

THE UNIVERSITY OF MANITOBA

SOCIAL-CLASS: A FACTOR IN SCHOOL ACHIEVEMENT  
OF TWO SELECTED GROUPS OF GRADE THREE  
WINNIPEG PUPILS, WITH SPECIFIC  
REFERENCE TO THE  
LANGUAGE ARTS

BEING A THESIS SUBMITTED TO THE FACULTY  
OF GRADUATE STUDIES AND RESEARCH  
IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE DEGREE  
OF  
MASTER OF EDUCATION

BY  
ALEXANDER NOBLE  
WINNIPEG MANITOBA  
MAY 1967



## FOREWORD

"The child was diseased at birth, stricken with a hereditary ill that only the most vital of men are able to shake off. I mean poverty--the most deadly and prevalent of all diseases."

Eugene O'Neill

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## ABSTRACT

With the development of universal, free education, and the demand for equal educational opportunity for all pupils, there has arisen the problem of limited academic achievement with the resultant drop-out.

Research studies at the secondary school level have shown that there is a direct relationship between social-class and academic achievement, and that lower social-class pupils are disproportionately represented among those who achieve limited academic success.

At the elementary school level, very few research studies have been done but they indicate that social class does play an important role in academic achievement at this level.

The purpose of this study was two-fold. The first part sought to determine if there was any significant difference in academic achievement between two selected groups of grade three Winnipeg pupils, with particular reference to the language arts. One group, designated as Area 1, was selected from a lower social-class area; the other group, designated as Area 2, was selected from an upper social-class area.

No selection was made within the groups. The only cause for any pupil to be omitted from the study was failure

to obtain complete data for that pupil, due to causes beyond the investigator's control. In the final analysis, the Area 1 group numbered 176 pupils, and the Area 2 group numbered 207 pupils.

The following data were obtained for each pupil: age; I.Q. as measured by the Otis Quick-Scoring Mental Ability Test, Alpha Short Form; achievement in the four sub-tests of the Stanford Achievement Test, Elementary Battery, Form J, consisting of paragraph meaning, word meaning, spelling, and language.

All data were statistically analyzed. The t-test was used to determine if any significant difference existed between the percentage of over-age pupils, or retardates, within each group. An analysis of variance program was set up for the IBM 360 computer to determine if any significant differences existed between the groups with regard to age, I.Q., and achievement in the sub-tests of the language arts.

The results of the first part of the study indicated differences between the two groups, in favor of the upper social-class group, on all variables, highly significant at the .01 level of confidence.

The second part of the study was concerned with the role of home language in academic achievement. For this investigation the pupils in Area 1 were divided according

to the home language, English or non-English. In the English group were 102 pupils; in the non-English group were 74 pupils.

The two groups were compared with regard to age, retardation, and achievement in the four sub-tests of the language arts, in the same pattern used to compare the pupils of the two separate areas in the first part of the study.

The results of this part of the study indicated no differences between the two groups with regard to age, percentages of retardates, paragraph meaning, spelling, or language.

Differences, significant at the .05 level of confidence, in favor of the English home language group, were found with regard to I.Q., and word meaning.

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## CHAPTER I

### THE PROBLEM OF EDUCATIONAL DEPRIVATION

#### 1. Introduction

The society of earlier times, in contrast to that of today, was much less complex, and education was not of the same importance. There was ample opportunity in the economy for unskilled and semi-skilled workers to find employment at jobs for which only a minimum of formal education was needed. If these workers learned even the fundamentals of reading, writing, and arithmetic, it was considered to be sufficient education. The main objective of these members of society, "the working class," was to learn a trade in order to be able to earn a living.

Formal education was reserved for the upper class, the leaders of the country. These were the professional people, the business and industrial leaders. Since education was only available to those who could pay for it, these were the only ones who could afford to have their children educated.

With the growth of universal, free education, however, a change in the personnel and numbers entering school occurred. Children from families belonging to the working class became pupils, and were entitled to the same educational opportunity

as those children from the upper social classes.

A rapidly developing, complex, urban, industrial society requires that functioning members of this society be highly literate, responsive to rapid changes in every area of life and work, and able to learn and re-learn complex ideas and skills as minimal conditions for job employment, social growth, and individual independence. In Canada, young people are expected to stay in school as long as they can. Ideally, students should stay in school until they have completed high school at least. This level of education is rapidly becoming the minimum standard for employment.

## 2. Inequalities in Educational Achievement

Throughout the world, school systems have developed elementary- and secondary-school curricula and programs which appear to work relatively well for a sizeable proportion of the students. Bloom, Davis and Hess<sup>1</sup> suggest that perhaps as many as one-half of those pupils now entering elementary school will be able to complete the full public school program successfully, if financial difficulties or other obstacles do not interfere. There has always been present in the schools

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<sup>1</sup> Benjamin S. Bloom, Allison Davis, and Robert Hess, Compensatory Education for Cultural Deprivation (New York: Holt, Rinehart and Winston, Inc., 1965), p. 1.

a certain number of students who have been unable to cope with the regular school program. These pupils have been representative of all social classes, in both urban centres and rural areas.

During the past three decades there has been a tremendous influx into the large cities of lower-class families. The children of such families do not seem able to take advantage of the educational opportunities offered by the conventional school. With the growth of cities, the central area, or "inner city," has gradually deteriorated, particularly with respect to housing accommodation. As the middle- and upper-class families have moved outwards from the centre of the city, usually to the suburbs, they have been replaced by families of a lower social order. In search of low rental accommodation, they have established themselves in the older portion of the city. The occupational level of most of these families is semi-skilled, or unskilled, labor. Many of them are only seasonally employed, and may be supported wholly or partially by public welfare. In recent years, the Indians and Métis have appeared as city residents, some on a permanent basis, others as temporary residents.

Children of such families seem unable to acquire the vital communication and computational skills which are so necessary to achievement of educational goals. Their progress

through school is marked by retardation, failure, and a poor self-image. Deficiencies in learning and lack of motivation combine to develop an attitude of hostility and rebellion against school authorities. Too often their formal schooling is terminated far short of the level demanded for successful entry into society. Many fail to complete high school, others barely achieve a junior high school standing, while some may leave school without completing a full elementary school program. Any student who leaves school with less than a senior high school standing must be considered to be educationally deprived.

When causes are sought as to why children of lower social class families fail to make satisfactory progress through school, a study of their heredity, and the environment in which they are reared, provides at least a partial answer. Many of these children are doomed to failure of varying degrees, before they enter school. They lack the pre-school experiences and preparation which are necessary as readiness for the formal school program. A large proportion of them come from homes in which the adults have minimal education and very low educational aspirations for themselves and their children. Many come from homes where poverty, large family size, quarrelling or separated parents, and slum conditions, further complicate the problem. On entry into school, they are expected to cope with the same



program as are those children from middle- and upper-class homes. Conventional teaching methods and materials are the usual approach to the learning problems of the lower social class child, and as a result he is unable to meet the challenge of the school work presented to him in the normal classroom.

Lacking the experiences, pre-school skills, and values of the middle- and upper-class child, the lower social-class child finds himself frustrated by the school learning environment and materials, so different from the settings which are familiar to him. As each year of school goes by, he suffers further frustration and failure. Finally, he "leaves" school. This may be only mentally, since in most provinces and states, a compulsory school age is laid down by law. In Manitoba, the School Attendance Act<sup>2</sup> sets the "compulsory school age as over the age of seven years and under the age of sixteen years," with the further proviso that "where a person attains the age of sixteen years during a school term, he may be required to attend school regularly until the end of the term." A compulsory attendance law may keep a child in school, but it cannot ensure that he is progressing academically. MacKinnon<sup>3</sup>

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<sup>2</sup>The School Attendance Act, Revised Statutes of Manitoba, 1954, Chapter 234, Amended 1965 (Winnipeg: The Queen's Printer, 1966), pp. 7-8.

<sup>3</sup>F. A. MacKinnon, "Educator Sees Dropout Signs at Early Ages," Winnipeg Free Press, October 27, 1966.

states the situation very succinctly in the remark, "There are lots of psychological drop-outs. The body is there, but the mind isn't."

This is the problem faced by educational authorities today. It is not a problem easily solved, and it is one which will require much thought and planning to overcome.

The impact of the educational deprivation suffered by so many of today's youth, particularly those of the lower social class, is bound to be reflected in the society which they enter on leaving school. The effect of educational deprivation is being felt now, and will continue to be felt. Counter measures to eliminate or at least to reduce such deprivation must be introduced into the schools which are responsible for the preparation of these children for society. It must be on such a scale, and of a form, which will guarantee that all children will develop, academically and socially, into worthy members of society. All children must be afforded every opportunity to develop to the limit of their abilities.

Many cities, particularly in the United States, have embarked on compensatory programs intended to assist boys and girls from the lower social-class. Two such programs are described in Chapter III. A few centres in Canada have initiated programs on a small scale. One of these programs, the "Higher Horizons" program in Winnipeg, is outlined in Chapter III.

### 3. The Measure of Educational Deprivation

Education is a fundamental tool, a basic requirement which people must have if they are to take advantage of the opportunities available to them. In an affluent society, many Canadians do not possess the necessary education to take advantage of the job opportunities available to them. In this rapidly developing technological age, too many lack the minimal education necessary to undertake the training required for employment in the careers which are developing and will continue to develop.

In a brief presented by the Canadian Welfare Council to the Senate Committee on Manpower and Employment in 1961, it was estimated that by 1970, with the present pattern of school drop-outs, approximately one-third of young Canadians will have left school with no more than a full elementary education, and another third will drop out before completing junior matriculation.<sup>4</sup>

Such an estimate of drop-outs would seem, at first glance, to be an exaggeration, but a study of actual figures, in fact, supports it.

