	3.	Fathers' Occupation
			1.00	4.	I. Q.

Note: All correlations over .16 are significant at the .05 level or higher.

VI. DAYS ABSENT

Table IX presents the arithmetic means of days absent for both boys and girls and for the whole group. As reported in Table X there is no statistically significant relationship between days absent and any of the other socioeconomic variables or pupil I. Q.

TABLE IX

DAYS ABSENT

Pupils	N	Mean
Boys	361	7.7
Girls	323	9.1
Total	684	8.4

TABLE X

CORRELATION COEFFICIENTS BETWEEN DAYS ABSENT AND FOUR OTHER VARIABLES (N = 684)

1	2	3	4	5		
1.00	-.14	-.09	.05	-.13	1.	Days Absent
	1.00	.32	-.04	.32	2.	Mothers' Education
		1.00	-.06	.27	3.	Fathers' Occupation
			1.00	-.17	4.	Family Size
				1.00	5.	I. Q.

Note: All coefficients over .16 are significant at the .05 level.

VII. TEACHER QUALIFICATIONS

The qualifications of the teachers included in the study ranged from emergency supply to grade three licence. About 42 per cent of the teachers in the area have a B- licence or less, compared with 25 per cent in the province as a whole. This means that about 16 per cent more of the teachers in the area studied than in Newfoundland as a whole have never been in university. Of course, there are obvious weaknesses in comparing the teachers of the Grade Six classes with the teachers of the whole province. If figures were available showing the formal qualifications of

all the Sixth Grade teachers in the province, the situation may not be much worse in the area than in the province itself.

At the time of the study, there was no Grade Six pupil in either Trinity North or Trinity South being taught by a teacher with Grade Four or higher. Not one was in contact with a teacher holding a degree from any university.

Because two teacher questionnaires were not received, information on their teachers' qualifications was available for only 766 of the pupils. Roughly 35 per cent of the pupils were being taught by licenced teachers, and the remainder by teachers with Grade one, two, or three.

Table XI shows the qualifications of the teachers in the area and compares them with those of the teachers in the whole province. The distribution of pupils according to teachers' qualifications is presented in Table XII.

The Department of Education report on teachers' qualifications did not distinguish the various classes of licences below A, thus the three lowest have been added together in Table XI for purposes of comparison with the Department's figures.

TABLE XI

QUALIFICATIONS OF THE TEACHERS INCLUDED IN THE STUDY AND A COMPARISON WITH THE TOTAL PROVINCE

Licence or Grade	Number of Teachers	Per Cent of Total		Provincial Per Cent 1967-8
D	8	10.4		
C or P	22	28.6	41.6	25.2
B	2	2.6		
A	5	6.5		3.2
1	25	32.5		36.8
2	10	12.9		12.4
3	5	6.5		5.8
4+	0	0.0		16.6
Total	77	100.0		100.0

Source: Department of Education Newsletter, Volume 19, Number 3 (December, 1967).

TABLE XII

DISTRIBUTION OF PUPILS ACCORDING TO TEACHER QUALIFICATIONS

Teacher Qualifications	Pupils		
	Number	Per Cent	Cum. Per Cent
D	47	6.0	6.0
C or P	141	18.0	24.0
B	23	2.9	26.9
A	67	8.5	35.4
1	280	35.5	70.9
2	178	22.7	93.6
3	50	6.4	100.0
Total	786	100.0	

Table XIII presents the inter-correlations between teachers' qualifications and mothers' education, fathers' occupations, size of family, days absent and pupil I. Q. As will be noted from the table, none of the variables considered correlate with teachers' qualifications at an acceptable level of significance.

TABLE XIII

CORRELATION COEFFICIENTS BETWEEN TEACHER QUALIFICATIONS AND FIVE OTHER VARIABLES

(N = 684)

1	2	3	4	5	6	
1.00	.08	.12	.02	-.06	.13	1. Teacher Qualifications
	1.00	.32	-.04	-.14	.32	2. Mothers' Education
		1.00	-.06	-.09	.27	3. Fathers' Occupation
			1.00	.06	-.17	4. Size of Family
				1.00	-.13	5. Days Absent
					1.00	6. I. Q.

Note: All coefficients over .16 are significant at the .05 level.

VIII. CLASSROOM ENROLLMENT

As shown in Table XIV following, the 791 students were found spread throughout 77 classrooms in 76 schools in 64 communities. The Grade Six class enrollment varied from 1 to 34. One-quarter of the students were enrolled in classes of nine pupils or less, and three-quarters in classes of 25 or less. Only one-quarter of all the Grade Six pupils in the area were found in classes of 27 or more; thus only one-quarter have had the advantage of being taught in a single-grade classroom for any length of time.

TABLE XIV

DISTRIBUTION OF GRADE SIX PUPILS BY CLASS ENROLLMENT

Class Enrollment	Number of each size	Total Enrollment in each size class	Cumulative Total	Per Cent in each size class	Cumulative Per Cent
1	3	3	3	.4	.4
2	9	18	21	2.3	2.7
3	8	24	45	3.0	5.7
4	4	16	61	2.0	7.7
5	6	30	91	3.8	11.5
6	5	30	121	3.8	15.3
7	6	42	163	5.3	20.6
8	3	24	187	3.0	23.6
9	1	9	196	1.1	24.7
10	4	40	236	5.1	29.8
11	3	33	269	4.2	34.0
12	1	12	281	1.5	35.5
13	1	13	294	1.6	37.1
14	3	42	336	5.3	42.4
15	5	75	411	9.5	51.9
18	1	18	429	2.3	54.2
19	1	19	448	2.4	56.6
21	1	21	469	2.7	59.3
22	1	22	491	2.8	62.1
23	3	69	560	8.7	70.8
25	1	25	585	3.2	74.0
27	1	27	612	3.4	77.4
28	2	56	668	7.1	84.5
29	2	58	726	7.3	91.8
31	1	31	757	3.9	95.7
34	1	34	791	4.3	100.0
Total	77	791		100.0	

Even where the larger classes were found, it was discovered that several of them had resulted from recent consolidations and amalgamations, and that the children had up until the year of study been taught in smaller, multi-grade classrooms of the type still predominant in the area. In the 64 communities only one school was found that was large enough to have two Grade Six classrooms.

For purposes of this testing, the students were transported to previously scheduled locations. It was found possible to restrict the testing to 41 different places, and if more money had been available for bus transportation this number could have been much further reduced. This points up incidentally the possibility of a great deal of further consolidation in the area.

A complete list of the schools tested, transportation, and distances has been included in Appendix I. The distribution of the Grade Six students by size of class is found in Table XIV.

Table XV presents the inter-correlation matrices between class enrollment and mothers' education, fathers' occupation, size of family, days absent, teacher qualifications, and pupil I. Q. The table indicates that the correlation between class enrollment and teacher qualifications is significant at the .001 level. It appears fairly certain that larger classes in the area

TABLE XV

CORRELATION COEFFICIENTS BETWEEN CLASSROOM ENROLLMENT AND SIX OTHER VARIABLES

1	2	3	4	5	6	7	
1.00	.10	.15	-.05	-.04	.39	.11	1. Class Enrollment
	1.00	.32	-.04	-.14	.08	.32	2. Mothers' Education
		1.00	-.06	-.09	.12	.27	3. Fathers' Occupation
			1.00	.05	.02	-.17	4. Size of Family
				1.00	-.06	-.13	5. Days Absent
					1.00	.13	6. Teacher Qualifications
						1.00	7. I. Q.

Note: Any r greater than .16 is significant at the .05 level.

studied are associated with better qualified teachers. It seems that the better qualified teachers are attracted to areas with larger schools. The reverse of this is that the smaller schools with their multi-grade classrooms are being staffed by the less well qualified teachers. The teachers with the least formal training or qualifications are most likely the ones teaching several grades in one classroom, a most undesirable situation.

For the girls in the study, larger class enrollments appear to be associated with better educated mothers, higher I. Q.'s, and newer buildings, as well as with better qualified teachers. For the boys, larger class enrollments appear to be significantly associated with better occupations on the part of the fathers, and newer buildings as well as with better qualified teachers.[2] Of course, the common factor throughout might be the simultaneous occurrence of all the better features because of the larger community size.

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[2]See Appendix K: Tables of Correlation Coefficients.

IX. AGE OF SCHOOL

Table XVI reports pupils classified according to age of the school which they attend. The percentage of the total attending by schools in each category is also reported in the table. Over 50 per cent of the Grade Six pupils were attending school in buildings that were more than ten years old. However, only 24 per cent were in buildings more than 20 years old.

The usual correlation matrix between age of school and the other variables has not been presented in the text because none of the correlations reached statistical significance. The correlations are in Appendix K.

TABLE XVI

DISTRIBUTION OF PUPILS BY AGE OF SCHOOL

Age of School (years)	Pupils		
	Number	Per Cent	Cumulative Per Cent
36+	16	2.0	2.0
31-35	23	2.9	4.9
26-30	30	3.8	8.7
21-25	119	15.2	23.9
16-20	130	16.5	40.4
11-15	140	17.9	58.3
6-10	131	16.6	74.9
1- 5	197	25.1	100.0
Total	786	100.0	

Mean age of school 14.7 years.
Median age of school 13 years.

X. SPELLING

Table XVII reports the distribution of spelling scores for the 404 boys and 356 girls who wrote the test.

Since the test was written by the students in May, the expected mean raw score was 28 which gives a grade equivalent of 68 (that is, Grade Six for eight months). For boys, however, the mean raw score was 18 which gives a grade equivalent of 50. In other words, the average Grade Six boy in the area was one year and eight months retarded in spelling achievement when compared with the Grade Sixes of the population on whom the test was standardized and its norms computed. The norms for the test claim to be nationally representative since the test was normed on more than 30,000 pupils in over 200 Canadian, English speaking schools. The schools were both separate and public, rural and urban, small and large.[3]

The mean raw score for girls was 24 which gives a grade equivalent of 58. Thus, the average Grade Six girl in the area was one year behind the average Grade Six of the norming population. As the literature had suggested, the average performance of the girls was better than that of the boys, in this particular case by eight months. For

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[3]Ethyl M. King, loc. cit. Unfortunately, the absence of published norms of sex for the Canadian Tests of Basic Skills precludes comparisons between the boys (or girls) of the present sample and their national counterparts.

TABLE XVII

DISTRIBUTION OF SPELLING SCORES

Raw Scores	Grade Equivalents*	Boys N	Boys %	Girls N	Girls %	Total N	Total %
41 - 46	91 - 100	6	1.5	7	2.0	13	1.7
36 - 40	81 - 89	11	2.7	18	5.0	29	3.8
31 - 35	73 - 80	16	4.0	44	12.4	60	7.9
26 - 30	65 - 72	36	8.9	64	18.0	100	13.1
21 - 25	56 - 63	60	14.9	62	17.4	122	16.0
16 - 20	46 - 54	98	24.2	86	24.2	184	24.2
11 - 15	36 - 44	92	22.8	45	12.6	137	18.0
6 - 10	28 - 34	66	16.3	24	6.7	90	11.8
0 - 5	21 - 26	19	4.7	6	1.7	25	3.3
Total	.....	404	100.0	356	100.0	760	100.0
Mean		Raw score	18		24		21
		Grade equivalent	50		58		54

*The numbers given as grade equivalents indicate years and months, for example, if a student had a raw score of 26 he would have a grade equivalent of 65 which means Grade Six for five months. See also: Ethel M. King (editor), Teacher's Manual Form 1, Canadian Tests of Basic Skills (Toronto: Thomas Nelson and Sons (Canada) Ltd., 1967) p. 92.

total pupils the mean raw score is 21 which gives a grade equivalent of 54. Thus the average Grade Six pupil in the area was one year and four months behind the average Grade Six of the norming population.

XI. CAPITALIZATION

Table XVIII reports the distribution of capitalization scores for the 404 boys and 356 girls who wrote this particular subtest of the language battery.

Because this test was written just after the students had been in Grade Six for eight months (i.e., in May), the expected mean raw score was 27 which translates into a grade equivalent of 68 or Grade Six for eight months. For boys the mean raw score was 20 which gives a grade equivalent of 53. For this measure of language achievement, then, the average Grade Six boy in the area was one year and five months behind the average Grade Six pupil in the norming population.

For girls the mean raw score was 22 which gives a grade equivalent of 57. The average Grade Six girl in the area was one year and one month behind the norm in this particular language achievement as measured by the test used. Again, however, the performance of the girls was superior to that of the boys. The average Grade Six girl was about four months ahead of the average boy on this measure.

TABLE XVIII

DISTRIBUTION OF CAPITALIZATION SCORES

Raw Scores	Grade Equivalents*	Boys N	Boys %	Girls N	Girls %	Total N	Total %
36 - 42	88 - 100	6	1.5	10	2.8	16	2.1
31 - 35	79 - 86	30	7.4	34	9.6	64	8.4
26 - 30	66 - 76	55	13.6	72	20.2	127	16.7
21 - 25	55 - 64	93	23.0	95	26.7	188	24.8
16 - 20	45 - 53	97	24.0	75	21.0	172	22.6
11 - 15	35 - 43	75	18.6	45	12.6	120	15.8
6 - 10	28 - 33	41	10.2	24	6.7	65	8.5
0 - 5	22 - 27	7	1.7	1	.3	8	1.1
Total	....	404	100.0	356	100.0	760	100.0
Mean	Raw Score	20	.....	22	.....	21	
	Grade Equivalent.	53	.....	57	.....	55	

* See footnote to Table XVII

For total pupils the mean raw score was 21 which gives a grade equivalent of 55. Thus the average Grade Six pupil was one year and three months behind the average Grade Six of the norming population.

XII. PUNCTUATION

Table XIX reports the distribution of scores on the punctuation subtest of the language battery of the Canadian Tests of Basic Skills. This subtest was written by 404 boys and 356 girls.

As for the preceding two subtests, the expected grade equivalent was Grade Six for eight months or 68, which corresponds to a mean raw score of 23. The mean raw score for boys was 18 which gives a grade equivalent of 57. Thus it appears that the average Grade Six boy of the area was one year and one month behind the average Grade Six of the norming population in this aspect of language achievement.

The girls achieved a mean raw score of 20 which gives a grade equivalent of 61. It appears that the average Grade Six girl of the area was about seven months below the level of performance established by the norming population. The average performance by the girls was about four months ahead of the average performance of the boys.

For total pupils the mean raw score was 19 which gives a grade equivalent of 59. Thus, the average Grade

TABLE XIX

DISTRIBUTION OF PUNCTUATION SCORES

Raw Scores	Grade Equivalent*	Boys N	Boys %	Girls N	Girls %	Total N	Total %
36 - 42	90 - 102	3	.7	11	3.1	14	1.8
31 - 35	82 - 88	13	3.2	14	3.9	27	3.6
26 - 30	73 - 81	30	7.4	46	12.9	76	10.0
21 - 25	63 - 71	63	15.6	98	27.6	161	21.2
16 - 20	54 - 61	136	33.7	96	27.0	232	30.6
11 - 15	41 - 52	110	27.2	65	18.2	175	23.0
6 - 10	30 - 38	48	11.9	26	7.3	74	9.7
0 - 5	22 - 28	1	.3	0	.0	1	.1
Total	....	404	100.0	356	100.0	760	100.0
Mean	Raw Score	18		20		19	
	Grade Equivalent .	57		61		59	

* See footnote to Table XVII.

Six pupil was about nine months behind the average Grade Six of the norming population.

XIII. USAGE

Table XX reports the distribution of scores on the usage subtest of the language battery of the Canadian Tests of Basic Skills. Results on this subtest were available from 404 boys and 356 girls.

The expected mean raw score for this subtest was 21 which corresponds to a grade equivalent of 68. For boys the mean raw score was 14 which gives a grade equivalent of 50. It appears that the average Grade Six boy in the area was one year and eight months behind the average Grade Six of the norming population, at least on this particular measure of language achievement.

For girls the mean raw score was 16 which gives a grade equivalent of 55. It appears that the average Grade Six girl in the area was one year and three months behind the average Grade Six of the norming population. Again, the difference in achievement between the boys and girls was emphasized. The mean grade equivalent for girls was about five months better than that of the boys.

For total pupils the mean raw score was 15 which gives a grade equivalent of 53. Thus the average Grade Six pupil was one year and five months behind the average Grade Six of the norming population.

TABLE XX

DISTRIBUTION OF USAGE SCORES

Raw Scores	Grade Equivalent*	Boys		Girls		Total	
		N	%	N	%	N	%
26 - 32	79 - 98	20	5.0	26	7.3	46	6.1
21 - 25	67 - 76	34	8.4	47	13.2	81	10.6
16 - 20	55 - 65	74	18.3	108	30.4	182	24.0
11 - 15	42 - 53	139	34.4	105	29.5	244	32.1
6 - 10	29 - 40	122	30.2	61	17.1	183	24.0
0 - 5	22 - 27	15	3.7	9	2.5	24	3.2
Total	...	404	100.0	356	100.0	760	100.0
Mean	Raw Score	14		16		15	
	Grade Equivalent ...	50		55		53	

* See footnote to Table XVII.

XIV. TOTAL LANGUAGE

Table XXI summarizes the Grade Six mean grade equivalents. As was shown in the previous four sections, both boys and girls performed well below the expected national Canadian norms.

TABLE XXI

DISTRIBUTION OF TOTAL LANGUAGE SCORES

Subtest	Mean Grade Equivalents			
	Boys	Girls	Total	Norms
L - 1 Spelling	50	58	54	68
L - 2 Capitalization	53	57	55	68
L - 3 Punctuation	57	61	59	68
L - 4 Usage	50	55	53	68
Total Language	53	58	56	68

XV. PARAGRAPH WRITING

Table XXII presents the distribution of paragraph writing scores. Scores were available for 389 boys and 354 girls. The table also compares the performance of the girls with that of the boys, and as for the previous measures of language achievement, the girls performed better than the

boys. The mean score for boys was eight and the mean score for girls was nine. The greatest difference between the performance of the two groups is seen in the middle of the scale.

TABLE XXII

DISTRIBUTION OF PARAGRAPH WRITING SCORES

Raw Scores	Boys		Girls	
	N	%	N	%
18 - 20	1	.3	2	.6
15 - 17	5	1.3	19	5.4
12 - 14	21	5.4	42	11.9
9 - 11	80	20.5	129	36.4
6 - 8	224	57.6	149	42.0
3 - 5	53	13.6	11	3.1
0 - 2	5	1.3	2	.6
Total	389	100.0	354	100.0
Mean	7.6		9.2	
S. D.	2.5		2.9	

XVI. SUMMARY

This chapter has reviewed the data collected on the Grade Six students in the political districts of Trinity North and Trinity South, a predominately rural area of

Newfoundland. Complete data were gathered on 361 boys and 323 girls. The language skills test battery of the Canadian Tests of Basic Skills was written by 404 boys and 356 girls. The paragraph writing test was done by 389 boys and 354 girls.

I. Q. measures were taken for 393 boys and 352 girls. As a whole, the group tested averaged 5 I. Q. points below the average of the normal population. The girls were superior to the boys by an average of six I. Q. points.

The occupational levels in the area seemed to be very limited since over 75 per cent of the fathers of the Grade Six pupils were found in occupational classes six or seven, the two lowest on the Blishen scale.

The median education of the mothers of the Grade Six pupils was Grade Seven, while only 12 per cent had Grade Eleven or better. Fathers' occupations and mothers' education correlated for both boys and girls at the .01 level or higher.

Fifty per cent of the pupils came from homes with five or more children under eighteen living at home.

The mean number of days absent was 8.4. The number of absences showed no correlation with any of the other variables at a significant level except in the case of the girls where the degree of negative correlation was significant at the .05 level with their mothers' education.

About 42 per cent of the teachers had a B-licence or lower qualification. There was not one teacher of a grade six class in the whole area who had completed a university degree or had obtained even a Grade IV certificate. Grade III was the highest teaching certificate reported in the area. Seventy per cent of the pupils were being taught by teachers with Grade I or less qualifications.

Three-quarters of the student population were located in classes of twenty-five or fewer. This means that three-quarters of the students were most likely to be in classrooms having more than one grade. Only one school in the whole area was large enough to have two Grade Six classes.

Class enrollment correlated significantly with fathers' occupations and teachers' qualifications in the case of the boys, and with mothers' education, teachers' qualification, and I. Q. in the case of the girls.

More than fifty per cent of the Grade Sixes in the area attend schools that are over ten years old. The median age of the schools is about 13 years.

On all the language measures used, spelling, capitalization, punctuation, usage, total language and paragraph writing, the pupils performed below the level indicated by the norms for the tests. Specifically, the

pupils were about one year and four months behind the norm in spelling, one year and two months behind in capitalization, nine months behind in punctuation, and one year and one month behind in usage. In total language ability, the pupils were one year and three months behind the norms.

On all measures of language achievement, the girls performed better than the boys.

CHAPTER V

STATISTICAL ANALYSIS

This chapter tests the hypotheses of the study as established in Chapter II. The first nine sections deal with the hypotheses specifying relationships between the various input variables and language achievement. The tenth section tests the major hypothesis, namely that socioeconomic variables are related more closely to a child's language achievement than are the school input variables. The .05 level of statistical significance is used throughout.

The correlation coefficients between language achievement and each of the other variables chosen are presented in the various tables throughout the chapter. The testing of the hypothesis is reported with a discussion of the findings in each case. The final section of the chapter presents a summary of the findings.

I. SEX

Hypothesis 1(a) and 1(b) predicted that girls would score higher than boys on language skills and on paragraph writing. Using a one-tailed t-test for independent samples after F-tests had revealed homogeneity of variance,

and after ascertaining from scanning the frequency distributions of Tables XVII, XVIII, XIX, XX, and XXII that the distributions were approximately normal, it was found that the mean scores for girls on language skills (and on each of the subsets) and on paragraph writing were indeed higher than those for the boys.

Table XXIII compares the mean raw scores for boys and girls on each of the language measures and presents as well the standard deviations, the value of the t in testing the difference between the means, and the level of significance of each t. As shown there, the girls scored significantly higher than the boys on all measures. It should be recalled also that girls scored higher than boys on verbal intelligence. Subsequent hypotheses will be tested separately for boys, for girls, and for both together.

II. INTELLIGENCE

Hypothesis 2(a) and 2(b) predicted respectively that positive correlations would be found between verbal intelligence on the one hand and language skills and paragraph writing on the other. As reported in Table XXIV, correlation coefficients between intelligence and the total language skills of .75 for boys and .80 for girls are statistically significant. Also significant are the

TABLE XXIII

COMPARISON OF BOYS (N = 404) AND GIRLS (N = 365)

Language Measure	Means		SD		t	Level
	Boys	Girls	Boys	Girls		
Spelling	18.3	23.5	8.60	8.75	8.09	.01
Capitalization	19.7	24.0	7.50	7.40	7.96	.01
Punctuation	18.5	20.3	6.30	6.50	3.85	.01
Usage	13.6	15.8	5.65	6.00	4.95	.01
Total Language	68.78	81.05	23.65	24.72	6.67	.01
Paragraph Writing	7.64	9.24	2.47	2.86	8.00	.01

coefficients between I. Q. and each of the subtests of language achievement. The correlation coefficients between I. Q. and paragraph writing were .50 for boys and .51 for girls, both of which are statistically significant at the .001 level.

In view of the high correlation between verbal intelligence and language achievement, subsequent hypotheses will be tested with intelligence partialled out.

TABLE XXIV

CORRELATION COEFFICIENTS BETWEEN VERBAL I.Q. AND PUPIL LANGUAGE ACHIEVEMENT

Language Measure	Boys	Girls	Total
Spelling	.62	.62	.65
Capitalization	.62	.70	.68
Punctuation	.59	.71	.68
Usage	.68	.74	.73
Total Language	.75	.80	.80
Paragraph Writing	.50	.51	.52

Note: Every r in the above table is significant at the .05 level.

III. FATHERS' OCCUPATIONS

Part (a) of hypothesis 3 states that there will be a positive correlation between the pupils' socioeconomic status as measured by the application of the Blishen scale to their fathers' occupations and the pupils' total scores on the language skills test battery. Part (b) states that there will be a positive correlation between the pupils' socioeconomic status and their scores on the paragraph writing test.

The pupils received scores on the two language criteria as stated. The fathers' occupations were obtained through the home questionnaire and were scored according to the scale used. Correlations were computed between the occupational scores and the various measures of language achievement. The resulting correlations are presented in Table XXV.

As had been hypothesized, there is a definite association between the pupils' socioeconomic status as classified in this study and their measured language achievement. The strength of the relationship is emphasized by the fact that all of the product-moment correlations are significant beyond the .05 level. Implicit in these findings is the fact that schools are not overcoming pupils' weaknesses resulting from disadvantaged homes. It has been suggested elsewhere, and

TABLE XXV

CORRELATION COEFFICIENTS BETWEEN FATHERS' OCCUPATIONS AND PUPIL LANGUAGE ACHIEVEMENT

Language Measure	Boys	Girls	Total
Spelling	.24	.21	.21
Capitalization	.22	.27	.24
Punctuation	.24	.32	.27
Usage	.34	.30	.32
Total Language	.30	.31	.30
Paragraph Writing	.25	.27	.24

Note: Every r in the above table is significant at the .05 level.

is confirmed in part here, that the same school program is not adequate for all pupils.

As indicated in Table XXV, the correlations for Hypothesis 3 (a) were .30 for boys and .31 for girls, and for Hypothesis 3 (b) were .25 for boys and .27 for girls. All of them are statistically significant beyond the .05 level. However, with intelligence partialled out, the statistical significance of the association between fathers' occupations and pupils' language achievement is

removed, except for total language for boys. This suggests that language-relevant differences in fathers' occupation are almost totally included in measures of verbal intelligence.

The above findings are not quite consistent with those of some other investigators. For example, Chauncey in 1929 studied a group of 113 eighth grade and 130 ninth grade pupils and found that scores made on the Sims Score Card for socioeconomic status correlated with those earned on the Stanford Achievement Test to the extent of r = .30 (8th. grade) and r = .35 (9th. grade). When he partialled out intelligence, as has been done in Table XXVI, the coefficients dropped to .23 and .30 respectively, but were still significant at the .01 level.[1] A reason for the difference in the findings might be that the Blishen scale needs revision and adaptation for Newfoundland use, at least in the rural areas.

IV. MOTHERS' EDUCATION

Part (a) of Hypothesis 4 stated that there would be a positive correlation between the number of years of

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[1]M.R. Chauncey, "The Relation of Home Factors to Achievement and Intelligence Test Scores," Journal of Educational Research, 1929, pp. 20, 88-90, as reported by Duane C. Shaw in "The Relation of Socioeconomic Status to Educational Achievement in Grades Four to Eight," Journal of Educational Research, 37 (November, 1943), 197-201.

TABLE XXVI

CORRELATION COEFFICIENTS BETWEEN FATHERS' OCCUPATIONS AND PUPILS' LANGUAGE ACHIEVEMENT WITH INTELLIGENCE PARTIALLED OUT

Pupils	Total Language		Paragraph Writing	
	r	level	r	level
Boys	.18	.05	.15	ns
Girls	.12	ns	.14	ns
Total	.14	ns	.12	ns

formal schooling of the mothers and the pupils' total scores on the language skills test battery. In part (b) it was stated that there would be a positive correlation between mothers' education and pupils' paragraph writing achievement.

To test this hypothesis, the pupils' language achievement was measured as previously stated and the number of years of formal schooling of each mother was obtained by means of the home questionnaire. Each mother reported the number of years of formal schooling she had undergone and the researcher assigned a number between zero and eighteen to her response. Correlations were then computed between

the mothers' education and the pupils' scores on each of the two language measures used. The resulting correlations are presented in Table XXVII.

TABLE XXVII

CORRELATION COEFFICIENTS BETWEEN MOTHERS' EDUCATION AND PUPILS' LANGUAGE ACHIEVEMENT

Language Measure	Boys	Girls	Total
Spelling	.24	.25	.23
Capitalization	.25	.28	.26
Punctuation	.19	.24	.21
Usage	.26	.25	.26
Total Language	.28	.30	.28
Paragraph Writing	.27	.23	.24

Note: Every r in the above table is significant at the .05 level.

As expected, the education of a pupil's mother has a definite association with pupil achievement on the usual types of language measures employed by the schools. As shown in Table XXVII, every correlation coefficient is significant at the .05 level.