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<sup>4</sup> Frank E. Jones, Social Bases of Education, Report to the Canadian Conference on Children (Quebec City, 1965), p. 12.

Census of Canada Bulletin, 1961,<sup>5</sup> in giving the percentage distribution of the Canadian population five years of age and over, not attending school, by highest grade attended, shows: 4.1 per cent with no schooling; 31.7 per cent with elementary education only; 32.6 per cent with secondary schooling; 2.2 per cent with some university education, 2 per cent having a university degree. For Manitoba, the same source gives the following information for those five years of age and over, not attending school, by highest grade attended: 4.8 per cent with no schooling; 28.7 per cent with elementary education only; 35.3 per cent with secondary schooling; 2.5 per cent with some university education; and 1.8 per cent with a university degree. A comparison of the figures for Manitoba and Canada shows the Manitoba figures to be typical of the nation.

It is of some significance that 33.5 per cent of Manitoba's out-of-school population had no more than elementary school education, and that the 35.3 per cent whose "highest grade attended" was in secondary school included drop-outs who had started but not finished high school.

By eliminating the age group 5 to 14, 46.8 per cent, or 5,166,346 Canadians 15 years of age and over, not attending school, have no schooling or elementary education only. Of this total,

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<sup>5</sup>Canada, Census 1961, Dominion Bureau of Statistics, Population--School Attendance and Schooling, Bulletin 1.2-10 (Ottawa: Queen's Printer, 1963),

176,254 have no schooling and 848,261 have grade four or less. This means that 1,024,785 Canadians are functionally illiterate, incapable of reading and writing to the extent required for all but the most menial jobs.<sup>6</sup>

In the article, "Education--A National Concern," Z. S. Phimister reports:

It is estimated that 500,000 adult Canadians have skills in the three R's not above grade four level, and that 7,000,000 adults have not finished high school. The National Employment Service tells us that in a recent year over seventy per cent of the males who applied for jobs had grade eight standing or less. Only twenty-one percent of our students complete high school, eight percent go on to university, and four percent graduate.<sup>7</sup>

No highly industrialized nation, such as Canada, can afford to lose the human resources it possesses. The school drop-out is a loss. Educators and those responsible for education view this problem as one of the major issues faced by schools. To compound the problem, a disproportionate number of drop-outs come from the lower-social class.

#### 4. Social-Class and Educational Deprivation

Research has shown that lower social-class pupils do not achieve academically as well as do upper social-class

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<sup>6</sup>Margaret Gayfer, "Education and the War on Poverty," School Progress (February, 1966), pp. 29-30.

<sup>7</sup>Z. S. Phimister, "Education--A National Concern," Quest--Spotlight on Education (November-December, 1963), p. 9.

pupils. Studies conducted in various centres, in the United States and Canada, have shown that there is a disproportionate number of school drop-outs among lower social-class pupils. The conclusions reached from such studies are that educational deprivation, though not wholly restricted to lower social-class pupils, is in fact a characteristic of them. Most of the research on this subject has been done at the junior- and senior-high school levels. Unfortunately, little research has been done at the elementary school level. What research has been done has indicated that the beginnings of educational deprivation appear at this level.

It is in the early school years that the basic communication skills must be mastered; good attitudes toward school and the learning process must be developed. Very early in his school life, motivation to achieve to the best of his ability must be instilled in the pupil. It is in the pre-school years and in the lower elementary grades that the "readiness" foundations are laid for school success. Remedial programs and alternative courses at the secondary level will always be needed for certain pupils, but the number of pupils requiring such programs would be reduced if these pupils did not carry unnecessary limitations in the basic skills from the elementary school into the junior-high school.

### 5. Reason for the Present Study

The problem of educational deprivation and its relationship to social-class is not limited to one or two large cities. The research studies on this problem have indicated that the relationship exists in every large city so far examined. Every large city has its area of low-rental housing, where multiple-type dwellings are common. In such an area, members of the lower social-class tend to concentrate. Winnipeg is similar to other cities in this respect.

This study undertook to determine if a relationship between social-class and academic achievement does, in fact, exist in Winnipeg. To this end, two groups of grade three pupils were selected for comparison. On the basis of occupational level and average male income of the families resident in two distinct areas of Winnipeg, one group was considered representative of the lower social-class, while the other group was representative of the upper social-class.

### 6. Organization of the Present Study

The present study consists of five major chapters. Chapter I has introduced the problem of educational deprivation particularly with reference to children of the lower social-class. The first sections of this chapter gave an overview of this problem, considered to be one of the most vital faced by educational authorities. Its importance and effect

on today's society and the development of society has been briefly outlined.

The second and third chapters review the literature which is available concerning this problem. Chapter II reviews literature regarding studies which have investigated the relationship between social-class and the school drop-out, and the relationship between social-class and academic achievement.

The third chapter describes briefly some of the approaches recommended by educational authorities as possible means of coping with the education of lower social-class pupils. Two compensatory programs in the United States, one in New York City, the other in Detroit, are described, with an evaluation of each. The "Higher Horizons" program introduced into one area of Winnipeg in 1962 is also outlined.

The fourth and fifth chapters are concerned with the research study undertaken to determine if any relationship exists in Winnipeg between social-class and academic achievement.



## CHAPTER II

### REVIEW OF THE LITERATURE

#### 1. Social-Class and the School Drop-out

Many studies have been conducted in the United States and Canada on the problem of the school drop-out. It has been the subject of conferences where causes and solutions have been sought in an effort to counteract what some authorities have suggested is the number one problem in education today. In this section, some of the research findings on the relationship between social-class and the school drop-out are outlined.

Basing his generalization on data reported in the Census of Canada, 1951, Porter<sup>1</sup> shows that among families where the father's occupation fell into either the first or second highest occupational class, 71 per cent and 55 per cent respectively of children between the ages of 14 and 24 were in school. By comparison, only 38 per cent and 35 per cent of the children whose fathers were employed in the two lowest occupational classes were in school.

A research study of drop-outs among students between grades seven and twelve in Canada revealed that 29 per cent

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<sup>1</sup>John Porter, "Social Class and Education," Social Purpose for Canada, ed. Michael Oliver (Toronto: University of Toronto Press, 1961), pp. 103-129.

of the boys and 20 per cent of the girls belonging to families of above-average economic status, in comparison to 78 per cent of the boys and 74 per cent of the girls belonging to below-average economic status, dropped out before completing high school.<sup>2</sup>

Studies conducted in specific regions of Canada confirm those undertaken on a national basis. Hall and McFarlane<sup>3</sup> reported that, in an Ontario community, 44 per cent of students with fathers employed as manual workers, compared to 24 per cent with fathers in non-manual occupations, dropped out of school by grade ten. The same study revealed that only 15 per cent of the students from lower class homes, as compared to 35 per cent from higher class homes, achieved senior matriculation.

The census of Canada, 1961, revealed that in families where the male wage earner received more than \$7,000 per year, one of two children, 19 to 24 years of age, resident at home, was attending school. Where the male wage earner received less than \$4,000 per year, less than one in eight children in the same age-group was attending school.<sup>4</sup>

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<sup>2</sup> Canadian Research Committee on Practical Education, Your Child Leaves School (Toronto: Canadian Research Committee on Practical Education, 1950), Report No. 2, p. 11.

<sup>3</sup> Oswald Hall and Bruce McFarlane, "Transition from School to Work," Research Program on the Training of Skilled Manpower, Department of Labour Report No. 10, December 1962 (Ottawa: Queen's Printer, 1963), pp. 15-20.

<sup>4</sup> Margaret Gayfer, "Education and the War on Poverty," School Progress (February, 1966), p. 29.

## 2. Underlying Causes of Dropping Out

The drop-out doesn't suddenly leave school on a fixed day and hour. The actual withdrawal from school, the termination of formal education, is simply the culmination of a process which has been building up for some time. There are many factors which contribute to the final act of leaving school. One of the most potent causes of dropping out of school is the pupil's failure to cope satisfactorily with the school program. In his booklet, "Education and Employment," issued in preparation for the 1962 Canadian Conference on Education, A. V. Piggott<sup>5</sup> notes that drop-outs tend to be one or more years older than their classmates; two-thirds of them have repeated one or more grades; more boys than girls drop out. Only about one-quarter of the drop-outs actually leave because of lack of ability. Fewer drop-outs occur where parents have a higher education themselves and a respect for learning.

Schreiber<sup>6</sup> reports a Maryland study which investigated the relationship between the drop-out and school. This study uncovered the fact that one-tenth of the drop-outs, at the

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<sup>5</sup>A. V. Piggott, "Education and Employment," Conference Study No. 9 (Toronto: Canadian Conference on Education, 1961), p. 9.

<sup>6</sup>Daniel Schreiber, ed., Guidance and the School Dropout (Washington, D.C.: National Education Association of the United States, 1964), p. 5.

time they left school, were reading below the third-grade level, and 45 per cent were reading at a sixth-grade level or less. The investigators concluded that some of the major factors involved in the drop-out problem are: a) reading retardation; b) grade retention; c) low intelligence; d) negative self-image; and e) family attitudes.