As indicated in Table XXVII, the correlations for Hypothesis 4(a) were .28 for boys and .30 for girls, and for Hypothesis 4(b) were .27 for boys and .23 for girls. However, with intelligence partialled out in Table XXVIII the statistical significance of the association between mothers' education and pupils' language achievement is removed. This suggests again that language-relevant differences are almost totally included in measures of verbal intelligence.

TABLE XXVIII

CORRELATION COEFFICIENTS BETWEEN MOTHERS' EDUCATION AND PUPILS' LANGUAGE ACHIEVEMENT WITH INTELLIGENCE PARTIALLED OUT

Pupils	Total Language		Paragraph Writing	
	r	level	r	level
Boys	.03	ns	.12	ns
Girls	.10	ns	.09	ns
Total	.05	ns	.09	ns

Note: The r must be greater than .16 to be significant at the .05 level.

V. SIZE OF FAMILY

Each part of Hypothesis 5 stated that a negative correlation would be found between size of family and pupil language achievement scores.

The relationship between family size and scores on the language skills test battery is not significant for boys, but for girls, and for the total pupil population, the correlations are significant at the .05 level. The correlations between family size and paragraph writing achievement are not statistically significant.

TABLE XXIX

CORRELATION COEFFICIENTS BETWEEN SIZE OF FAMILY AND PUPILS' LANGUAGE ACHIEVEMENT

Language Measure	Boys	Girls	Total
Spelling	-.09	-.15	-.12
Capitalization	-.11	-.22	-.16
Punctuation	-.10	-.18	-.15
Usage	-.15	-.16	-.16
Total Language	-.13	-.20	-.17
Paragraph Writing	-.09	-.14	-.12

Note: Any r greater than .16 is significant at the .05 level.

Table XXIX showed that only five of the eighteen correlations between family size and language achievement measures were statistically significant. Table XXX presents the correlations with the effects of intelligence partialled out. None of the resulting partial coefficients is significant at the .05 level.

TABLE XXX

CORRELATION COEFFICIENTS BETWEEN SIZE OF FAMILY AND PUPILS' LANGUAGE ACHIEVEMENT WITH INTELLIGENCE PARTIALLED OUT

Pupils	Total Language		Paragraph Writing	
	r	level	r	level
Boys	-.03	ns	-.02	ns
Girls	-.08	ns	-.05	ns
Total	-.06	ns	-.03	ns

VI. PUPIL ABSENCE

Hypothesis 6 predicted that there would be a negative correlation between the number of days the pupils lost from school and their scores on the two measures of language achievement used. For purposes of this study, the

number of days lost was obtained from the school register and reported on the teacher questionnaire. The number of days lost by each pupil was then correlated with his score on each of the language measures. The resulting correlations between days absent and pupils' language achievement are presented in Table XXXI.

TABLE XXXI

CORRELATION COEFFICIENTS BETWEEN DAYS ABSENT AND PUPILS' LANGUAGE ACHIEVEMENT

Language Measure	Boys	Girls	Total
Spelling	-.12	-.16	-.10
Capitalization	-.11	-.23	-.14
Punctuation	-.13	-.18	-.13
Usage	-.10	-.07	-.06
Total Language	-.13	-.19	-.13
Paragraph Writing	-.16	-.12	-.12

Note: Any r greater than .16 is significant at the .05 level.

All of the correlations were negative as had been hypothesized, but only three of them, days absent and capitalization, days absent and punctuation, and days

absent and total language were statistically significant for the sub group of girls. For the boys and the group as a whole, none of the correlations was significant.

For girls, it appears that loss of time from school is more closely associated with their achievement in parts of the objective or mechanical aspects of language. Girls' absences correlate negatively at the .05 level of significance with their achievement on the language skills subtests of capitalization and punctuation and with their total language scores, but when their absences are correlated with their scores on the paragraph writing test the association is not significant. Part of the difference might be explained in terms of the nature of the two tests employed. The language skills test battery contains the type of material normally taught in schools, that is, rules of grammar and the other mechanics of the language, while the paragraph writing test called for some imagination and originality in addition to a knowledge of basic elements.

Table XXXII shows that when the effects of intelligence have been partialled out, all of the correlations lose their statistical significance.

TABLE XXXII

CORRELATION COEFFICIENTS BETWEEN DAYS ABSENT AND PUPILS' LANGUAGE ACHIEVEMENT WITH INTELLIGENCE PARTIALLED OUT

Pupils	Total Language		Paragraph Writing	
	r	level	r	level
Boys	-.05	ns	-.11	ns
Girls	-.11	ns	-.05	ns
Total	-.04	ns	-.06	ns

Note: The r must be greater than .16 to be significant at the .05 level.

VII. TEACHERS' QUALIFICATIONS

Hypothesis 7 predicted a positive correlation between teachers' qualifications as measured by years of formal training and their pupils' achievement on the two language measures. Part (a) concerned the relationship between pupils' achievement in the mechanics of the language and teachers' qualifications, and part (b) concerned the relationship between the pupils' achievement in paragraph writing and the teachers' qualifications.

The number of years of formal training of the teachers was obtained by means of the teacher questionnaire.

Each teacher was asked to state the licence or grade which he or she had been granted by the Department of Education. The reply to this question was translated into a number which became the "score" on this item for each pupil in that teacher's class. The scores for teachers' qualifications were then correlated with each of the scores on the language measures. The resulting correlations are presented in Table XXXIII.

TABLE XXXIII

CORRELATION COEFFICIENTS BETWEEN TEACHERS' QUALIFICATIONS AND PUPILS' LANGUAGE ACHIEVEMENT

Language Measure	Boys	Girls	Total
Spelling	.08	.17	.12
Capitalization	.13	.16	.14
Punctuation	.13	.22	.17
Usage	.15	.15	.15
Total Language	.15	.20	.17
Paragraph Writing	.01	.10	.04

Note: Any r greater than .16 is significant at the .05 level.

As hypothesized, the correlations obtained were positive, and in the case of the correlations between teachers' qualifications and pupils' scores on the language skills test battery, the correlations found for the sub-population of girls were statistically significant at the .05 level. When teachers' qualifications were correlated with pupils' scores on the paragraph writing test, the resulting r's were not statistically significant.

Table XXXIV shows that with intelligence partialled out, none of the correlations was significant.

TABLE XXXIV

CORRELATION COEFFICIENTS BETWEEN TEACHERS' QUALIFICATIONS AND PUPILS' LANGUAGE ACHIEVEMENT WITH INTELLIGENCE PARTIALLED OUT

Pupils	Total Language		Paragraph Writing	
	r	level	r	level
Boys	.07	ns	-.06	ns
Girls	.14	ns	.03	ns
Total	.11	ns	-.03	ns

Note: The r must be greater than .16 to be significant at the .05 level.

VIII. CLASS ENROLLMENT

Hypothesis 8 predicted that there would be a positive correlation between the number of pupils enrolled in each class and their scores or achievement on the two language measures. The information on class enrollment was supplied by the teacher questionnaire. Correlations were computed and the results are presented in Table XXXV.

TABLE XXXV

CORRELATION COEFFICIENTS BETWEEN CLASS ENROLLMENT AND PUPILS' LANGUAGE ACHIEVEMENT

Language Measure	Boys	Girls	Total
Spelling	.03	.16	.07
Capitalization	.10	.20	.14
Punctuation	.06	.21	.13
Usage	.08	.17	.11
Total Language	.08	.21	.13
Paragraph Writing	.16	.36	.22

Note: Any r greater than .16 is significant at the .05 level.

As Table XXXV shows, this hypothesis was validated for the girls of the study. It appears that the larger

the class in the area, the better will be the achievement of each girl in that class.

The area studied was predominantly rural and the schools were for the most part very small with multi-grade classrooms. Thus, there are many factors associated with larger classes, not the least of which is the fact that the larger classes occur in schools in the more urban parts of the districts.

The boys differed from the girls in that their language scores did not correlate significantly with the size of their classes. Consequently, for the boys the hypothesis is rejected. For the girls the two parts of the hypothesis are accepted.

TABLE XXXVI

CORRELATION COEFFICIENTS BETWEEN CLASS ENROLLMENT AND PUPILS' LANGUAGE ACHIEVEMENT WITH INTELLIGENCE PARTIALLED OUT

Pupils	Total Language		Paragraph Writing	
	r	level	r	level
Boys	.06	ns	.15	ns
Girls	.08	ns	.30	.01
Total	.07	ns	.20	.05

Note: Any r greater than .16 is significant at the .05 level.

Table XXXVI shows that even with intelligence partialled out, the correlations between paragraph writing and class enrollment were statistically significant for the girls and for the group as a whole.

IX. AGE OF SCHOOL

Hypothesis 9 predicted a negative correlation between the age of the school building which the pupils attended and the pupils' scores on each of the two language measures. The age of the school was supplied by the teacher questionnaire. All the pupils in any one class received the same "score" on this item.

As was expected, and as shown in Table XXXVII, all the correlation coefficients between the ages of the school buildings and the pupils' achievement scores were negative. However, none reached statistical significance. None of the correlations between age of school and pupil I. Q. was significant. Accordingly, the correlations between age of school and language achievement with intelligence partialled out have not been reported.

X. SOCIOECONOMIC INPUTS VERSUS SCHOOL INPUTS

This section tests the major hypothesis of the study, namely that socioeconomic variables are more closely related to language achievement than are school variables.

TABLE XXXVII

CORRELATION COEFFICIENTS BETWEEN AGE OF SCHOOL AND PUPILS' LANGUAGE ACHIEVEMENT

Language Measure	Boys	Girls	Total
Spelling	-.02	-.10	-.04
Capitalization	-.03	-.15	-.08
Punctuation	-.05	-.10	-.06
Usage	-.02	-.07	-.03
Total Language	-.04	-.12	-.06
Paragraph Writing	-.09	-.09	-.07

Note: The r must be greater than .16 to be significant at the .05 level.

Three procedures were used to test this hypothesis. First, there was a comparison of the size of the correlation coefficients between socioeconomic variables and language achievement with the size of the correlation coefficients between school input variables and language achievement. Secondly, the comparison was made with intelligence partialled out. Finally, a multiple regression analysis was carried out to assess the effects on the multiple correlation coefficient of adding school inputs to socioeconomic inputs.

Correlation Coefficients

Considerable support for the major hypothesis comes from Table XXXVIII where the correlations between the socioeconomic inputs and both language skills and paragraph writing were in general noticeably higher and more often statistically significant than the correlations between school inputs and the same two language achievement measures.[2]

The two principal socioeconomic inputs (fathers' occupation and mothers' education) correlate with the two main measures of language achievement (total language and paragraph writing) at the .01 level for boys and girls separately and for both together. The number of siblings and the number of days absent correlate in three cases at the .05 level. Of all the school inputs, only four correlations are significant at the .05 level and one at the .001 level. Thus, there are fifteen out of twenty-four socioeconomic inputs significant at the .05 level or better, but only five out of eighteen school inputs are significant at the .05 level or better.

Table XXXVIII(A) reports the correlation coefficients between the socioeconomic variables and the various subtests of the Canadian Tests of Basic Skills,

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[2]The number of significant correlations in Table XXXVIII is influenced by the different patterns of inter-correlations for the socioeconomic input variables and the school input variables.

TABLE XXXVIII

COEFFICIENTS INDICATING THE CORRELATION OF SOCIOECONOMIC AND SCHOOL INPUT VARIABLES WITH LANGUAGE ACHIEVEMENT

Inputs	Language Skills			Paragraph Writing		
	Boys	Girls	Total	Boys	Girls	Total
Socioeconomic Inputs						
Fathers' Occupation	.30[2]	.31[2]	.30[2]	.25[2]	.27[2]	.25[2]
Mothers' Education	.28[2]	.30[2]	.28[2]	.27[2]	.23[1]	.24[2]
Number of Siblings	-.13	-.21[1]	-.17[1]	-.09	-.14	-.12
Days Absent	-.13	-.19[1]	-.13	-.16	-.12	-.12
School Inputs						
Teachers' Qualifications	.15	.20[1]	.17[1]	.01	.10	.04
Classroom Enrollments	.08	.21[1]	.13	.16	.36[3]	.23[1]
Age of School	-.04	-.12	-.06	-.09	-.10	-.07
Intelligence	.75[3]	.80[3]	.80[3]	.50[3]	.51[3]	.52[3]

Superscripts 3, 2, 1 indicate respectively statistical significance at the .001 level, the .01 level, and the .05 level.

TABLE XXXVIII (A)

COEFFICIENTS INDICATING THE CORRELATION OF SOCIOECONOMIC AND SCHOOL INPUT VARIABLES WITH LANGUAGE ACHIEVEMENT

	Language Battery Subtest											
	Spelling			Capitalization			Punctuation			Usage		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Socioeconomic Inputs												
FO.	.24[2]	.21[1]	.21[1]	.22[1]	.27[2]	.24[2]	.24[2]	.23[2]	.27[2]	.35[3]	.30[2]	.32[2]
MB.	.24[2]	.25[2]	.23[2]	.25[2]	.28[2]	.26[2]	.19[1]	.24[2]	.21[1]	.26[2]	.25[2]	.26[2]
NS.	-.09	-.15	-.12	-.11	-.22[1]	-.16	-.11	-.18[1]	-.18[1]	-.15	-.16	-.16
DA.	-.12	-.16	-.10	-.11	-.23[2]	-.14	-.13	-.18[1]	-.13	-.10	-.07	-.06
School Inputs												
TQ.	.08	.17[1]	.12	.13	.16	.14	.13	.22[1]	.17[1]	.15	.15	.15
CE.	.03	.16	.07	.10	.20[1]	.14	.06	.21[1]	.13	.08	.17[1]	.11
AS.	-.02	-.11	-.04	-.03	-.15	-.08	-.05	-.10	-.06	-.02	-.07	-.03
Intelligence												
IQ.	.62[3]	.62[3]	.65[3]	.62[3]	.70[3]	.68[3]	.59[3]	.71[3]	.68[3]	.68[3]	.74[3]	.73[3]

Superscripts 3, 2, and 1 indicate respectively statistical significance at the .001 level, the .01 level, and the .05 level.

and also between the school input variables and the same language measures. Fathers' occupation and mothers' education correlate with the results of each of the four subtests (Spelling, Capitalization, Punctuation, Usage) in all cases at the .05 level or the .01 level. The number of children and the days absent correlate negatively with the language subtests at the .05 level in five cases.