Allen,<sup>7</sup> in establishing a picture of the drop-out, refers to studies which have revealed a number of characteristics that many drop-outs have in common. Among others, he suggests the following:

1. Most drop-outs are unsuccessful in schoolwork, and retarded by one or more grades. As a consequence, many are overage for their grades by the time they withdraw from school. In many cases, the potential drop-out, early in his school career, experiences failure in the form of low marks and likely repetition of one or more grades. He cites a Detroit study which revealed that 76 per cent of the drop-outs had suffered one or more grade failures in elementary school, more than half of them in the first three grades, while 93 per cent of the drop-outs had suffered one or more subject failures in

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<sup>7</sup> Charles M. Allen, Combating the Drop-out Problem (Chicago: Science Research Associates, Inc., 1956), p. 5.

secondary school. He also refers to a study of 1,000 drop-outs in five midwestern American communities, sponsored by the National Child Labor Committee. This research study found that 52 per cent had repeated one or more grades, mostly at the elementary level. The first, third, and fourth grades were most commonly repeated in the elementary school; the ninth in junior high; and the tenth in high school.

2. Most drop-outs are from low-income families. Family influence as a force for or against staying in school is closely related to the family's social-class, its values and goals, income, type of dwelling, and overall way of life.

Many factors influence the pupil's decision or desire to leave school prematurely, and amongst these, one of the basic ones, is poor academic achievement at all school levels. Research has indicated the direct relationship between the drop-out and social-class; it has also revealed the direct relationship between academic achievement and social-class.

### 3. Social-Class and Academic Achievement

The relationship between social-class and school achievement has been the subject of recurrent studies during the past fifty years. Hill and Giammatteo,<sup>8</sup> in the introduction to their

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<sup>8</sup> Edwin H. Hill and Michael C. Giammatteo, "Socio-Economic Status and Its Relationship to Achievement in the Elementary School," Elementary English, Vol. 40, No. 3 (March 1963), pp. 265-270.

study, "Socio-Economic Status and Its Relationship to School Achievement in the Elementary School," refer to earlier investigations which dealt with the relationships between home conditions and drop-outs, retardation, and persistence in school. Neighbours<sup>9</sup> (1910) and Van Denburg<sup>10</sup> (1946) found a definite relationship between socio-economic conditions and progress in school. Gaugh<sup>11</sup> (1946) found positive relationships between socio-economic levels and vocabulary, arithmetic, reading ability and language ability. Coleman<sup>12</sup> (1940) working with 4,800 junior high subjects found the higher socio-economic groups made the highest achievement on all group areas tested.

Wilson,<sup>13</sup> in reporting on the data obtained from a survey

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<sup>9</sup>O. J. Neighbours, "Retardation in the Schools and Some of the Causes," Elementary School Teacher, No. 11 (1910), pp.119-135.

<sup>10</sup>J. K. Van Denburg, Causes of Elimination in the Public Secondary Schools of New York City (New York: Bureau of Publications, Teachers College, Columbia University, 1941), pp.14-15.

<sup>11</sup>H. G. Gaugh, "Relationship of Socio-Economic Status to Personality Inventory and Achievement Tests Survey," Journal of Educational Psychology, No. 37 (1946), pp. 527-540.

<sup>12</sup>H. A. Coleman, "Relationship of Socio-Economic Status to the Performance of Junior High Pupils," Journal of Experimental Education, No. 9 (1940), pp. 61-63.

<sup>13</sup>Alan B. Wilson, "Social Stratification and Academic Achievement," Education in Depressed Areas, ed. A. Harry Passow (New York: Bureau of Publications, Teachers College, Columbia University, 1963), pp. 221-223.

of the sixth-grade pupils made in fourteen elementary schools of Berkeley, California, notes that in the upper-class schools virtually all of the students were reading at grade level in a high sixth-grade text, or in an additional enrichment text. In the lower-class schools only about 51 percent of the students were at grade level. In a further breakdown of the data, by sex, he notes that over 90 per cent of the sons of professional men and executives were reading at grade level, whereas only a third of the sons of semi-skilled and unskilled manual workers were at grade level. He concludes that in the various schools, whether in an upper- or lower-class area, the socio-economic background had a substantial impact upon the pupil achievement. In a second conclusion, he notes that this impact was reduced in the case of a lower-class pupil enrolled in a predominantly upper-class school.

Hill and Giammatteo<sup>14</sup> investigated the relationship between the socio-economic status and intelligence, vocabulary achievement, reading comprehension, arithmetic skill, and problem solving. Basic reading skills including sentence meaning, sensory imagery, relationships, emotional reaction, visual scrutiny, phonetic analysis, and structural analysis were tested. Using 223 third-grade students of western

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<sup>14</sup>Hill and Giammatteo, op. cit., pp. 265-270.

Pennsylvania as the subject of their investigation, they found that to a great extent socio-economic status was a factor in school achievement. The means obtained on the various sub-tests indicated that by the grade three level, children from the higher socio-economic level were farther advanced academically than those from the low socio-economic level. In vocabulary achievement, the superiority was eight months; in reading comprehension, it was nine months (a full school year). In total score the high socio-economic group, with a mean grade score of 3.9, was seven months advanced over the low socio-economic group. In two of the seven sub-tests of basic reading skills measured, sentence meaning and phonetic analysis, the mean differences were found to be significant at the 5 percent level. In the individual reading tests they noted that the socio-economic factor is a positive one at the third-grade level, but not as significant as it is at the first-grade level. They concluded that the results of their study strengthen the accumulated evidence that socio-economic status affects school achievement. Even by the third grade, children from the lower socio-economic group apparently do not overcome the deficiencies of heredity and environment accumulated in the pre-school years.

Edmonds<sup>15</sup> conducted an investigation involving 1,239

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<sup>15</sup>William S. Edmonds, "Sex Differences in the Verbal Ability of Socio-Economically Depressed Groups," The Journal of Educational Research, Vol. 58, No. 2 (October, 1964), pp. 61-64.



eleventh-grade students enrolled in sixty-six high schools located in a socio-economically depressed area. Because of the large number of students involved, and since the students came from a variety of backgrounds and locations, Edmonds was able to set up different socio-economic groupings. From his study, he reached the following conclusions:

1. Within the entire group, there was no significant difference between the verbal ability of boys and girls.
2. There was a difference between boys of the highest and lowest socio-economic groups statistically significant at the .001 confidence level.
3. There were significant differences between female populations of variant socio-economic levels. The greatest difference of all pairings occurred between highest-class females and lowest-class females.
4. There was no significant difference between the measured verbal ability of boys and girls at any level when the factor of socio-economic status was held constant.

Edmonds concluded that sex cannot be assumed to be a valid predictor of ability, but that the socio-economic level of the pupil under observation, sex notwithstanding, is a far more consistent index. He suggests that the differences between the sexes are no greater within depressed groups than within advantaged groups--neither is statistically significant. He points out that low socio-economic groups cannot be lumped together in total inferiority, but that within-group differences, and subsequently-designed verbal learning

experiences are as important for different levels of low ability as for normal and high ability groups.

In her study of "Big City," Sexton<sup>16</sup> divided the student population at the elementary level into four socio-economic groups based on family income. On the basis of results of achievement-testing at the fourth, sixth and eighth grade level, she found a direct relationship between each socio-economic group and the composite scores made by its members. In general, achievement scores tended to go up as income levels went up, with the high socio-economic pupils achieving above grade level, while the low socio-economic pupils achieved below grade level. At the fourth-grade level, the highest income group had a composite achievement superiority of two whole years over the lowest income group. The greatest difference in scores was in reading, where the lower income groups were unusually weak, while the upper-income groups were unusually strong, a factor which Sexton suggests undoubtedly influenced the composite scores.

Marjorie Smiley<sup>17</sup> reports a New York survey in which

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<sup>16</sup>Patricia Cayo Sexton, Education and Income, Inequalities of Opportunity in Our Public Schools (New York: The Viking Press, 1963), pp. 25-28.

<sup>17</sup>Marjorie Smiley, "Research and Its Implications," Improving English Skills of Culturally Different Youth, (Washington: Office of Education, Department of Health, Education, and Welfare, 1964), pp. 35-61.

the mean reading scores at the third-, sixth-, and eighth-grade levels in the upper-income schools were above grade level, while those in the lower-income schools were below grade level. In fact, the lower-income scores were farther below grade level than the upper-income scores were above grade level. A further observation was that the mean scores for the underprivileged group fell farther below grade level at each testing point.

In his study of a small mid-western community in the United States, Hollingshead<sup>18</sup> found that high school students drawn from the two highest social-classes obtained twice as many grades in the 85-100 range than would be expected by chance, while pupils from the lowest social-class obtained about one-third as many grades in this high category as could be expected by chance. Similar findings were reported by Warner<sup>19</sup> in his summary of studies of social-class in several communities in the United States. Coster,<sup>20</sup> in reporting a study

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<sup>18</sup>August B. Hollingshead, Elmtown's Youth (New York: John Wiley & Sons, Inc., 1949), p. 75.

<sup>19</sup>W. L. Warner, R. J. Havighurst, and M. B. Loeb, Who Shall Be Educated (New York: Harper and Bros., 1944), pp. 47-50.

<sup>20</sup>John K. Coster, "Some Characteristics of High School Pupils from Three Income Groups," Journal of Educational Psychology, No. 50 (1959), pp. 55-72.

conducted among students attending Indiana high schools, reported that those students drawn from high-income families were more likely to obtain high marks than were those students from middle- and low-income families.

Frankel<sup>21</sup> reported a comparative study involving fifty high achievers and fifty low achievers matched for intelligence, age, and school entrance examination score. He found that the boys from families where the father was employed in one of the higher occupational groups were over-represented among the high achievers.

Rossi<sup>22</sup> suggests that a student's intelligence relates more strongly to his achievement level than any other characteristic. In a study conducted at the National Opinion Research Center, University of Chicago, it was found that between 40 per cent and 60 per cent of the variations among students could be accounted for by variations in IQ levels; yet, despite the importance of intelligence, a considerable portion of the differences among individuals had to be accounted for in other terms. He proposes that part of the remain-

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<sup>21</sup>Edward Frankel, "A Comparative Study of Achieving and Under-achieving High School Boys of High Intellectual Ability," Journal of Educational Research, No. 53 (1960), pp. 172-180.

<sup>22</sup>Peter H. Rossi, "Social Factors in Academic Achievement, A Brief Review," Education, Economy and Society, A Reader in the Sociology of Education, ed. A. H. Halsey, Jean Floud, and C. Arnold Anderson (New York: Free Press of Glencoe, Inc., 1962, p. 269.

ing variation is taken up by socio-economic status,--the higher the occupation of the head of the family, the greater the student's level of achievement. He offers no answer, however, as to how socio-economic status plays its role in achievement.

In Canada, studies of the relationship between social-class and achievement have revealed similar findings to those found in the United States. Here, too, the lower social-class is disproportionately represented among the underachievers.

A study of grade seven failures in the Edmonton Junior High Schools in the school year 1951-1952 revealed that 58.5 per cent of the failing students came from homes where the father was categorized as belonging to the semi-skilled occupational group while only 3.8 per cent of the failing students came from homes where the fathers were employed in managerial or professional occupations. Among students who had not failed, 15.5 per cent of the fathers were classified in the semi-skilled group as compared to 27.3 per cent in the managerial group. A conclusion reached in this study was that failure in grade seven is associated with lower occupational status.<sup>23</sup>

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<sup>23</sup>C. J. Allison, "Characteristics of Students Who Failed Grade 7 in Edmonton Junior High Schools," Alberta Journal of Educational Research, Vol. 8, No. 1 (January, 1962), pp. 11-24.

As a result of a study involving "high" and "low" achieving boys on the Grade IX Departmental Examinations in Calgary in 1962, Linton and Swift<sup>24</sup> concluded that there is a significant relationship between the socio-economic position of the family and the success or failure of the son in school.

An investigation conducted by Bancroft<sup>25</sup> among 522 male students who had obtained all or part of their education in Ontario revealed that the school grade attained was related to the social-class position of the individual's family.

In the Report on the Atkinson Study of Utilization of Student Resources, Fleming<sup>26</sup> points out that among grade thirteen students attending Ontario high schools in 1956,

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<sup>24</sup> Thomas E. Linton and Donald F. Swift, "Social Class and Ninth Grade Educational Achievement in Calgary," Alberta Journal of Educational Research, Vol. 9, No. 3, (September, 1963), pp. 157-167.

<sup>25</sup> George W. Bancroft, "Socio-Economic Mobility and Educational Achievement in Ontario," Ontario Journal of Educational Research, Vol. 5, No. 1 (Autumn, 1962), pp. 27-31.

<sup>26</sup> W. G. Fleming, "Background and Personality Factors Associated with Educational and Occupational Plans and Careers of Ontario Grade 13 Students," Atkinson Study of Utilization of Student Resources, Report No. 1 (Toronto: Ontario College of Education, Department of Educational Research, University of Toronto, 1957), pp. 7-8.

50 per cent were from "white-collar" families, i.e., were children of fathers employed in professional, managerial, executive, sub-professional, minor supervisory, or proprietorial occupations. These occupations form the two top groups of the five occupational level groups of the study. Based on the distribution of Ontario males, 35 years and older, in the occupational structure, the "white-collar" group of fathers had more than double their expected proportion of offspring among grade thirteen students. Of those grade thirteen students who went on to university, a disproportionately large number came from families where the fathers were employed in the highest occupational categories: professional, managerial, or executive occupations.

When answers are sought as to why there is a disproportionate number of lower class children among those who fail to make satisfactory progress in school, and who, as a result of this poor achievement, drop out of school before achieving at least the high school level of learning, some of the causes of learning limitations under which these pupils operate must be examined.

#### 4. Causes of Learning Limitations

Deutsch,<sup>27</sup> in his review of the problems faced by the

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<sup>27</sup>Martin P. Deutsch, "The Disadvantaged Child and the Learning Process," Education in Depressed Areas, ed. A. Harry Passow (New York: Bureau of Publications, Teachers College, Columbia University, 1963), p. 163.

lower social-class pupil, points out that among children who come from lower class socially impoverished circumstances, there is a high proportion of school failure, school drop-outs, reading and learning disabilities, as well as life adjustment problems. He suggests that the lower class child enters the school situation so poorly prepared to produce what the school demands that initial failures are almost inevitable, and the school experience becomes negatively rather than positively reinforced. In their analysis of the problem of the lower class pupils entering the elementary school, Bloom, Davis and Hess<sup>28</sup> point out that differences between pupils of upper class and lower class, small but measurable initially in the first grade, become larger each year. By the end of the sixth year, they suggest there is a cumulative deficit in the school achievement of the lower class pupils which shows up most clearly in the tool subjects of reading and arithmetic. They further note an apparent decline in the measures of general intelligence of many lower class children during the period of grade one to grade six.

#### Limited Mental Development

All children do not come to school equally prepared for

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<sup>28</sup> Benjamin S. Bloom, Allison Davis and Robert Hess, Compensatory Education for Cultural Deprivation (New York: Holt, Rinehart and Winston, Inc., 1965), p. 20.



the learning tasks of the first grade. The problem of individual differences has always had to be faced by the classroom teacher. It has always been recognized that mental ability varied from child to child and that differences in children's I.Q.'s could be attributed to native endowment, but very little of the variation was attributed to the effects of environment. Bloom, Davis and Hess<sup>29</sup> suggest, however, that recent research has demonstrated that for children growing up under adverse circumstances, the I.Q. may be depressed by a significant amount.

Ideally, the early intellectual development of the child should take place in the home. All later learning is likely to be influenced by the very basic learning which has taken place by the age of five or six. W. H. Worth,<sup>30</sup> in his monograph "The Critical Years," refers to a report by Benjamin S. Bloom,<sup>31</sup> which examines and interprets a large mass of data from hundreds of longitudinal studies on the shaping of the human being from infancy to adulthood with respect to such relatively stable characteristics as intelligence, school achievement, and per-

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<sup>29</sup>Ibid., p. 12.

<sup>30</sup>W. H. Worth, "The Critical Years," The Canadian Administrator, Vol. 4, No. 4 (January, 1965), pp. 13-16.

<sup>31</sup>Benjamin S. Bloom, Stability and Change in Human Characteristics (New York: John Wiley and Sons, 1964).

sonality traits. This report indicates that most stable human characteristics have negatively accelerated growth rates-- that is, growth begins very rapidly and then slows down. In terms of intelligence measured at age 17, about 50 per cent of the development takes place between conception and age 4, about 30 per cent between ages 4 and 8, and about 20 per cent between ages 8 and 17. The effects of environment on characteristics such as intelligence which tend to follow this pattern of development, especially of extreme environment, appear to be greatest in the more rapid (earlier) periods of development, and least in the less rapid (later) periods.

In his report to the Canadian Conference on Children, Frank E. Jones<sup>32</sup> summarizes the results of several investigations into the relationship between social-class and intelligence by concluding that upper class students appear to be better endowed with the intelligence necessary to cope with higher learning, and concludes that social-class shares with intelligence the distinction of being a major influence contributing to variations in scholastic aspirations.

Hollingshead,<sup>33</sup> in his study, observed that social-

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<sup>32</sup> Frank E. Jones, Social Bases of Education, Report to Canadian Conference on Children, Quebec City, 1965, p. 17.

<sup>33</sup> Hollingshead, op. cit., p. 175.

class and intelligence, as measured by standard intelligence tests, are positively related, i.e., the higher the social-class, the higher the percentage of higher I.Q.'s, or the higher the average I.Q. In their review of papers reporting and discussing research on a variety of problems in the field of education, Charters and Gate<sup>34</sup> summarize the findings of the studies investigating the relationship between social-class and intelligence in the same way. Mayer<sup>35</sup> states that the wealthiest suburban school outside of a typical American metropolitan area usually shows an average I.Q. of about 120, while the bottom school of the worst slum area shows an average I.Q. of about 85. He also observes that children with high I.Q.'s (135 and over) come from homes where the father is a professional, semi-professional, or in business management. In the same report, he notes that only 7 per cent of the students with high I.Q.'s come from homes of semi-skilled and unskilled workers.

Sexton,<sup>36</sup> in her study of Big City, reports the work

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<sup>34</sup>W. W. Charters, Jr. and N. L. Gate, Readings in the Social Psychology of Education (Boston: Allyn and Bacon, Inc., 1963), pp. 12-21.

<sup>35</sup>Martin Mayer, "The Good Slum Schools," Harpers, No. 222 (April, 1961), pp. 46-52.

<sup>36</sup>Sexton, op. cit., p. 65.

of Gallagher and Crowder<sup>37</sup> in an investigation of the total school population of a Midwestern city in the United States. A basic finding of this investigation was that among students in grades two to five, with scores on the Stanford Binet I.Q. test of 150 or over, almost half (49 per cent) were the offspring of college professors, and a total of 73 per cent were from either business or professional families. Not one child was from an unskilled family.

Very little investigation has been carried out in Canada on the relationship between social class and intelligence. What research has been done in Canada supports the United States findings.

Robbins,<sup>38</sup> in a study of Ottawa public school children, found a positive relationship between social-class and intelligence.