Twenty-eight out of forty-eight of the correlations between socioeconomic measures and the results on the language subtests were significant at the .05 level or .01 level. Six out of thirty-six of the correlations between school inputs and the results on the language subtests were significant at the .05 level. Thus, Tables XXXVIII and XXXVIII(A) show quite clearly that the socioeconomic variables are more often associated with language achievement than are the school input variables.

Correlation Coefficients with Intelligence Partialled Out

Table XXXIX reports the correlations between the socioeconomic inputs and the two principal language measures, and between the school inputs and the same measures, in each case with intelligence partialled out. With the exception of fathers' occupation for boys and classroom enrollment for girls and for total pupils, it is clear from the table that neither the socioeconomic variables nor the school input variables contribute to

TABLE XXXIX

COEFFICIENTS INDICATING THE CORRELATION OF SOCIOECONOMIC AND SCHOOL INPUT VARIABLES WITH LANGUAGE ACHIEVEMENT WITH INTELLIGENCE PARTIALLED OUT

Inputs	Language Skills			Paragraph Writing		
	Boys	Girls	Total	Boys	Girls	Total
Socioeconomic Inputs						
Fathers' Occupation	.18[1]	.12	.14	.15	.14	.12
Mothers' Education	.03	.10	.05	.12	.09	.09
Number of Siblings	-.03	-.08	-.06	-.02	-.05	-.03
Days Absent	-.05	-.11	-.04	-.11	-.05	-.06
School Inputs						
Teachers' Qualifications	.07	.14	.11	-.07	.03	-.03
Classroom Enrollment	.06	.09	.07	.15	.30[2]	.20[1]
Age of School	none significant			none significant		

Superscripts 2 and 1 indicate respectively statistical significance at the .01 and .05 levels.

language achievement when the effects of intelligence have been partialled out.

Multiple Regression Analysis

The next six sections will present the results of a multiple regression analysis. Consideration will be given to the following: boys and total language skills, girls and total language skills, both boys and girls and total language skills, boys and paragraph writing, girls and paragraph writing, and finally, both boys and girls and paragraph writing. An explanation of the results of each analysis is included in each section and a summary is provided at the end.

Language Skills: Boys. Table XL reports the multiple correlation coefficients for boys between total language achievement and the four socioeconomic factors and between total language achievement and the three school input factors. The multiple correlation coefficients are in the first column of the table and the beta coefficients make up the matrix.

The combination of all the variables in the model account for 58 per cent of the variance in the total language achievement of the Grade Six boys in the area studied.[3] While the combination, including I. Q., accounts

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[3] $R_m^2 = .76^2 = .58$

for 58 per cent of the variance, the socioeconomic factors account for 15 per cent and the addition of the three school input variables account for a further one per cent, so that both the socioeconomic and the school input variables together account for 16 per cent of the variance.

TABLE XL

DETERMINANTS OF LANGUAGE SKILLS ACHIEVEMENT FOR BOYS

	R_m[1]	FO	ME	DA	NS	CE	TQ	AS	IQ
FO	.30	.30							
+ME	.36	.24	.20						
+DA	.37	.23	.19	-.10					
+NS	.39	.22	.20	-.10	-.11				
+CE	.39	.22	.20	-.10	-.11	.03			
+TQ	.40	.21	.20	-.09	-.11	-.02	.12		
+AS	.40	.21	.20	-.09	-.11	-.02	.12	-.01	
+IQ	.76	.12	-.01	-.03	-.01	-.01	.03	.00	.71[2]

[1] R_m = Coefficient of multiple correlation.

[2] Note: I. Q. has been included in this and the following tables because of its noteworthy effects on the multiple R, but has been set off from the other factors because it is not part of its discussion.

From the point of view of this study, it is noteworthy that 15 per cent of the variance in total language achievement for boys is accounted for by socio-economic variables, but only one per cent is accounted for by the addition of the school input variables.

Language Skills: Girls. Table XLI reports the multiple correlation coefficients for girls between total language skills achievement and the four socioeconomic factors as well as between total language achievement and the three school input factors. The multiple correlation coefficients are in the first column of the table and the beta coefficients make up the matrix.

TABLE XLI

DETERMINANTS OF LANGUAGE SKILLS ACHIEVEMENT FOR GIRLS
(Beta Coefficients)

	R_m	FO	ME	CE	NS	DA	TQ	AS	IQ
FO	.31	.31							
+ ME	.38	.25	.22						
+ CE	.41	.24	.20	.15					
+ NS	.44	.23	.19	.14	-.17				
+ DA	.45	.23	.17	.14	-.16	-.11			
+ TQ	.47	.22	.16	.09	-.17	-.11	.12		
+ AS	.47	.22	.17	.07	-.16	-.11	.12	-.06	
+ IQ	.81	.06	.04	-.02	-.04	-.05	.08	-.09	.74

R_m = Coefficient of Multiple Correlation.

The combination of all the variables in the model account for 65 per cent of the variance in total language achievement for the Grade Six girls. The two principal socioeconomic variables, fathers' occupation and mothers' education, together account for 14 per cent of the variance. The addition of the best school input predictor, class enrollment, raises the proportion to 17 per cent of the variance. The addition of the next two socioeconomic variables, number of siblings and number of days absent, increases the multiple R to .45, so that it then accounts for 20 per cent of the variance. The further addition of the two remaining school input variables, teachers' qualifications and age of school, increases the multiple R to .47, so that it accounts for 22 per cent of the variance in language skills achievement for the girls.

The important thing to note in Table XLI is that the socioeconomic variables account for about 18 per cent of the variance while the school input factors account for about four per cent of the variance in total language skills achievement for girls in the area studied.

Language Skills: Total Pupils. Table XLII reports the multiple correlation coefficients for all the Grade Six pupils between total language skills achievement and the four socioeconomic factors as well as between language achievement and the three school input factors. The multiple correlation coefficients are in the first column

of the table and the beta coefficients make up the matrix.

TABLE XLII

DETERMINANTS OF LANGUAGE SKILLS ACHIEVEMENT FOR BOTH SEXES (Beta Coefficients)

	R_m	FO	ME	NS	DA	CE	AS	TQ	IQ
FO	.30	.30							
+ ME	.36	.23	.21						
+ NS	.39	.22	.21	-.15					
+ DA	.39	.22	.20	-.15	-.07				
+ CE	.40	.21	.19	-.14	-.07	.07			
+ AS	.40	.21	.19	-.14	-.07	.06	-.01		
+ TQ	.42	.20	.19	-.15	-.06	.01	-.02	.13	
+ IQ	.81	.07	.01	-.03	-.01	.00	-.04	.06	.76

R_m = Coefficient of multiple correlation.

The combination of all the variables in the model, including I. Q., account for 66 per cent of the variance in total language skills achievement of all the Grade Six pupils. The first four variables in the model are the socioeconomic ones. Together they account for 15 per cent of the variance (R_m = .39). The first two, fathers' occupation and mothers' education, account for 13 per cent. The number of siblings in the family explains the next two

per cent and the number of days absent adds nothing to the explanation.

The addition of the three school input variables brings the multiple R to .42 at which point it accounts for 18 per cent of the variance. Thus, as the table shows, the socioeconomic factors account for 15 per cent and the school input factors three per cent of the variance in total language skills achievement for all the Grade Six pupils in the study.

Paragraph Writing: Boys. Table XLIII reports the multiple correlation coefficients for boys between paragraph writing achievement and the four socioeconomic variables as well as between the paragraph criterion and the three school input variables. The multiple correlation coefficients are in the first column of the table and the beta coefficients make up the matrix.

The combination of all the variables in the model account for 30 per cent of the variance in paragraph writing achievement of the Grade Six boys.

The first three factors in the model are the socioeconomic variables of mothers' education, fathers' occupation, and number of days absent. Together they account for about 12 per cent (R_m = .35) of the variance. The addition of the two school input variables, classroom enrollment and age of school, raises the proportion to

TABLE XLIII

DETERMINANTS OF PARAGRAPH WRITING ACHIEVEMENT FOR BOYS
(Beta Coefficients)

	R_m	ME	FO	DA	CE	AS	NS	TQ	IQ
ME	.27	.27							
+FO	.32	.21	.19						
+DA	.35	.20	.17	-.13					
+CE	.36	.21	.15	-.13	.12				
+AS	.37	.21	.14	-.13	.11	-.04			
+NS	.37	.21	.14	-.13	.11	-.04	-.07		
+TQ	.38	.21	.14	-.13	.13	-.04	-.07	-.07	
+IQ	.55	.08	.08	-.09	.14	-.05	-.01	-.12	.44

R_m = coefficient of multiple correlation.

13.6 per cent (R_m = .37). Adding the remaining socioeconomic variable, number of siblings, does not change the multiple R. Adding teachers' qualifications brings the multiple R to .38, so that the combination of socioeconomic factors and school input factors in the model accounts for 14 per cent of the variance in paragraph writing achievement for the Grade Six boys. Of that 14 per cent, socioeconomic factors account for 12 per cent and school inputs for only two per cent. Again, the relative importance of socio-economic over school factors is clear.

Paragraph Writing: Girls. Table XLIV reports the multiple correlation coefficients for girls between paragraph writing achievement and the four socioeconomic variables as well as between the language criterion, paragraph writing, and the three school input variables. The multiple correlation coefficients are in the first column of the table and the beta coefficients make up the matrix.

TABLE XLIV

DETERMINANTS OF PARAGRAPH WRITING ACHIEVEMENT FOR GIRLS
(Beta Coefficients)

	R_m	CE	FO	ME	NS	DA	TQ	AS	IQ
CE	.36	.36							
+FO	.41	.33	.24						
+ME	.44	.31	.20	.11					
+NS	.45	.31	.20	.11	-.09				
+DA	.46	.29	.17	.22	-.09	-.04			
+TQ	.47	.32	.17	.22	-.08	-.04	-.07		
+AS	.46	.34	.20	.10	-.09	-.06	-.07	.03	
+IQ	.53	.29	.11	.03	-.02	-.02	-.09	.01	.41

R_m = Coefficient of multiple correlation.

The combination of all the variables in the model account for about 34 per cent of the variance in paragraph writing achievement for the Grade Six girls (R_m = .58).

The first factor in this model is the school input factor of class enrollment. This variable accounts for about 13 per cent of the variance (R_m = .36). To this factor is added one by one the socioeconomic variables, fathers' occupations, mothers' education, number of siblings, and days absent, thus increasing the multiple correlation to .46. The addition of teachers' qualifications increases the multiple R to .47, but the addition of age of school reduces it to .46.

Accordingly, of the 21 per cent of the variance accounted for by a combination of socioeconomic variables and school input variables, the socioeconomic variables account for about eight per cent and the school inputs account for 13 per cent.

For girls' paragraph writing achievement, the size of the school or class enrollment is a school input factor that appears to be associated with the size of scores made. The other school input variables appear to be relatively unimportant. The socioeconomic variables are definitely associated with achievement, accounting for eight per cent of it, but are outweighed in this particular case by the class size variable.

Paragraph Writing: Total Pupils. Table XLV reports the multiple correlation coefficients for all the pupils between paragraph writing achievement and the four socioeconomic variables as well as between the paragraph criterion and the three school input variables. The multiple correlation coefficients are in the first column of the table and the beta coefficients make up the matrix.

TABLE XLV

DETERMINANTS OF PARAGRAPH WRITING ACHIEVEMENT FOR BOTH SEXES
(Beta Coefficients)

	R_m	FO	ME	NS	DA	CE	AS	TQ	IQ
FO	.25	.25							
+ME	.30	.19	.17						
+NS	.35	.16	.16	.18					
+DA	.36	.16	.16	.18	-.09				
+CE	.37	.16	.15	.19	-.09	-.07			
+AS	.37	.16	.15	.18	-.09	-.07	.01		
+TQ	.37	.16	.15	.21	-.09	-.07	.01	-.07	
+IQ	.57	.08	.04	.21	-.01	-.04	.00	-.11	.47

R_m = Coefficient of multiple correlation.

The combination of all the variables in the model accounts for about 32 per cent of the variance in paragraph writing achievement for all the Grade Six pupils.

The first four variables are socioeconomic, fathers' occupations, mothers' education, number of siblings, and days absent. These together account for 13 per cent of the variance (R_m = .36). The addition of the three school input variables raises the multiple R. to .37, bringing the total to about 14 per cent of the variance.

As Table XLV shows, of the 14 per cent of the variance explained by a combination of socioeconomic variables and school input variables, the socioeconomic factors account for 13 per cent and the school input factors account for one per cent. Again, the socioeconomic factors appear as much more important than the school input factors.

Summary: Multiple Regression Analysis. Table XL showed that a combination of socioeconomic factors and school input factors explained 16 per cent of the boys' variance in total language skills achievement. Of that 16 per cent, socioeconomic factors accounted for 15 per cent and school input factors for one per cent.

Table XLI showed that a combination of socioeconomic factors and school input factors explained 22 per cent of the girls' variance in total language skills achievement.

Of that 22 per cent, socioeconomic factors accounted for 18 per cent and school input factors for four per cent.

Table XLII showed that a combination of socio-economic factors and school input factors explained 18 per cent of all the pupils' variance in total language skills achievement. Of that 18 per cent, socioeconomic factors accounted for 15 per cent and the school input factors for three per cent.

Table XLIII showed that a combination of socio-economic factors and school input factors explained 14 per cent of the boys' variance in paragraph writing achievement. Of that 14 per cent, socioeconomic factors accounted for 12 per cent and school input factors for two per cent.

Table XLIV showed that a combination of socio-economic factors and school input factors explained 21 per cent of the girls' variance in paragraph writing achievement. Of that 21 per cent, socioeconomic factors accounted for eight per cent and school input variables for 13 per cent. This particular case is the only one of the six in which school input variables contribute more than the socioeconomic variables in the explanation of pupil language achievement.

Table XLV showed that a combination of socioeconomic factors and school input factors explained 14 per cent of all the pupils' variance in paragraph writing achievement. Of that 14 per cent, socioeconomic

factors accounted for 13 per cent and school input factors for one per cent.

From the above it can readily be seen that in the area studied and for that particular population, the socioeconomic factors of the pupils' environments are in general more closely associated with language achievement than are the school input variables.