John Porter, in "Social Class and Education," remarks, "Although for Canada, the evidence on the relation between social-class and measured intelligence is meagre, there is

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<sup>37</sup> James J. Gallagher and Thora H. Crowder, "Adjustment of Gifted Children in the Regular Classroom," Educating the Gifted, ed. Joseph L. French (New York: Holt, 1959).

<sup>38</sup> John E. Robbins, "The Home and Family Background of Ottawa Public School Children in Relation to their I.Q.'s," Canadian Society, ed. Bernard R. Blishen et al (New York: The Free Press of Glencoe, Inc., 1961).

enough of it from other industrial societies to suggest it may be a characteristic of industrial societies as such."<sup>39</sup>

#### Limited Language Development

Verbal ability is a basic skill, an absolute essential in today's world. It is the means by which people communicate with each other.

Insofar as school is concerned, it is the basis on which most, if not all, teaching-learning situations are built. It is the means by which information and skills are transmitted from teacher to pupil. Further, it is a basic requirement in most testing programs, intelligence testing or achievement testing. It is in this area that the lower social class child is particularly weak.

Smiley<sup>40</sup> suggests that the verbal deprivation of lower-class children begins, as all language learning begins, with their early experiences in speech. She refers to a 1948 study by Irwin<sup>41</sup> on the development of speech in infancy, which

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<sup>39</sup>Porter, op. cit., p. 129.

<sup>40</sup>Smiley, op. cit., p. 29.

<sup>41</sup>Orvis C. Irwin, "Infant Speech: The Effect of Family Occupational Status and the Age on Sound Frequency," Journal of Speech and Hearing Disorders (December, 1948), p. 39.

points out that while initial development was age-related, only development during the second year revealed social-class differences. In a more recent study of lower-class children's speech development, Templin<sup>42</sup> reports that sentence length and complexity of sentence structure are related to socio-economic level. The study revealed that the differences between upper and lower socio-economic groups are significant in such language areas as the grammatical complexity of remarks, the vocabulary of recognition at school age, and in the length of remarks at pre-school age.

Allison Davis<sup>43</sup> points out that by the time they are two years old, low-status children already are inferior in verbal skills to those from the middle classes. As a result of this inferiority, these children, at first-grade level, will not perform as well on tests and on the verbal aspects of the curriculum. Moreover, after the primary grades, the superiority of the middle-class child in verbal skills and academic habits increases faster than that of low-status children. Thus,

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<sup>42</sup> Mildred C. Templin, "Relation of Speech and Language Development to Intelligence and Socio-economic Status," Volta Review, No. 60 (September, 1958), pp. 331-334.

<sup>43</sup> Allison Davis, "Society, the School, and the Student," Improving English Skills of Culturally Different Youth, Bulletin No. 5 (Washington: U. S. Department of Health, Education and Welfare, Office of Education, 1964), p. 14.

by the time these two groups have reached the secondary school, the low-status students are farther behind the middle economic group than they have ever been. This retardation exists in all areas of the curriculum, but particularly in the basic language skills.

#### Influence of Home Environment

Two requisites are essential if any pupil is to attack and to master any learning situation: mental ability capable of coping with the expected learning, and sufficient readiness or background on which to tackle the new learning.

This section outlines some of the limitations suffered by low social-class children in their pre-school years because of the special problems of the type of home in which they are reared.

Ideally, the family provides for the physical and emotional well-being of children and raises them to levels of understanding, which serve as foundations for the school's effort to promote intellectual growth. But these foundations are often lacking in the case of the deprived child.<sup>44</sup>

The parents of deprived children often have limited education themselves. They are generally marginally employed.

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<sup>44</sup>Mildred Sandison Fenner, "Education and the Disadvantaged American," NEA Journal (April, 1962), pp. 8-12.

In many cases the family has moved frequently in search of employment, or for other reasons, and its narrow environment moves with it. Books, magazines, and other materials are virtually non-existent in the home. The children probably have little or no contact with such institutions as libraries or museums that might broaden their experience.<sup>45</sup>

Goldberg,<sup>46</sup> in her outline of factors affecting the educational future of the lower social-class child, points out that, beginning with the family, the early pre-school years present the child from a disadvantaged home with few of the experiences which produce readiness for academic learning, or which instil in the child the right attitudes and motivation for future success. The child has little preparation either for recognizing the importance of schooling in his own life or for being able to cope with the kinds of verbal and abstract reasoning which the school will demand of him.

Deutsch<sup>47</sup> suggests that in the lower social-class home

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<sup>45</sup>Dorothy M. Fraser (ed.), Deciding What to Teach (Washington: National Education Association of the United States, 1963), pp. 55-56.

<sup>46</sup>Miriam L. Goldberg, "Factors Affecting Educational Attainment in Depressed Urban Areas," Education in Depressed Areas, ed. A. Harry Passow (New York: Bureau of Publications, Teachers College, Columbia University, 1963), p. 87.

<sup>47</sup>Deutsch, op. cit., pp. 167-171.



there is a scarcity of books, toys, puzzles, pencils and scribbling paper. It is not that the mere presence of such materials would necessarily result in their productive use, but it would increase the child's familiarity with the tools with which he will be confronted in school. Deutsch proposes that children from depressed areas, because of inadequate training and stimulation due to the lack of objects and lack of diversity of home artifacts, may not have developed the requisite skills by the time they enter the first grade, and the assumption that they do possess these skills may add to the frustration these children experience on entering school.

#### 5. Summary

A review of the literature dealing with low social status and its relationship to academic achievement has indicated the basic problems of limited mental and language development. In turn, these basic requirements for academic achievement are found to depend upon the home environment in which the educationally deprived child is reared. The roots of learning begin to be formed following birth, long before the youngster appears in first grade class. The roots of learning in some children are blighted before they begin school, and this leads to disabilities which appear during the elementary grades and may become insurmountable at the secondary level. The final result may be the academic "drop-out."

## CHAPTER III

### COMPENSATORY EDUCATION FOR THE DEPRIVED

#### 1. Introduction

Educational authorities have long been aware of the problem of the education of the lower social class. Allison Davis,<sup>1</sup> in his article, "Society, the School, and the Culturally Deprived Student," refers to an address he delivered in 1950 to the American Association of School Administrators, in which he pointed out that the efficiency of a nation depended upon two factors. These two basic factors are how to motivate, and how to teach, the lower socio-economic groups within the schools. He suggests that only when the lower socio-economic level pupils are assisted to develop their abilities and skills and guided into productive jobs will a country develop to its maximum potential.

Ravitz<sup>2</sup> asserts that the disadvantaged children who

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<sup>1</sup>Allison Davis, "Society, the School, and the Culturally Deprived Student," Improving English Skills of Culturally Different Youth, Bulletin No. 5 (Washington, D.C., U.S. Department of Health, Education and Welfare, Office of Education, 1964), pp. 10-11.

<sup>2</sup>Mel Ravitz, "The Role of the School in the Urban Setting," Education in Depressed Areas, A. Harry Passow, ed. (New York: Bureau of Publications, Teachers College, Columbia University, 1963), p. 21.

live in the depressed core of the city have the same intellectual potential as other normal children. They are not dull nor stupid; many are, or would be, bright and alert, if they were able to gain those experiences that would enable and encourage them to learn the ways and knowledge of the middle-class world. This, of course, must be integrated with positive efforts on the part of civic authorities to remove the basic causes of the economic, educational, and psychological plight of the homes of these children. To this end, urban renewal must be undertaken, not just to improve the physical appearance of the area, but to improve the outlook of the people who populate the area.

Smith,<sup>3</sup> in "The Nature of Educational Change," states that it is not sufficient that we content ourselves with meeting the physical problems, but we must study the educational implications of the personal effects of overcrowded living, and be prepared to expect large-scale social changes.

Becker<sup>4</sup> points out that schools function importantly

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<sup>3</sup>Clarence E. Smith, "The Nature of Educational Change," The Journal of Education, No. 8 (March, 1963), p. 29.

<sup>4</sup>Howard S. Becker, "Schools and Systems of Stratification," Education, Economy, and Society; A Reader in the Sociology of Education, A. H. Halsey, Jean Floud, and C. Arnold Anderson, editors (New York: The Free Press of Glencoe, Inc., 1962), p. 103.

as a possible means by which lower social class groups are enabled to move upward in social status. Education can and must provide the mobility by which disadvantaged groups are enabled to move out of their depressed state. Davis<sup>5</sup> suggests that usually the school is the one place where the student from the slums has the chance to associate with, and to want to become like, a middle-class person. He points out that achievement in school alone is not always a true measure of the full benefit such a pupil receives. The real measure may not show up until ten or fifteen years after the pupil has left school. The place he has taken in society then indicates the real benefit of his schooling.

The problem of education for the lower-class child is not just attendance at school. If he enters school with the limitations indicated earlier, and then is expected to cope with the same curriculum, and taught by the same methods as those devised for the middle-class pupil, the educational system cannot expect the schooling to have much impact. What must be developed is an approach to the learning problems of the disadvantaged so that he has the opportunity to develop to the fullest his potential.

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<sup>5</sup> Davis, op. cit., p. 15.

Sexton<sup>6</sup> suggests that two broad objectives might be accepted in the search for specific goals in setting up a program of education for underprivileged children: education for lower-income children should provide such skills and understandings as would enable them to compete as far as possible on the same levels with upper-income children for the rewards of school and of later life; education should equip them to function as useful citizens in a democracy, and to lead richer, fuller lives.

## 2. Compensatory Programs for the Deprived

During the past ten years, many compensatory educational programs have been established. The first of these was initiated in New York in 1956 as an experimental project in one junior high school. From this small beginning it has grown to a full-scale program, the Higher Horizons program, including pupils from elementary school level to senior high school. This program has served as a model for other programs which have been established.

Following the success of the New York project, the educational authorities in thirteen large cities in the United

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<sup>6</sup> Patricia Cayo Sexton, Education and Income, Inequalities of Opportunity in Our Public Schools (New York: The Viking Press, 1961), pp. 283-284.

States decided to implement a compensatory educational program. This program became known as the Great Cities Grey Areas Improvement program. The first project was initiated in Detroit in 1959. Although the program is basically the same in each city, it has been modified to suit the particular needs of the individual city.

In Winnipeg, a compensatory program was established in September 1962.

A brief description of each of these compensatory programs is given in the following section.

#### New York Higher Horizons Program

The first compensatory program in the United States was set up in New York in December, 1956. It was the result of an inquiry by the New York Board of Education into the problems of integration and drop-outs. Seeking solutions to these problems, the Board established a committee on Guidance, Educational Stimulation, and Placement. In the spring of 1956, the committee stated:

It is well known that tests of mental ability usually do not measure the full intellectual potential of children who come from low status socio-economic homes, or homes in which there is cultural deprivation. Neither do such children demonstrate the academic achievement that other, more privileged children of comparable ability do, with the result, relatively few of the under-privileged children pursue post-high school education, if indeed they complete even modified high school courses. In the concern for this type of child, it is proposed to institute

a demonstration guidance program for the early identification and stimulation of able students who are not now identified, and to combine this guidance program with one of teacher education in the identification and stimulation of able students of the type mentioned.<sup>7</sup>

A Demonstration Guidance Project was initiated in one junior high school. In describing the project, Shaw<sup>8</sup> notes that initially the project was rather narrow in its scope, the students being chosen on a very selective basis. Only half the enrolment, the most promising, were selected for the project. Their mean I.Q. was 95, and on the average, were retarded one and one-half years in reading. Of those students chosen to participate in the project, some dropped out of school, others entered vocational high schools instead of entering the regular academic high school, still others left the city.

Shaw<sup>9</sup> outlines the project under four basic headings, and credits the success of the experiment to the emphasis placed upon each:

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<sup>7</sup> Board of Education, City of New York, Higher Horizons Program (Brooklyn, N.Y.: Board of Education, City of New York, 1961), (Mimeographed), p. 1.

<sup>8</sup> Frederick Shaw, "Educating Culturally Deprived Youth in Urban Centres," Phi Delta Kappan, Vol. 45, No. 2 (November, 1963), p. 94.

<sup>9</sup> Ibid.

1. Reinforcing the teacher's work--students who were deficient in reading entered special remedial classes of five or six students. All teachers, regardless of subject, spent the first ten minutes of class time in reading exercises. At the high school level, the students took English twice a day because they had difficulty with the written, and spoken, language. Counselling services were increased, and the clinical services helped students cope with environmental difficulties interfering with school achievement.

2. Involving parents--school personnel spent considerable time in parent interviews, parent meetings, parent workshops, and even trips for parents. Counselors tried to persuade parents to provide privacy for home study, to encourage good school work, and to limit home responsibilities of the student to the minimum.

3. Involving the community--trips to museums, libraries, industrial plants, concerts, the ballet, the theatre, and colleges were a regular part of the project.

4. Providing additional funds--the project cost \$100 per junior high pupil, \$250 per senior high pupil. These costs represented a more than 40% increase in normal academic high school expenditure.



Riesmann<sup>10</sup> points out that the project stressed a number of outstanding features, in addition to those outlined by Shaw:

1. A variety of instruments were utilized, including a non-verbal I.Q. test, in order to assess the ability of the students.
2. Book fairs and circulating libraries of paperbacks were started in the schools to stimulate reading.
3. Classrooms were opened after hours, giving children who came from noisy, crowded homes the opportunity for quiet study.

Riesmann<sup>11</sup> in his assessment of the project, states that, despite basic weaknesses, the project demonstrated convincingly that supposedly uneducable children from lower socio-economic backgrounds can learn and progress in a reorganized school environment. He points out that the success of the Demonstration Guidance Project was outstanding: reading ability and grades improved; I.Q. scores went up; school attendance increased, discipline problems subsided, and parents' partici-

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<sup>10</sup> Frank Riesmann, The Culturally Deprived Child (New York: Harper and Row, 1962), pp. 98-99.

<sup>11</sup> Ibid., p. 100.

pation in the school rose.

The success of the pilot project led to its expansion in a less intense form, known as the Higher Horizons Program. In 1959, it was introduced into other junior high schools as well as the feeder elementary schools. In the 1963-64 school year it served pupils in fifty-two elementary schools, thirteen junior high schools, and eleven high schools throughout New York City. The Report of the Board of Education of New York<sup>12</sup> points out that the Higher Horizons Program was planned to include all children,--bright, average, and slow. Since it applies to the disadvantaged, it is, in reality, a quest for the kind of education which, when adjusted to their needs, will enable them to compete with other children on an equal basis.

Seymour,<sup>13</sup> in his assessment of the Higher Horizons demonstration education program which was provided over a six-year period from grade seven, notes the following results:

1. reading scores increased from 5.4 in grade seven to 9.7 in grade nine;
2. the number of high school completions increased by 39%;

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<sup>12</sup>Board of Education of New York, op. cit., p. 2.

<sup>13</sup>P. H. Seymour, "'Higher Horizons' of New York City," New Opportunities for the Culturally Disadvantaged (Toronto: The Canadian Education Association, 1964), p. 73.

3. the number of students who went on to some other form of higher education increased by 250%;
4. verbal I.Q.'s (which usually go down with increasing age for underprivileged children) rose from a median of 93 in grade eight to a median of 102 in grade eleven.

Seymour feels that these results constitute significant evidence of the value of compensatory education for culturally disadvantaged children.

The Great Cities Grey Areas  
School Improvement Program

The Great Cities Grey Areas School Improvement Program grew out of a meeting of the superintendents and board members of fourteen large cities (population 600,000 or more.) The meeting concluded that immediate steps should be taken to improve the education of children with limited backgrounds. Of the fourteen cities, New York did not participate in the program since it had already initiated one of its own, Higher Horizons. The other thirteen cities, Baltimore, Boston, Buffalo, Chicago, Cleveland, Detroit, Los Angeles, Milwaukee, Philadelphia, Pittsburg, San Francisco, St. Louis, and Washington, D.C. set up programs based upon the New York model. Following the initial meeting in 1957, the first pilot project was established in Detroit in 1959.

In all projects, the aims are to help disadvantaged children in many ways: to raise their school achievement, to

identify and help able youngsters, to raise the level of their aspirations, to equip them for modern urban life by developing their competencies, to increase parental responsibility, and to mobilize community support in their behalf.<sup>14</sup>

#### Detroit Great Cities School Improvement Program

The Great Cities Program in Detroit began in three schools, in the 1959-60 school year, the ultimate intention being to expand it to become a regular part of the school system. The initial project has since been expanded to include four elementary, two junior high, and one senior high school. The total enrolment is just over 10,000 pupils, and is operated at a cost of less than 10% above the normal per pupil cost. The budget is composed in part of Board of Education funds, and in part, of funds from the Ford Foundation.<sup>15</sup>

Shaw<sup>16</sup> points out that there are four basic elements in the Detroit project. These are:

1. The classroom teacher's work is reinforced by assis-

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<sup>14</sup>Frederick Shaw, op. cit., pp. 91-97, and Ralph Lee, "Stirrings in the Great Cities: Detroit," NEA Journal, Vol. 51, No. 3 (March, 1962), pp. 34-37.

<sup>15</sup>G. L. Barbeau, "Compensatory Education Program-- Detroit," New Opportunities for the Culturally Disadvantaged (Toronto: The Canadian Education Association, 1964), p. 28.

<sup>16</sup>Shaw, op. cit., pp. 93-94.

tance from specialized professional workers and smaller class size. Competent consultants in the areas of education, social work, sociology, and psychology gave in-service courses, and local workshops in local school curricular problems were organized. Each school involved in the project added three full-time specialized persons to its staff. These were: a school community agent to act as liaison officer between community and school; a visiting teacher, who, in reality, was a social worker; and a coaching teacher, specially trained in language arts, to work with groups of five to fifteen children, helping them to overcome reading deficiencies, and to help to train other teachers in this area.

2. The school tries to show parents that education can open new doors to opportunity for their children, particularly if they are convinced this is possible and willingly co-operate. The Detroit project attempted to involve parents in school activities in order to raise their educational and social aspirations for their children, and to give the parents a better understanding of the educational process. Free classes were offered in speech, shorthand, typing, sewing, and millinery, as well as refresher courses in reading and arithmetic. This enabled the parents to help their children in school work.

3. The community is involved in upgrading the education

of its children. The schools set up comprehensive programs of after-school and evening activities to serve the needs of the community. Some emphasized afternoon enrichment programs for youth, while others offered evening adult educational programs.

4. Additional funds were provided. All the activities required more funds than were provided for conventional schools. But, generally speaking, the extra cost of the demonstration project did not exceed 10% of the normal costs of schooling in Detroit schools.

Barbeau,<sup>17</sup> in his report on the Detroit project, states that:

The educators working in the Detroit project schools believe that an increasingly large number of children will leave school with positive self-images, higher goals, greater scholastic achievement, and improved citizenship. They will be more adequately prepared for going to work and will be independent rather than dependent citizens.