XI. SUMMARY OF CHAPTER V

To test the hypotheses in this chapter, each pupil was given two tests of English language achievement. The objective part was the Canadian Tests of Basic Skills, Language Battery, which consisted of four subtests: spelling, capitalization, punctuation, and usage. The total language score was the sum of the scores on these four measures. The subjective part required the pupils to write a paragraph on the topic "What I Like Best". Both types of tests were required so that both the mechanics and the more imaginative aspects of language achievement could be tested and compared with the other factors chosen for study.

After correlations had been computed and tabulated, decisions were made as to the acceptance or rejection of each of the hypotheses. Only correlation coefficients greater than .16, or those significant at the .05 level or higher, were accepted.

The first hypothesis which stated that there would be a difference in language achievement on the basis of pupil sex was accepted. Girls were found to score generally higher than boys on all measures of language achievement used.

The second hypothesis predicted that there would be a difference in language achievement on the basis of pupil I. Q. This hypothesis was accepted in full. There appears to be a significant association between pupil language achievement and pupil verbal intelligence. High verbal intelligence was found to be positively associated with high scores on all the measures of language achievement. Because of the high association between language achievement and intelligence, subsequent hypotheses were tested with I. Q. included and with I. Q. partialled out. Also, because of the difference in achievement on the basis of sex, the hypotheses were tested separately for boys and girls and for both together.

The third hypothesis predicted a positive association between language achievement and the occupational status of the fathers. The hypothesis was accepted on the basis of the raw correlations, but the statistical significance of the association disappeared almost completely when the effects of I. Q. were partialled out.

The fourth hypothesis predicted a positive association between language achievement and the formal education of the mothers. This hypothesis was also accepted on the basis of the raw correlations, but the statistical significance disappeared when the effects of I. Q. were partialled out.

The fifth hypothesis predicted a negative association between language achievement and family size. This hypothesis was largely rejected on the basis of the raw correlations, and all association disappeared when the effects of I. Q. were removed.

The sixth hypothesis predicted a negative association between the number of days lost from school and language achievement. Like number five hypothesis, this one was largely rejected on the basis of the raw correlations and completely when the effects of I. Q. were removed.

The seventh hypothesis predicted a positive association between language achievement and teachers' qualifications. This, too, was largely rejected on the basis of the raw correlations and was refuted when the effects of I. Q. were partialled out.

The eighth hypothesis predicted a positive association between the size of the class and language achievement. This was found to be true for the girls of the study but not for the boys. However, when the effects of I. Q. were

partialled out, the hypothesis was rejected completely for the boys and for the girls as far as total language skills achievement. For the girls and for the whole group, the hypothesis that there is a positive association between paragraph writing skills and class enrollment is accepted.

The ninth hypothesis predicted a negative association between the age of the school building and language achievement. This was rejected on the basis of the raw correlations.

The tenth hypothesis was the major one of the study. This hypothesis predicted that the socioeconomic variables would be more closely associated with language achievement than the school input variables would. This hypothesis was tested in three ways. First, a table of the various correlation coefficients was constructed. The correlations between the socioeconomic factors and language achievement were compared for size with the correlations between the school input factors and language achievement. It was found that the correlations between the socioeconomic variables and language achievement were usually larger and more often statistically significant than the correlations between school input variables and language achievement.

Second, in testing Hypothesis 10, a table of the various correlation coefficients with the effects of I. Q.

partialled out was constructed. With the exception of fathers' occupations for boys and classroom enrollment for girls and for total pupils, it was clear that neither the socioeconomic variables nor the school input variables contributed to language achievement when the effects of intelligence had been partialled out.

Third, a regression analysis was made for total language skills achievement for boys, for girls, and for both together. A similar analysis was made for paragraph writing achievement for boys, for girls, and for both together. This detailed analysis consistently showed that more of the variance in language achievement could be explained by socioeconomic factors -- principally, fathers' occupations and mothers' education -- than by school input variables.

CHAPTER VI

SUMMARY, FINDINGS, CONCLUSION, AND RECOMMENDATIONS

This chapter presents a summary of the problem studied and its relevance to the system of education in Newfoundland. Following the summary and findings, the conclusions of the research are stated, and the chapter concludes with a statement of the recommendations resulting from this project.

I. SUMMARY

The ability to use language well is a definite asset to any person. Children from lower social classes are at a disadvantage in acquiring facility in language. The speech patterns of the home and the use made of language by the immediate members of a child's family affect his development in the use and mastery of the language.

This project was prompted by a recognition of the importance of language in determining a child's success or failure in the school and social system in which we live. Previous studies have revealed a high association between language achievement and socioeconomic factors. A major

reason for this study was to discover if the same factors were operative in a selected rural area of Newfoundland, and to make whatever recommendations might be justified by the results of the study.

All the Grade Six students of Trinity North and Trinity South were selected to be the population of the study. Since success or failure in the elementary schools usually determines the extent of high school and post-high school education, the factors which affect success in the elementary schools were regarded as important and worthy of study. The highest grade in some elementary schools is Grade Six.

With the kind permission of the various Superintendents of Education, the three researchers first examined the relevant records at the Department of Education in St. John's. The school boards were contacted and with their permission the researchers contacted the principals of the schools to set up a testing schedule. The resulting schedule, which involved about five hours of testing for each pupil, was then followed.

This study was limited to a consideration of written pupil language achievement and to four socioeconomic variables and three school variables which were believed to be associated with language achievement. The four main sources of data for the study were (i) two measures of

language achievement (the Language Battery, Canadian Tests of Basic Skills and a paragraph writing test), (ii) the Lorge-Thorndike Verbal Intelligence Tests, (iii) a home questionnaire, and (iv) a teacher questionnaire. The language achievement and the verbal intelligence tests were given to the pupils in the various schools. The questionnaire to the homes was sent to the parents via the pupils after the latter had written the first half of the testing programme. The questionnaire to the teacher was given to her during the first half of the pupil testing programme and usually collected at the end of the second session. The home questionnaire was usually returned by the pupils by the beginning of the second session.

Fullest cooperation was received for the project from the various Superintendents of Education, the school boards, the principals, the teachers, the parents and the pupils concerned. In all, the three researchers spent three weeks in the area gathering the raw data used in this and the two companion studies.

II. FINDINGS

In testing of Hypothesis 1 it was found that girls scored more highly than boys on each of the language measures.

In testing of Hypothesis 2 it was found that language achievement and performance on the verbal

intelligence test were, as expected, closely and positively associated.

The testing of Hypothesis 3 revealed a statistically significant association between fathers' occupations and pupil language achievement as long as intelligence was left in the model, but with intelligence partialled out the correlation coefficients, except for boys with total language scores, were no longer statistically significant.

The testing of Hypothesis 4 revealed that mothers' education and pupils' language achievement correlated significantly, as long as pupil intelligence was left in the model. With intelligence partialled out the coefficients were no longer significant. Relatively high associations were found between pupil intelligence and both fathers' occupations and mothers' education.

The testing of Hypothesis 5 revealed that for girls and the total pupils size of family was negatively associated with language achievement, but for boys the relationships were not statistically significent. With intelligence partialled out the coefficients were no longer significant.

The testing of Hypothesis 6 revealed that losing time from school was negatively associated with total language scores for girls, but for boys the relationship was not statistically significant. With intelligence

partialled out the coefficients were no longer significant.

The testing of Hypothesis 7 revealed a positive association between teachers' qualifications and total language scores for the girls and for total pupils, but for boys the relationship was not statistically significant. With intelligence partialled out the coefficients were no longer significant.

The testing of Hypothesis 8 revealed that for girls the class size was associated with achievement in language both for total language scores, including three of the four sub-tests, and for paragraph writing. For boys no relationships were statistically significant. With intelligence partialled out the association between class size and paragraph writing remained statistically significant for the girls.[1]

Hypothesis 9 revealed that the age of the school building was not associated with pupils' performance in language.

Three different processes were used to test the major hypothesis that socioeconomic factors were more closely associated with pupil achievement in language than were school input factors. The net result was the

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[1]This greater sensitivity of their language scores to variations in the number of children per family, class size, teacher's qualifications and absenteeism suggests that for Grade Six girls language achievement has more saliency and meaning than for Grade Six boys.

conclusion that the hypothesis should be accepted.

The overall finding of the study, then, is that the socioeconomic factors were more closely associated with pupil achievement in language than the school input factors considered in this study.

III. CONCLUSIONS

One support for the importance of language achievement can be concluded from this study in that language achievement is closely associated with measured verbal intelligence. In commenting on the cultural bias in intelligence tests, some writers have claimed that I. Q. tests are really language mastery tests, and they have found that low achievers on I. Q. tests can raise their scores significantly when their language problems are partially overcome.

The major hypothesis of the study demonstrated that language achievement is more closely associated with certain socioeconomic factors of the pupil's environment than with certain school input factors. This leads to the conclusion that educational achievement, particularly in written language, cannot be considered in isolation from the prevailing social and economic conditions. Of the four socioeconomic factors considered, fathers' occupations and mothers' education emerged as the most closely

associated with pupil language achievement and with pupil intelligence. Teachers' qualifications and size of school were relatively less important than fathers' occupation and mothers' education as far as their association with pupil language achievement was concerned.

It is this researcher's opinion that with a more discriminating scale for fathers' occupation, the correlation between pupil achievement and that variable would have been even higher. As it was, the association was high. From the fact that over 75 per cent of the fathers were in occupational classes six or seven, the two lowest on the scale, one must conclude that the association is worthy of consideration with a view to improving the occupational opportunities available in the area.

A second socioeconomic factor closely associated with pupil achievement also points up an area of concern. A mother's education is closely associated with the educational success of her children, yet over 50 per cent of the mothers in the study had a Grade Seven education or less. The obvious conclusion is that some program for improving adult education must be implemented in the area.

In general, school personnel and school boards concentrate their efforts and resources on school input factors. Better buildings, more qualified teachers, and more teaching aids, are always easy for school people to

justify. Recognition that socioeconomic factors are more closely associated with pupil achievement than school input factors as they are at present, must make school people aware that the same type of teaching and program are not suitable for all pupils regardless of their home background. This study in no way denies the great importance of the schools and their contribution to education of the pupils, it simply emphasizes what every good teacher already knows--that pupils from different home circumstances behave differently and need different kinds of stimulation if the school is to succeed.

An understanding of the relationship between socioeconomic factors and success in school is necessary in order to make school authorities utilize the available resources so that the maximum benefit is realized.

IV. RECOMMENDATIONS

The findings of the present study suggest that careful consideration be given to the following courses of action.

1. The low scores on all the tests as reported in Chapter IV suggest the need for a crash language program by the agencies concerned. Schools could concentrate on worthwhile language activities; school boards could

provide more facilities and personnel.

2. Some program of adult education and re-training should be provided for the area. Consideration should be given to the establishment at Clarenville, a central location in the area studied, of an adult school, similar to those established at Stephenville, Bell Island, Carbonear and Happy Valley.
3. The high schools might be utilized as they are in Nova Scotia for adult retraining centres.
4. More encouragement should be given for the adult education program already in effect in Newfoundland. The adult program allows adults to attend government sponsored classes about two nights a week to earn higher formal diplomas or to improve their basic skills.
5. A diversified curriculum must be provided to meet the needs of pupils from various socio-economic backgrounds. This can be done by introducing several programmes of study for grades as low as Seven. For example, the Province of Nova Scotia has a Grade Seven through Eleven adjusted program for those

students who require more time than the majority of students to do a normal year's work. In addition to the adjusted program for the slow achievers, there should be an alternative to the academic program for those students who know they want to eventually go to vocational or technological schools rather than university, even when they have the ability to succeed in the latter.

6. Teachers must be aware of the differences associated with varying home backgrounds and they must vary their teaching and expectations accordingly. This can be done through more studies of this type, changes in the courses of instruction for teachers at Memorial University, teacher workshops, and more emphasis on the problem by leading educational agencies.
7. The low level of the fathers' occupations in general suggests that one way to improve educational productivity is by improving occupational opportunities in the area studied. The question of improving the whole economic situation in the area should become a major concern of the government and the

governmental agencies involved.

Several recommendations for further research also emerge:

1. A more discriminating scale of fathers' occupations should be devised for use in Newfoundland for any further studies of this type. Several inadequacies of the present scale were pointed out in the text.
2. The connection between a mother's education and her attitude towards education for her children should be investigated in the Newfoundland context.
3. The larger question of the association between parental attitude towards education and the pupil's achievement should be studied in view of the fact that while there is a definite association between socio-economic status and pupil achievement, the association is relatively low and factors not considered in the present study are also affecting achievement. Intuition suggests that the unknown quantity might in part be parental attitude.
4. Newfoundland norms should be established for any test used to compare pupils in one part

of the province with those of another. National norms for tests such as intelligence tests may not be appropriate for Newfoundland children because of their cultural uniqueness; however, both types of comparisons, within and outside Newfoundland, are necessary.

5. Since the time of this study in the spring of 1968, a great deal of educational reorganization has been undertaken in the geographical area. Accordingly, a similar study could profitably be done in a few years' time to see if the balance between socioeconomic and school variables has changed.
6. The study could be repeated with a random sample of students from all over Newfoundland, or from any defined area.
7. The study could be repeated with a higher grade using the Public Examination results as the achievement criteria and questionnaires mailed to the homes and to the schools.
8. The contribution of each of the socioeconomic variables to measured pupil intelligence should be worthy of investigation in view of the fairly large correlations obtained in this research.

Two further suggestions can be made. First, progressive parents will find objective evidence in the present study justifying current efforts to create optimum conditions in the home, looking toward the greater success of their children in the work of the school. Second, educators will find grounds for both encouragement and caution. The value of the association between socioeconomic factors and language achievement, while significant, is relatively low. It is apparent, first, that while a certain pupil has rated low in socio-economic status, his school achievement may have been satisfactory. Evidently, the school facilities have partially made up the deficiency. This is the educator's opportunity. It is further apparent that while a certain pupil has rated high in the socioeconomic area, his achievement may have been mediocre or low. In this case the educator may have failed to harness the possibilities for learning which are implied in the good home situation. This suggests the educator's need for caution.[2]

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[2]Marlin R. Chauncey, loc. cit.

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APPENDIX A

LETTERS TO THE SUPERINTENDENTS OF EDUCATION AND TO THE DIRECTOR OF AMALGAMATED SCHOOLS

APPENDIX A

P.O. Box 81
Education Building
Memorial University
St. John's, Nfld.
March 5, 1968

Mr. (Name of Superintendent)
Superintendent of Education
Department of Education
Confederation Building
St. John's, Nfld.

Dear Sir:

The three undersigned graduate students in Educational Administration at Memorial University are contemplating conducting, under the auspices of the Faculty of Education of the University, a study involving all the Grade Six students in all the schools in the electoral districts of Trinity North and Trinity South in the Province of Newfoundland.

We are, therefore, asking your permission to allow us to contact the school boards, principals, and teachers involved. We wish to contact them for permission to enter the schools on a pre-arranged date to administer the required examinations. If the necessary permissions are given we shall be giving examinations in reading, arithmetic, and language, as measures of school achievement. In addition we shall administer both a verbal and a non-verbal I. Q. test, and collect data on class size and teacher qualifications.

Please accept our thanks in advance for any help and cooperation you can give us.

Yours truly,

R. Noel

H. Pollard

J. S. Ralph

APPENDIX B

REPLIES FROM THE SUPERINTENDENTS OF EDUCATION

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

DEPARTMENT OF EDUCATION

March 7, 1968 ST. JOHN'S

Mr. R. Noel
P.O. Box 57
Education Building
Memorial University
St. John's, Nfld.

Dear Sir:

This is in reply to your letter of March 5 regarding the research project you propose to carry out in the schools of Trinity North and Trinity South. Rest assured of my fullest co-operation.

With every good personal with,

I remain,
Sincerely yours,

F. R. KENNEDY,
SUPERINTENDENT OF EDUCATION.

FRK-cm

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

DEPARTMENT OF EDUCATION

ST. JOHN'S

March 8, 1968

Mr. J. S. Ralph,
P. O. Box 81,
Education Building,
Memorial University,
St. John's, Nfld.

Dear Mr. Ralph:

In reply to your letter of March 5, I wish to inform you that I would have no objection to your contacting the school boards of your choice for the purpose of conducting studies in connection with your Master's program. If you require any kind of specific letter I would be happy to provide it to you, if this letter is not suitable for your purposes.

John Aeroman,
Superintendent of Education,
(United Church)

JA/hmb

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

DEPARTMENT OF EDUCATION

ST. JOHN'S

March 8, 1968

Mr. R. Noel, Mr. Pollard, and Mr. Ralph,
P. O. Box 81,
Education Building,
Memorial University,
St. John's, Nfld.

Dear Mr. Noel, Mr. Pollard, and Mr. Ralph:

You hereby have my blessing to contact our School Boards and principals in Trinity North and Trinity South. I am also enclosing a memorandum which you might find useful, in case some School Board or principal is reluctant to cooperate.

Yours truly,

C. Roebothan,
Superintendent of Education,
(Anglican)

CR/hnb
Encl.

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

DEPARTMENT OF EDUCATION

ST. JOHN'S

March 8, 1968

Memorandum to:
Anglican School Boards and Principals
in Trinity North and Trinity South:

Mr. R. Noel, Mr. H. Pollard, and Mr. J. S. Ralph, three graduate students in Educational Administration at Memorial University, are undertaking a study involving the Grade VI students in all of the schools in Trinity North and Trinity South.

I have given my support to their project, and I am hereby suggesting that our Anglican School Boards and principals cooperate with these gentlemen in every way possible. Their study is an integral part of their Master's program at the University, but the results of it should contain data and information which will be important to all of us.

Thank you for your anticipated cooperation.

Yours truly

Cecil Roebothan,
Superintendent of Education,
(Anglican)

CR/hnb

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

DEPARTMENT OF EDUCATION

ST. JOHN'S

March 15, 1968.

Messrs. Noel, Pollard, Ralph,
P. O. Box 81,
Education Building,
Memorial University,
St. John's, Nfld.

Dear Sirs:

In reply to your letter of March 5th, I may say that I am happy to grant permission to you to contact the School Boards, Principals and teachers involved in the districts mentioned in your letter. I understand that this is necessary so that you can complete graduate work in (the) educational research.

Yours sincerely,

W.C. WOODLAND,
Superintendent of Education, S.A.

WCW/ms

APPENDIX C

LETTERS TO SCHOOL BOARD CHAIRMEN

MEMORIAL UNIVERSITY OF NEWFOUNDLAND
St. John's, Newfoundland, Canada

P. O. Box 81
Education Building
Memorial University of Newfoundland
March 26, 1968

Mr. (Name of Chairman)
Chairman
(Name of School Board)
(Name of Community)
Newfoundland

Dear Sir:

In cooperation with our faculty advisor, Dr. H.W. Kitchen, we, a group of three graduate students in Educational Administration at Memorial University of Newfoundland, are intending to collect information having to do with achievement and other factors related to all Grade 6 students of Trinity North and Trinity South. The purpose of the proposed study is to discover relationships between achievement in Grade 6 and certain selected social and environmental factors.

To gather the necessary information for the study we hope to be working in each of your schools which have Grade 6 students for approximately one day. Soon we plan to contact the principals of the schools involved to arrange a visitation and examination schedule. We have already received approval for this project from your superintendent at the Department of Education.

If you have any questions concerning the proposed study, or reservations about our contacting your principals, Grade 6 teachers, and students, we would certainly appreciate hearing from you.

Sincerely yours,

[illegible]

[illegible]
W. A. Pollard

[illegible]
J.S. Ralph

APPENDIX D

LETTER TO PARENTS AND PUPIL QUESTIONNAIRE

MEMORIAL UNIVERSITY OF NEWFOUNDLAND
St. John's, Newfoundland, Canada

P. O. Box 8I
Arts and Education Building
Memorial University of Nfld.
St. John's, Newfoundland

Dear Parent or Guardian:

As part of the requirements for our M. Ed. programs in Educational Administration we are conducting studies in the fields of reading, language, and arithmetic among the Grade Six pupils in Trinity North and Trinity South.

Your co-operation in completing this pupil questionnaire and returning it to your child's teacher will be greatly appreciated.

PUPIL QUESTIONNAIRE

1. TO THE MOTHER (OR GUARDIAN): How many years of schooling do you have? Circle the number showing the highest grade completed.
   1 2 3 4 5 6 7 8 9 10 11 12

   University or Trade school, or other training beyond High school 1 2 3 4 5 6 7 8 years.

2. TO THE FATHER (OR GUARDIAN): What do you usually do for a living? For example: brakeman with the C.N.R., a fisherman, a captain, drives a taxi, teaches school, salesman for a life insurance company, etc. Give as many details as you can. _____

   _____

3. How many children do you now have who are 15 years of age or under and living at home? _____

Pupil's Name _____

APPENDIX E

EIGHTEEN POINT SCALE FOR CLASSIFICATION OF MOTHERS' EDUCATION

SCALE FOR CLASSIFICATION OF MOTHERS' EDUCATION

Formal Education	Points
No formal education	0
Grade I	1
Grade II	2
Grade III	3
Grade IV	4
Grade V	5
Grade VI	6
Grade VII	7
Grade VIII	8
Grade IX	9
Grade X or Grade IX and one year of Vocational School	10
Grade XI or Grade IX and two years vocational or technical school; or Grade X and one year vocational	11
Grade XI and one year university, or two summer schools at university, or one year vocational or technical school, or Grade Twelve	12
Grade XI and two years of university, vocational, or technical school, or equivalent	13
Grade XI and three years university, vocational, or technical school, or equivalent	14
Grade XI and four years university, vocational, or technical school, or equivalent	15
Grade XI and five years of higher education	16
Grade XI and six years of higher education	17
Grade XI and seven years of higher education	18

APPENDIX F

BLISHEN SCALE FOR CLASSIFICATION OF FATHERS' OCCUPATIONS

APPENDIX

Table 1—Occupations Ranked and Grouped According to Combined Standard Scores for Income and Years of Schooling, by Sex, Canada, 1951 [a]

Occupation	Sex	Score [b]
Class 1		
Judges	M	90.0
Dentists	M	82.5
Physicians and surgeons	M	81.2
Lawyers	M	78.8
Engineers, chemical	M	77.8
Actuaries	M	77.6
Engineers, mining	M	77.4
Engineers, electrical	M	75.2
Engineers, civil	M	75.0
Architects	M	73.2
Class 2		
Statisticians	F	72.9
Engineers, mechanical	M	72.6
Professors	M	72.0
Stock and bond brokers	M	70.9
Veterinarians	M	69.8
Business service officers	M	69.5
Statisticians	M	68.8
Mining managers	M	67.9
Finance managers	M	67.7
Osteopaths and chiropractors	M	67.3
Dietitians	F	67.0
Professors	F	66.7
Chemists and metallurgists	M	65.8
Officers, armed forces	M	65.1
Air pilots	M	65.0
Chemists and metallurgists	F	64.8
Agricultural professionals	M	64.8
Electricity, gas, and water officials	M	64.7
Other professions	M	64.0
Construction managers	M	63.8
Wholesale trade managers	M	63.5
Librarians	F	63.4
Authors, editors, and journalists	M	63.4
Manufacturing managers	M	63.0
Community radio workers	M	62.4
Social welfare workers	F	62.2
Other, fire and disposal	F	62.2
School [illegible]	M	62.2
[illegible]	M	62.0
Accountants and auditors	M	61.8
Authors, editors, and journalists	F	61.4
Clergymen	M	61.0
Designers, clothing	M	60.6
Gov't. service officials	M	60.6
Transportation managers	M	60.1
Farmers	F	59.4
Communic[illegible] service workers	F	59.1
Dispatch[illegible] train	M	58.5
Designers, cloth	F	58.2
Insurance agents	M	58.2
Foremen, communication	M	58.1
Advertising agents	M	58.0
Managers N.E.S.[c]	M	57.7
School teachers	F	57.6
Artists and teachers of art	M	57.6
Nurses, graduate	F	57.4
Real estate agents and dealers	M	57.0
Social welfare workers	M	57.0
Retail trade managers	M	57.0
Class 3		
Actors	F	56.9
Commercial travellers	M	56.7
Advertising agents	F	56.6
Forestry managers	M	56.5
Artists, commercial	F	56.4
Radio announcers	M	56.4
Laboratory technicians N.E.S.[c]	F	56.0
Artists, commercial	M	56.0
Draughtsmen	M	55.0
Brokers, agents, and appraisers	M	55.0
Inspectors, communication	M	55.0
Artists and teachers of art	F	55.0
Surveyors	M	55.0
Recreation service officers	M	54.8
Purchasing agents	M	54.6
Agents, ticket station	M	54.3
Laboratory technicians N.E.S.[c]	M	54.2
Stenographers and typists	F	54.1
Conductors, railway	M	54.1
Radio operators	M	54.0
Locomotive engineers	M	54.0
Photographers	M	54.0

(continued)

Table 1—(Continued)

Occupation	Sex	Score [b]
Class 3 (continued)		
Music teachers	M	53.7
Teachers N.E.S.[c]	F	53.6
Office appliance operators	F	53.4
Teachers N.E.S.[c]	M	53.4
Retail trade managers	F	53.3
Telegraph operators	F	52.9
Foremen, mining	M	52.8
Window-decorators	F	52.3
Nurses, graduate	M	52.2
Actors	M	52.1
Stenographers	M	52.0
Class 4		
Book-keepers and cashiers	F	51.6
Forewoman, communication	F	51.5
Foremen, manufacturing	M	51.5
Photographers	M	51.5
Inspectors, construction	M	51.5
Window-decorators	M	51.4
Telegraph operators	M	51.4
Petroleum refiners	M	51.4
Toolmakers	M	51.4
Engravers, except photo-engravers	M	51.4
Undertakers	M	51.3
Office clerks	F	51.2
Locomotive firemen	M	51.2
Book-keepers and cashiers	M	51.2
Brakemen, railway	M	51.1
Power station operators	M	51.0
Office appliance operators	M	51.0
Doctor, dentist attendants	F	50.6
Motion picture projectionists	M	50.0
Radio repairmen	M	50.0
Captains, mates, pilots	M	50.7
Foremen, transportation	M	50.7
Foremen, commercial	M	50.6
Personal service officers	M	50.5
Class 5		
Patternmakers	M	50.4
Compositors	M	50.4
Inspectors, metal	M	50.4
Paper-makers	M	50.4
Photographers	F	50.2
Policemen	M	50.2
Office clerks	M	50.2
Mechanics, airplane	M	50.1
Inspectors, metal products	F	50.0
Music teachers	F	50.0
Firemen, fire department	M	49.8
Foremen and plate printers	M	49.8
Telephone operators	F	49.6
Electricians	M	49.6
Machinists, metal	M	49.6
Linemen and repairmen	M	49.4
Engineering officers (on ships)	M	49.4
Baggagemen	M	49.4
Transportation inspectors	M	49.4
Rolling mill men	M	49.4
Auctioneers	M	49.3
Inspectors and graders	M	49.2
Farmers	M	49.2
Photographic occupations N.E.S.[c]	M	49.2
Collectors	M	49.1
Dental mechanics	M	49.1
Sulphite cookers	M	49.0
Wire drawers	M	48.9
Other ranks, armed forces	M	48.8
Electroplaters	M	48.8
Plumbers	M	48.8
Motormen	M	48.7
Quarriers	M	48.6
Machine operators, metal	M	48.5
Paint makers	M	48.4
Filers	M	48.4
Upholsterers	M	48.3
Knitters	M	48.3
Wood inspectors	M	48.3
Barbers	F	48.2
Milliners	F	48.2
Tobacco products workers	F	48.2
Furnacemen	M	48.2
Ferriers	M	48.2
Brothers	M	48.1
Paper box-makers	M	48.1
Other bookbinding workers N.E.S.[c]	F	48.0
Coremakers	M	48.0
Vulcanizers	M	48.0
Liquor and beverage workers	M	48.0
Postmen	M	48.7
Meat cutters	F	48.9
Other upholstering workers N.E.S.[c]	F	48.8
Bookbinders	F	48.8
Transportation, storage, communication workers	F	48.6
Polishers, metal	M	48.6

(continued)

Table 1—(Continued)