In support of this observation, he notes the following findings:

1. I.Q. scores have been substantially increased in several cases.
2. Achievement scores have been materially affected by specialized coaching and remedial and enrich-

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<sup>17</sup> Barbeau, op. cit., p. 32.

ment programs.

3. Parent participation in school and after-school programming has been far beyond expectations.
4. The involvement and co-operation of public and private agencies have increased rapidly as they come to know the objectives of the project.

Other Projects in the Great Cities Grey  
Areas School Improvement Program

The outline of the Detroit project gives basically the approach being used by all the school systems in the Great Cities Grey Areas School Improvement Program. The details differ from area to area depending upon the directors in charge of the project, and the special needs to be met.

Milwaukee has established school orientation centres to prepare culturally deprived children for regular classrooms. St. Louis has set up a combined academic and vocational program aimed at economic independence for students who would otherwise join the army of drop-outs; Pittsburg uses team teaching and flexible programming to tailor education for disadvantaged children. The main purpose of the San Francisco program is "to develop solutions for the reading and language problems of culturally deprived youth." This project makes an across-the-board effort, with classes in two elementary schools, one junior high school, and three senior high schools. The same concern for better communication skills has shaped the language arts program set up in Washington, D.C. to aid

children "who have the ability to communicate for utilitarian purposes but have not had the background to be able to use English as a form of expression of ideas--which in turn begets ideas." Although this program is used only in the kindergarten and primary grades of fourteen selected schools, it has affected all grade levels of the schools involved because of the special work of the language arts teachers and strong in-service programs in each school.<sup>18</sup>

Summary of the Great Cities Grey Areas  
School Improvement Programs

Dorsey Baynham,<sup>19</sup> in writing about the Great Cities Projects, notes that although program details differ, certain factors are common to each. He lists four such factors:

1. Awareness that the culturally deprived student is usually weak in communication skills and that this inability causes failure in other subjects.

2. Willingness to experiment with a broad range of supplementary teaching materials such as: filmstrips, records, and television, and with administrative approaches such as team teaching and flexible programming.

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<sup>18</sup>Dorsey Baynham, "The Great Cities Projects," NEA Journal, Vol. 52, No. 4 (April, 1963), pp. 17-20.

<sup>19</sup>Ibid., p. 17.



3. Strenuous efforts to search out and to use community help, such as various public health and welfare services or private philanthropic organizations as well as business and industry.

4. Preparation both in teaching skills, and in attitudes of teachers involved in the Great Cities programs.

#### Conclusions Regarding American Compensatory Programs

Shaw,<sup>20</sup> in summing up the relative successes of the various compensatory programs, suggests that, as yet, there is only a beachhead of knowledge on how to teach disadvantaged children. He feels that the demonstration projects are hopeful signs. Intelligent efforts are being made to prepare teachers to handle assignments in deprived schools with confidence and skill. Kaplan<sup>21</sup> notes that there is evidence that many programs are attempting to foster in their staff a better understanding of the community's disadvantaged, and to adapt materials and methods accordingly. He<sup>22</sup> sums up the problem and its solution in these words, "Only by confronting the

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<sup>20</sup>Shaw, op. cit., p. 97.

<sup>21</sup>Bernald A. Kaplan, "Issues in Educating the Culturally Disadvantaged," Phi Delta Kappan, Vol. 45, No. 2 (November, 1963), p. 75.

<sup>22</sup>Ibid., p. 70.

issues squarely and unequivocally will school districts be able to develop successfully their own programs for disadvantaged pupils."

#### Winnipeg "Higher Horizons" Program

Members of the Winnipeg School Board became concerned in 1961 about the large number of students who dropped out of school before they completed high school. They suspected that the situation was particularly serious in the low socio-economic areas of the city, and suggested that a "Higher Horizons" program, similar to the project introduced in slum areas of New York, be tried on an experimental basis in Winnipeg, if the plan appeared to be feasible. Four thousand dollars was placed in the 1962 budget for initial expenses connected with the study and probable introduction of a "Higher Horizons" program.

The area served by Hugh John Macdonald Junior High School and its feeder elementary schools, Victoria-Albert, Isbister (since closed), Somerset, Pinkham, and Montcalm, was designated as a suitable experimental unit for launching a "Higher Horizons" project.

A committee consisting of the Assistant Superintendent (Elementary), and other administrative officials, and the principals of the schools concerned, under the chairmanship of the Assistant Superintendent (Secondary) was established. Their

assignment was to review the available literature describing the New York project and to relate this information to the local situation. A further investigation was to determine the feasibility of a program being introduced.

Bulletin No. 1 of the "Higher Horizons" Projects,<sup>23</sup> provided the following pertinent information about the transiency of students in this area:

1. Principals of the elementary schools reported a tremendous student turnover in grades one to six. Some schools reported an average of thirty transfers-in and transfers-out per month. However, it was noted that most of this moving appeared to take place within the area served by Hugh John Macdonald School.

2. A survey of the student population at Hugh John Macdonald School revealed that of the pupils:

- a) in grade nine--42% had been in the area for nine years or more; 23% had been in the area for less than four years;
- b) in grade eight--38% had been in area eight years or more; 35% had been in the area for less than four years;
- c) in grade seven--40% had been in the area seven

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<sup>23</sup>Winnipeg School Division No. 1, "Higher Horizons" Projects, Bulletin No. 1, Winnipeg: School Division of Winnipeg No. 1, Superintendent's Department, May, 1962, 3 pp. (Mimeographed)

years or more; 40% had been in the area for less than four years.

A follow-up study<sup>24</sup> was made on 313 pupils who attended Hugh John Macdonald School in grade seven in 1955-56 to determine the grade attained and the educational aspirations of the students who might be in grade twelve or first year university in 1961-62 if they had continued in school and had passed a grade each year. The survey revealed the following information:

1. 11% were attending grade twelve or first year university;
2. 7% withdrew in their third year of high school (grade twelve);
3. 11% withdrew in their second year of high school (grade eleven);
4. 11% withdrew in their first year of high school. This included those in Terminal and Special Courses as well as Matriculation and General Courses;
5. 8% withdrew in grade nine;
6. 12% withdrew in grade eight;
7. 15% withdrew in grade seven;
8. 25% transferred to other schools and could not be traced.

From this report, it is apparent that 35% of the students who started grade seven at Hugh John Macdonald School never reached

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<sup>24</sup>Ibid., p. 2.

high school.

It was decided, in view of this information, to recommend to the School Board that a "Higher Horizons" Project be initiated, but not to "import" the New York program. The reasons given were:

1. Winnipeg did not have the financial resources to launch a costly program.
2. Guidance and counselling, considered to be the backbone of the New York program, were not accepted in Winnipeg to the extent they are in the United States.
3. Schools in Winnipeg are not free to modify the curriculum.
4. The basic problem in Winnipeg is not colour or race, with overtones of discrimination, but rather one of limited curriculum adaptation to students' abilities, and interests, parental indifference, low self-image, lack of ambition, and lack of financial resources.

The committee decided that the specific problem was to get students to stay in school voluntarily, beyond the school leaving age, on through senior high school and into higher institutions of learning. In short, the object was to reduce the rate of drop-out in the junior high school and to increase the number of students entering and completing senior high school and university. The committee summarized the objective of the program in the following statement:

We must identify the college-able students early and stimulate them to realize their potential. But we cannot stop there. We must also motivate the students not likely to succeed in college, to pursue an educational program which will best fit them for the occupations, trades, or business enterprises for which they have aptitude.<sup>25</sup>

It was decided that the grade seven students of Hugh John Macdonald Junior High School, and the grade six students of the feeder schools: Isbister, Montcalm, Pinkham, Somerset, and Victoria-Albert, would embark on an experimental compensatory program. This project was commenced in September, 1962. The project has been gradually extended in both directions until in September, 1964, grades five to nine pupils were part of the program.

In September, 1965, a questionnaire comprised of twenty-five questions was distributed to teachers in Dufferin, Montcalm, Somerset, and Victoria-Albert schools to determine their opinions regarding the effect that the Higher Horizons program had had on pupils, parents and teachers. The Evaluation of Higher Horizons Program analysis<sup>26</sup> showed that at each of the four schools there was a majority opinion favouring the program

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<sup>25</sup> Ibid., p. 2.

<sup>26</sup> The Winnipeg School Division No. 1, "Evaluation of Higher Horizons Program (Winnipeg: The Winnipeg School Division No. 1, Superintendent's Department, November, 1965), 1 page (Mimeographed).

as having some positive effect. A test analysis for the total over-all effect showed the results to be highly significant. The results also showed a trend of opinion favouring the Higher Horizons program as having a significant positive effect on students, parents, and teachers.

## CHAPTER IV

### DESIGN OF THE RESEARCH PROJECT

#### 1. Purpose of the Project

Chapter I outlined one of the basic problems faced by modern educational systems, that of providing programs designed to enable all pupils, regardless of social class, to achieve academically to the limit of their mental capacity. It was pointed out that with the growth of large urban centres, with their cores of low-rental housing, populated largely by lower social-class families, the problem of educating the children of such families has become one of major concern to educators.

The review of the literature, presented in Chapter II, indicated the direct relationship that exists between social-class and academic achievement. Research at the elementary school level indicates that a gap between the upper and lower social-classes exists in the early stages of the formal school program. It has been suggested that this gap exists at the pupils' initial entry into school, and widens with each higher grade.

Most curricula in common use in public schools have been devised to challenge the great majority of pupils enrolled in the schools. These are members of the great middle class.