Occupation	Sex	Score[b]
Class 5 (continued)		
Furriers	?	45.6
Structural iron workers	M	45.6
Mechanics, motor	M	45.6
Textile inspectors	M	45.6
Cabinet and furniture makers	M	45.5
Loom fixers	M	45.5
Weavers, textile	F	45.4
Butchers	M	45.4
Millers	M	45.4
Assemblers, electrical equipment	F	45.9
Operators, electric street railway	M	40.8
Stationary engineers	M	40.7
Bookbinders	M	40.6
Tire and tube builders	F	40.4
Conveyors	M	40.2
Telephone operators	M	40.2
Switchmen and signalmen	M	40.2
Opticians	M	40.2
Jewellers and watchmakers	M	40.2
Personal service workers	F	45.1
Assemblers, electrical equipment	M	40.1
Tire and tube builders	M	40.1
Millwrights	M	40.0
Religious workers N.E.S.c	M	40.0
Fitters, metal	F	47.9
Milliners	M	47.8
Construction foreman	M	47.7
Opticians	F	47.6
Bus drivers	M	47.6
Heat treaters	M	47.6
Religious workers N.E.S.c	F	47.5
Photographic workers N.E.S.c	F	47.4
Machine operators, metal	F	47.4
Boilermakers	M	47.3
Jewellers and watchmakers	F	47.2
Other bookbinding workers N.E.S.c	M	47.2
Soles clerks	M	47.2
Hoistmen, crossman	M	47.2
Welders	M	47.2
Mechanics N.E.S.c	M	47.2
Mechanics, railroad	M	47.2
Fitters, metal	M	47.2
Cutters, textile goods	M	47.2
Milliners	M	47.2
Wire drawers	F	47.1
Core makers	I	47.1
Riggers	M	47.1
Sheetmetal workers	M	47.1
Shipping clerks	M	47.0
Logging foremen	M	45.4
Labellers	M	45.3
Nurses, in training	F	45.2
Meat cutters	M	45.2
Farm managers	M	45.2
Plasterers	M	45.2
Textile inspectors	M	45.1
Other pulp and paper workers	F	45.1
Class 6		
Winders and warpers	F	45.0
Carders and drawing frame workers	F	45.0
Soles clerks	F	45.0
Moulders, metal	M	45.0
Nurses, practical	M	45.0
Cutters, textile goods	F	44.9
Elevator tenders	F	44.8
Tailoresses	F	44.8
Textile inspectors	F	44.8
Potmen	M	44.8
Timbermen	M	44.7
Prospectors	M	44.7
Oilers, power plant	M	44.7
Liquor and beverage workers	F	44.6
Paper box makers	F	44.6
Kiln burners	M	44.6
Brick and stone masons	M	44.6
Construction machine operators	M	44.5
Conveyors	F	44.4
Service station attendants	M	44.4
Painters and decorators	M	44.4
Hat and cap makers	M	44.4
Bleachers and dyers	M	44.4
Spinners and twisters	F	44.3
Rubber shoe makers	F	44.2
Porters	M	44.2
Tobacco products workers	M	44.2
Millers	M	44.2
Nurses, practical	F	44.1
Finishers, textile	F	44.0
Blacksmiths	M	44.0
Tailors	M	44.0
Bakers	M	43.8
Weavers	M	43.8
Rubber shoe makers	M	43.8
Labellers	F	43.7
Other personal service workers	I	43.6
Barbers	M	43.6

(continued)

Table 1—(Continued)

Occupation	Sex	Score[b]
Class 6 (continued)		
Truck drivers	M	43.6
Packers and wrappers	M	43.6
Finishers, wood	M	43.6
Finishers, textile	M	43.6
Tanners	M	43.6
Hat and cap makers	F	43.5
Cutters, leather	M	43.5
Commercial packers and wrappers	F	43.4
Teamsters	M	43.4
Stone cutters	M	43.4
Riveters and rivet heaters	M	43.4
Butter and cheese makers	M	43.3
Chauffeurs	M	43.3
Boiler firemen	M	43.3
Spinners	M	43.3
Inspectors N.E.S., graders c	F	43.2
Postmen	F	43.2
Waiters	M	43.2
Carpenters	M	43.2
Sewers and sewing machine operators	M	43.2
Forest rangers	M	43.2
Lock keepers, canalmen	M	43.1
Wood turners	M	43.1
Labourers, mines and quarries	M	43.1
Sewers and sewing machine operators	F	43.0
Brick and stone masons	M	43.0
Textile inspectors	F	42.8
Machine operators, boot and shoe	F	42.8
Knitters	F	42.8
Guards	M	42.8
Winders, warpers, reelers	M	42.8
Glove makers	M	42.7
Cutters, leather	F	42.6
Elevator tenders	M	42.5
Bakers	F	42.4
Machine operators, boot and shoe	M	42.4
Launderers	M	42.4
Firemen, on ships	M	42.4
Cement and concrete finishers	M	42.4
Dressmakers and seamstresses	F	42.3
Carders and drawing frame tenders	M	42.3
Box and basket makers	F	42.2
Coopers	M	42.2
Sailors	M	42.1
Harness and saddle workers	M	42.0
Nuns	F	41.8
Class 7		
Cooks	M	41.8
Janitors	M	41.6
Laundresses, cleaners, and dyers	F	41.4
Sectionmen and trackmen	M	41.4
Charworkers and cleaners	M	41.3
Paper box, bag, and envelope makers	M	41.3
Sawyers	M	41.2
Longshoremen	M	41.2
Waitresses	F	41.2
Glove workers	F	41.2
Labourers	M	40.9
Cooks	F	40.5
Messengers	M	40.5
Shoemakers	M	40.2
Ushers	M	40.1
Janitors	F	40.0
Hawkers	M	39.9
Housekeepers and matrons	F	39.9
Hotel cafe and household workers	M	39.8
Newsboys	M	39.7
Guides	M	37.8
Hotel cafe and household workers	F	37.8
Farm labourers	M	37.5
Lumbermen	M	37.4
Charworkers and cleaners	F	37.4
Fishermen	M	37.0
Deckhands	M	36.8
Fish canners, curers and packers	M	36.2
Fish canners, curers and packers	F	36.0
Hunters and trappers	M	35.8

a. Canada, Dominion Bureau of Statistics, Census of Canada, 1951, V, Table 21, and 1/, Table 11 (Ottawa, 1953); Canada, Dept. of Internal Revenue, Taxation Statistics, 1951 (Ottawa, 1953). Additional information supplied by U.S., Census Analysis Section.

b. The range of the scores is 50 for standard deviation is 10 (calculated separately for each sex).

c. N.E.S. = not elsewhere specified.

APPENDIX G

TEACHER QUESTIONNAIRE

TEACHER QUESTIONNAIRE

1. Teacher's Name_____
2. Name of School_____
3. School Address_____
4. What is your Teaching Licence / Grade ?

   _____(1) Licence ; _____(2) Grade
5. How many pupils are enrolled in Grade Six in your classroom?_____
6. What is the age of the school building in which you teach ?_____
7. Please list below the names of your Grade Six pupils, and after each name indicate the number of days he(or she) was absent between September 6, 1967 and April 30, 1968.

Pupils' Names	Days Absent	Pupils' Names	Days Absent

APPENDIX H

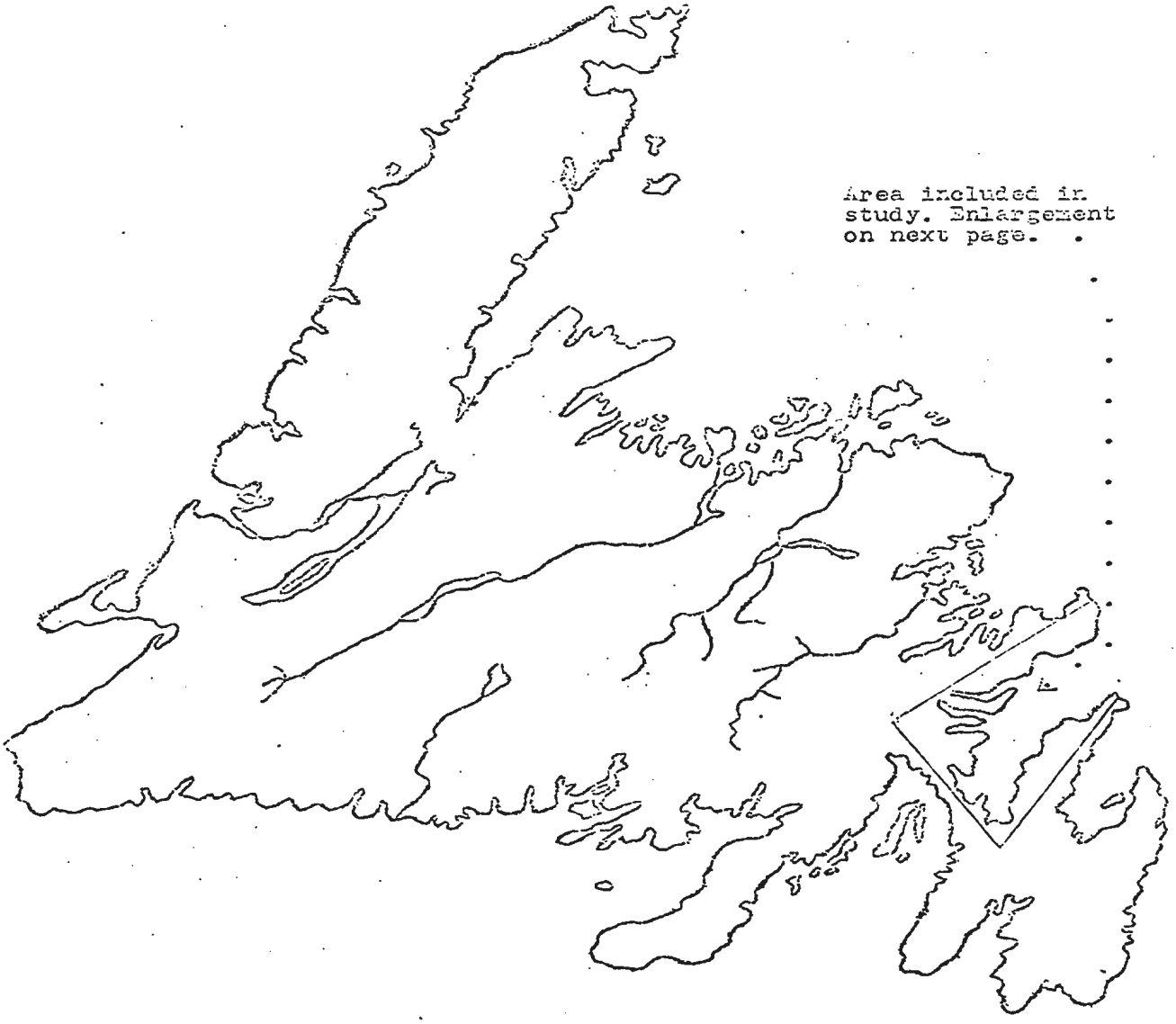
ELEVEN POINT SCALE OF TEACHERS' QUALIFICATIONS

SCALE FOR CLASSIFICATION OF TEACHERS' QUALIFICATIONS

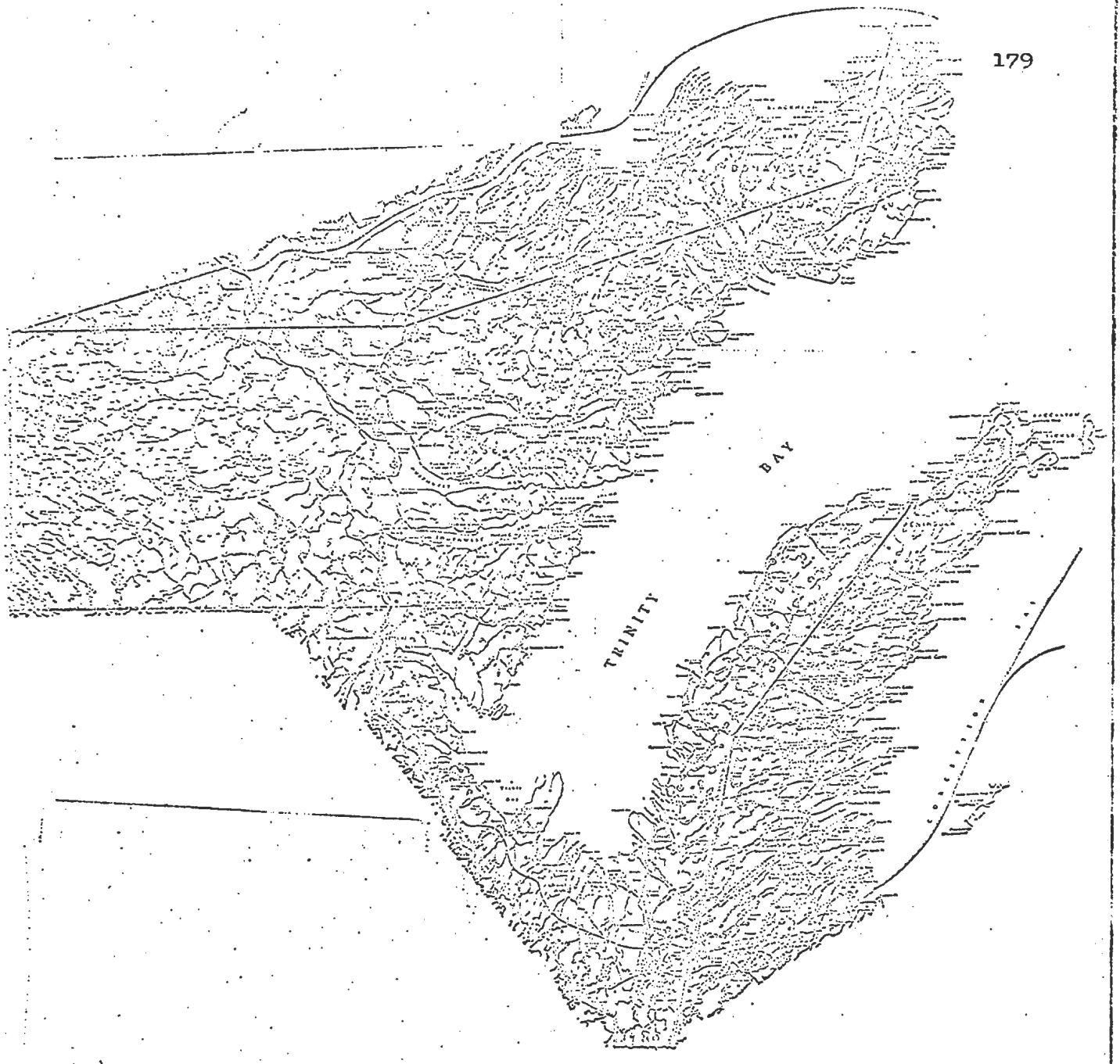
Department of Education Licence or Grade	Training	Point Value
D Licence and Emergency Supply	High School with no professional training	1
P and C Licences	One six-week summer school of professional training	2
B Licence	Two six-week summer schools of professional training (No longer granted)	3
A Licence	A university year of professional training minus one course	4
Grade One	A university year of professional training	5
Grade Two	Two complete years of professional training or the equivalent	6
Grade Three	Three complete years of professional training or the equivalent	7
Grade Four	Four complete etc., etc.	8
Grade Five	Five complete etc., etc.	9
Grade Six	Six complete etc., etc.	10
Grade Seven	Seven complete etc., etc.	11

APPENDIX I

AREA COVERED BY THE STUDY



NEWFOUNDLAND


TRINITY
BAY

DETAILS OF TESTING PROGRAMME

Place and Denomination of Schools	Test Centre Number	Researcher	Transport used	Distance to Centre	Dates of Test	Enrollment, April 30	Number Tested
1. Bellevue, R.C.		P			6, 7	19	11
2. Blaketown, Ang.		R			2, 3	4	4
3. Bonaventure, Ang.		R			12, 16	9	9
4. Burgoyne's Cove, Ang.		R			14, 15	8	8
5. Britannia, U.C.		R			10, 13	2	2
6. Brownsdale, U.C.		N			1, 10	5	5
7. Butter Cove, Ang.	26	N	Car	2 mi.	8, 9	6	6
8. Catalina, Ang.		P			14, 15	29	29
9. Catalina, U.C.	8	N			14, 15	15	15
10. Catalina, R.C.	8	N			14, 15	5	5
11. Cavendish, U.C.	28	N	Bus	7 mi.	2, 3	10	10
12. Champney's East, Ang.	59	P	Bus	3 mi.	15, 16	4	2
13. Chance Cove, Ang.-S.A.		P			6, 7	18	17
14. Chapel Arm, Ang.		N			6, 7	15	15
15. Chapel Arm, R.C.	14	N			6, 7	11	8
16. Clarenville, S.A.		R			8, 9	15	15
17. Clarenville, U.C.		R			8, 9	57	55
18. Deep Bight, U.C.	16	R	Bus	5 mi.	8, 9	3	3
19. Dildo, S.A.		P			2, 3	23	23
20. Dunfield, Ang.	70	N	Car	4 mi.	15, 16	4	3

Continued next page

DETAILS OF TESTING PROGRAMME

School	Centre	Res.	Trans.	Dist.	Dates	Enroll.	Tested
21. Dunfield, U.C.	70	N	Car	4 mi.	15, 16	4	4
22. Elliot's Cove, U.C.	35	R	Car	15 mi.	10, 13	2	2
23. Elliston, U.C.		P			13, 14	14	14
24. English Harbour, Ang.	59	P	Bus	4 mi.	15, 16	2	2
25. George's Brook, U.C.	62	P	Car	6 mi.	8, 9	3	3
26. Gooseberry Cove, Ang.		N			8, 9	5	5
27. Green's Harbour, S.A.	28	N			2, 3	3	3
28. Green's Harbour, U.C.		N			2, 3	21	21
29. Hant's Harbour, Amalg.		N			1, 10	12	11
30. Harcourt, U.C.	4	R	Car	10 mi.	14, 15	8	8
31. Hatchet Cove, Ang.	36	P	Car	8 mi.	8, 9	2	2
32. Heart's Content, Ang.		P			1, 10	10	10
33. Heart's Desire, R.C.		R			1, 21	13	13
34. Hickman's Harbour, S.A.	35	R	Car	1 mi.	10, 13	3	3
35. Hickman's Harbour, U.C.		R			10, 13	7	7
36. Hillview, U.C.		P			8, 9	7	7
37. Hodge's Cove, Ang.-U.C.		R			6, 7	15	15
38. Hopeall, U.C.	27	N	Bus	4 mi.	2, 3	6	6
39. Islington, Ang.		R			1, 3	23	21
40. Lady Cove, U.C.	35	R	Car	10 mi.	10, 13	2	2
41. Little Catalina, U.C.		N			13, 14	34	32
42. Little Heart's Ease, S.A.		N			8, 9	15	15
43. Long Beach, Ang.-U.C.	37	R	Car	4 mi.	6, 7	2	2
44. Long Cove, U.C.		N			6, 7	22	20
45. Lower Lance Cove, S.A.	5	R		1 mi.	10, 13	6	6

Continued next page

DETAILS OF TESTING PROGRAMME

School	Centre	Res.	Trans.	Dist.	Dates	Enroll.	Tested
46. Markland, Ang.	73	R	Car	6 mi.	2, 3	5	5
47. Markland, U.C.	73	R	Taxi	4 mi.	2, 3	9	8
48. Melrose, R.C.	8	N	Bus	3 mi.	14, 15	14	12
49. Milton, U.C.	62	P	Car	5 mi.	8, 9	1	1
50. New Chelsea, Pent.	6	N	Bus	4 mi.	1, 10	2	2
51. New Chelsea, U.C.	6	N	Bus	4 mi.	1, 10	4	4
52. New Harbour, Ang.		P			2, 3	23	21
53. New Perlican, Ang.	76	P	Car	3 mi.	1, 10	11	11
54. New Melbourne, U.C.	6	N	Car	2 mi.	1, 10	5	4
55. Norman's Cove, U.C.		N			6, 7	25	22
56. North West Brook, Ang.	36	P	Taxi	3 mi.	8, 9	1	1
57. North West Brook, U.C.	36	P	Taxi	3 mi.	8, 9	7	7
58. Old Shop, Ang.	2	R	Car	7 mi.	2, 3	6	6
59. Port Rexton, Ang.		P			15, 16	14	10
60. Port Union, U.C.	8	N	Car	2 mi.	14, 15	10	10
61. Petley, Ang.	5	R	Car	6 mi.	10, 13	7	7
62. Shoal Harbour, U.C.		P			8, 9	31	31
63. Sibley's Cove, U.C.	6	N	Car	2 mi.	1, 10	6	6
64. South Dildo, S.A.	2	R	Car	4 mi.	2, 3	2	2
65. South Dildo, U.C.	2	R	Car	4 mi.	2, 3	3	3

Continued next page

DETAILS OF TESTING PROGRAMME

School	Centre	Res.	Trans.	Dist.	Dates	Enroll.	Tested
66. Southport, U.C.	26	N	Car	2 mi.	8, 9	3	3
67. St. Jones Within, U.C.	36	P	Car	12 mi.	8, 9	3	3
68. Sunnyside, Ang.	69	R	Car	2 mi.	6, 7	7	7
69. Sunnyside, U.C.		R			6, 7	11	10
70. Trinity, Ang.		N			15, 16	10	9
71. Trinity East, Ang.	59	P	Car	2 mi.	15, 16	3	3
72. Weybridge, U.C.	35	R	Car	13 mi.	10, 13	1	1
73. Whitbourne, Ang.		R			2, 3	27	22
74. Whitbourne, R.C.	73	R			2, 3	7	7
75. Whiteway, U.C.	28	N	Bus	3 mi.	2, 3	5	5
76. Winterton, S.A.		P			1, 10	28	25
(A) (B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)

A. Number of the schools arranged in alphabetical order.
B. Name of the community and the denomination of the school. Ang. - Anglican Church of Canada, Pent. - Pentecostal Assemblies of Newfoundland, R.C. - Roman Catholic, U.C. - United Church of Canada, S.A. - Salvation Army, and Amalg. - Amalgamated Schools.
C. The centre where the test was written and to which the pupils were transported.
D. The researcher who conducted the testing: N - Raftus Noel, P - Hector Pollard, and R - Stewart Ralph
E. The Transportation used to move the pupils. "Car" means privately owned car, usually the tester's.
F. The distance between the pupils' home school and the testing centre.
G. The dates in the month of May, 1968, when the tests were given.
H. The enrollment shown on the school register on April 30, 1968.
I. The number of the enrollment who wrote part of the tests.

APPENDIX J

PARAGRAPH WRITING TEST

PARAGRAPH WRITING TEST

The test administrator will say to the pupils after seeing that all are supplied with paper and pen: "You will be given fifteen minutes to write a paragraph telling what you like best. Here is the title for your paragraph (tester will write on board) 'What I Like Best'. Please try to write as well as you can. Pay attention to your spelling, capitalization, punctuation, etc., but try to make your paragraph very interesting".

Have all the pupils stop at the end of fifteen minutes.

APPENDIX K

TABLE OF CORRELATION COEFFICIENTS

INDEX TO VARIABLES

VARIABLE NUMBER	VARIABLE NAME
1	Mothers' Education
2	Fathers' Occupations
3	Number of Siblings
4	Number of days absent
5	I. Q.
6	Reading Vocabulary*
7	Reading Comprehension*
8	Reading Total*
9	Mathematics Concepts*
10	Math Problem Solving*
11	Total Mathematics*
12	Spelling
13	Capitalization
14	Punctuation
15	Usage
16	Total Language
17	Paragraph Writing
18	Age of School Building
19	Teachers' Qualifications
20	Class Enrollment

* For other studies

CORRELATION COEFFICIENTS - BOYS (N = 361)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1000	339	-002	-085	349	336	256	318	235	196	229	236	248	186	263	281	272	011	045	043
2	.	1000	-081	-070	257	368	240	330	262	214	255	237	219	239	345	304	250	-149	136	193
3		.	1000	042	-151	-174	-108	-155	-056	-046	-053	-090	-110	-105	-147	-129	-093	-018	007	-021
4	.	.	.	1000	-132	-110	-088	-107	-133	-031	-085	-119	-106	-133	-099	-134	-160	015	-026	010
5	.	.	.	.	1000	768	685	774	664	551	649	615	622	594	677	745	496	-028	139	054
6	.	.	.	.	.	1000	770	952	620	536	614	617	575	549	671	727	486	-022	102	008
7	.	.	.	.	.	.	1000	926	563	578	603	622	499	511	580	662	469	-022	011	-018
8	.	.	.	.	.	.	.	1000	631	589	647	657	572	591	668	740	506	-023	065	-002
9	.	.	.	.	.	.	.	.	1000	725	939	583	612	648	622	730	434	-093	120	066
10	.	.	.	.	.	.	.	.	.	1000	906	583	593	563	533	677	461	-057	-021	-025
11	.	.	.	.	.	.	.	.	.	.	1000	622	643	653	613	752	473	-083	060	024
12	.	.	.	.	.	.	.	.	.	.	.	1000	582	587	542	832	466	-018	083	029
13	.	.	.	.	.	.	.	.	.	.	.	.	1000	693	613	861	432	-033	129	100
14	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	619	847	471	-048	132	064
15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	804	402	-019	153	077
16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	526	-037	150	077
17	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	-093	013	156
18	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	-014	-290
19	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	361
20	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000

CORRELATION COEFFICIENTS - GIRLS (N = 323)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1000	302	-079	-194	301	278	234	273	213	189	210	249	279	243	254	297	229	006	125	173
2	.	1000	-049	-104	308	270	230	267	276	229	275	209	272	230	302	314	272	-069	094	106
3	.	.	1000	068	-197	-253	-176	-288	-230	-151	-208	-148	-216	-183	-162	-205	-142	125	031	-096
4	.	.	.	1000	-160	-136	-047	-112	-121	-091	-118	-162	-234	-175	-071	-191	-123	006	-078	-074
5	.	.	.	.	1000	776	731	797	703	667	742	624	703	714	737	798	505	-035	151	206
6	.	.	.	.	.	1000	790	952	709	648	734	663	615	624	658	743	522	-051	112	158
7	.	.	.	.	.	.	1000	937	662	650	703	568	547	578	570	655	499	-029	017	127
8	.	.	.	.	.	.	.	1000	725	689	761	655	618	639	653	743	541	-045	072	151
9	.	.	.	.	.	.	.	.	1000	708	933	583	604	644	598	703	487	-063	158	151
10	.	.	.	.	.	.	.	.	.	1000	906	567	573	580	532	654	465	-006	139	064
11	.	.	.	.	.	.	.	.	.	.	1000	626	638	659	617	739	516	-037	161	125
12	.	.	.	.	.	.	.	.	.	.	.	1000	642	622	571	848	441	-105	138	159
13	.	.	.	.	.	.	.	.	.	.	.	.	1000	729	663	879	432	-149	157	204
14	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	732	881	494	-099	222	211
15	..	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	837	472	-068	154	168
16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	531	-124	202	214
17	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	-095	104	355
18	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	-079	-304
19	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	415
20	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000

CORRELATION COEFFICIENTS - TOTAL PUPILS (N = 684)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1000	321	-035	-137	317	300	233	284	224	185	217	232	262	211	256	282	235	008	080	101
2	.	1000	-065	-088	273	309	224	285	269	216	263	209	241	274	316	298	245	-107	116	151
3	.	.	1000	054	-172	-209	-140	-188	-132	-098	-125	-122	-164	-184	-159	-171	-117	050	020	-053
4	.	.	.	1000	-133	-107	-068	-093	-122	-052	-100	-103	-144	-126	-061	-127	-117	017	-058	-036
5	.	.	.	.	1000	780	719	793	669	620	693	650	684	681	729	798	524	-014	131	109
6	.	.	.	.	.	1000	709	954	646	604	671	667	616	635	687	761	529	-019	094	061
7	.	.	.	.	.	.	1000	935	591	628	650	640	556	585	609	701	518	-004	000	033
8	.	.	.	.	.	.	.	1000	655	651	699	692	621	648	688	775	553	-013	054	051
9	.	.	.	.	.	.	.	.	1000	703	932	570	614	647	613	711	439	-076	134	102
10	.	.	.	.	.	.	.	.	.	1000	902	606	608	602	560	696	485	-013	047	004
11	.	.	.	.	.	.	.	.	.	.	1000	633	659	674	632	759	495	-050	101	064
12	.	.	.	.	.	.	.	.	.	.	.	1000	618	620	571	849	507	-040	115	073
13	.	.	.	.	.	.	.	.	.	.	.	.	1000	714	643	868	462	-080	143	142
14	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	683	867	522	-060	174	126
15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	824	474	-030	151	110
16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	574	-063	170	129
17	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	-066	043	225
18	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	-049	-299
19	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000	387
20	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1000