Such curricula are based upon the assumption that all pupils enter school equally prepared for the formal program. Unfortunately, pupils from the lower social-classes lack the pre-school preparation for success and are unable to cope adequately with the learning program. Their lack of readiness for school is soon apparent in their reduced achievement, a situation which leads soon to retardation and limited mastery of the basic skills. This is particularly noticeable when pupils of the lower social classes are compared with pupils of the upper social classes.

This study undertook to investigate the possibility that there is a difference between the grade three Winnipeg pupils from two different social status areas. The study was particularly concerned with any difference which might exist with regard to retardation, and to relative ability in the basic language arts skills, as shown by achievement test scores in paragraph meaning, word meaning, spelling, and language.

In recent years, a considerable number of non-English speaking immigrants have arrived in Winnipeg, many of them settling in the central part of the city. This is particularly true of those who are semi-skilled workmen. As a further part of this project, the investigation of the role that a home language, other than English, might play in the pupil's school progress was undertaken.

## 2. Selection of the Subjects

For the purposes of comparison, two groups of grade three pupils were selected. All pupils involved in the study began the grade three program in September, 1965. Initially, all pupils enrolled in grade three in the ten schools selected for the research project were included in the study. Losses were suffered when pupils transferred out before the testing program was completed, pupils were absent for part of the testing program, or complete information about the family could not be obtained. In the final analysis, 176 pupils in Area 1 (low), and 207 pupils in Area 2 (high), were involved in the study.

Experimental Group. The experimental group included the pupils enrolled in five elementary schools: Dufferin, Montcalm, Pinkham, Somerset and Victoria-Albert. These schools are located in downtown Winnipeg, an area commonly known as the "inner city."

The area served by these schools includes the property bounded by Notre Dame Avenue (South), the Canadian Pacific Railway main line (North), Main Street (East), McPhillips Street (West). On the Index Map of Census Tracts of the Metropolitan Area Winnipeg, Census of Canada, 1961, this area includes Census Tracts 19, 22, 23, and 24. A copy of this

map, with Area 1 defined, is shown in Figure 1, page 64.

For the purpose of this study, this area will be referred to as Area 1, with the schools within the area designated as follows: Dufferin - 1, Montcalm - 2, Pinkham - 3, Somerset - 4, Victoria-Albert - 5.

The Census of Canada, 1961,<sup>1</sup> shows this area to be populated predominantly by families where the fathers' occupations are of the unskilled or semi-skilled type.

On the same Census report, the average annual wage for males within the City of Winnipeg is given as \$3,670. For this area, the average annual wage for males is given as \$2,779.

The report on the Dominion-Provincial Conference on Poverty defined the condition of being "poor" as being applicable to any family in Canada that earned less than \$3,000 per year.<sup>2</sup>

Occupation and income are commonly accepted as indices of social level. On these bases, this area was considered to be representative of the lower social-class.

Control Group. The control group included those pupils enrolled

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<sup>1</sup>Census of Canada, 1961, "Population and Housing Characteristics by Census Tracts, Winnipeg," Dominion Bureau of Statistics, Bulletin CT-17, (Ottawa: Queen's Printer, 1963), pp. 4-23.

<sup>2</sup>News item in the Winnipeg Free Press, December 7, 1965.

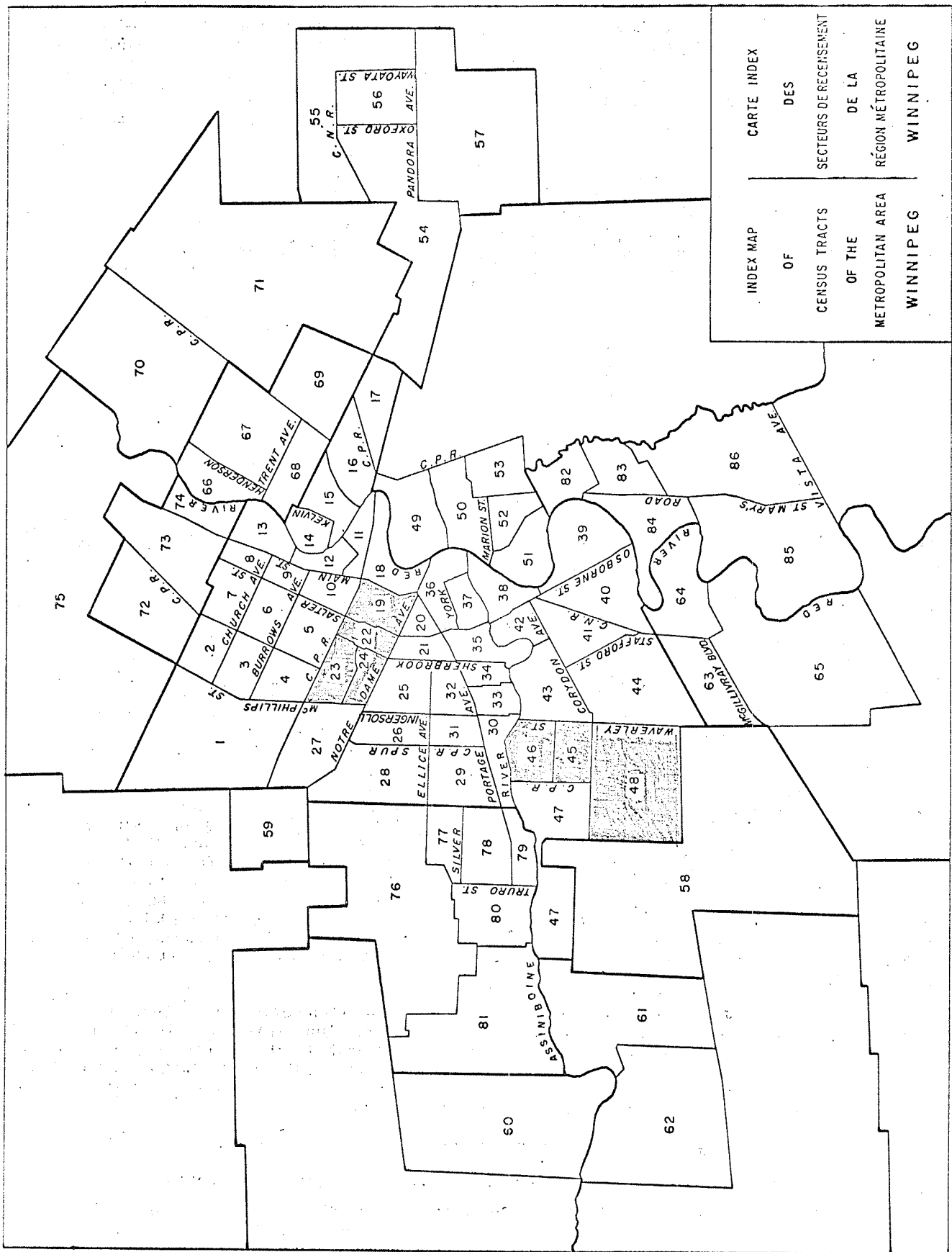


Fig. 1.

in the following schools: Brock-Corydon, Montrose, Queenston, Robert H. Smith, and William Osler.

These schools are located within the area enclosed by Taylor Avenue (South), the Assiniboine River (North), Cambridge Street (East), the Midland Railway line (West). On the Index Map of Census Tracts of the Metropolitan Area Winnipeg, Census of Canada, 1961, this area includes Census Tracts 45, 46 and 48. A copy of this map, with Area 2 defined, is shown in Figure 1, page 64.

For the purpose of this study, this area will be referred to as Area 2, and the schools within the area designated as follows: Brock-Corydon - 1, Montrose - 2, Queenston - 3, Robert H. Smith - 4, William Osler - 5.

The Census of Canada, 1961,<sup>3</sup> shows this area to be populated predominantly by families where the fathers' occupations are of the professional and managerial type.

On the same Census report, the average annual wage for males for this area is given as \$6,480.

On the basis of occupation and income, this area was considered to be representative of the upper social-class.

The distinction between the two groups of pupils, as regards social status, was confirmed by checking the occupation of the head of each family.

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<sup>3</sup>Census of Canada, 1961, loc. cit.

### 3. Collection of the Data

For each pupil involved in the study, the following data were obtained:

- a) sex;
- b) age as at January 1966, at which time the achievement testing program was carried out;
- c) mental ability;
- d) occupation of the head of the family;
- e) language spoken at home;
- f) achievement in each of the sub-tests of the language arts: paragraph meaning, word meaning, spelling, and language.

The complete data for each pupil, recorded by school, is given in Appendix A of this thesis.

Pupils' Ages. The birthdate of each pupil is recorded on a personal record card at the time of the pupil's enrollment in a Winnipeg school. This information is obtained from the child's birth certificate which the parent is required to present at the time of enrollment. By reference to the pupil's record card, the age at time of testing was determined.

Mental Ability. Each year the grade three pupils in the Winnipeg schools are given a mental ability test. This testing program is conducted under the authority and direction of the Director of Research, Winnipeg School Division No. 1. In

September, 1965, the Otis Quick-Scoring Mental Ability Test: Alpha Short Form was administered to all grade three pupils in the Winnipeg schools. The test results for all pupils involved in this study were obtained, and the full scale value accepted as the measure of each pupil's mental ability.

Occupational Scores. To support the acceptance that each selected group was representative of a distinct social-class group, the occupation of the head of each family was obtained. This was obtained from three sources: the academic record card for each pupil, on which the occupation of each parent is recorded; a questionnaire completed by each pupil; and consultation with the school principal and classroom teacher. Where the knowledge of the occupation was uncertain, the home was contacted.

The initial form of the questionnaire was administered to a class of grade three pupils not involved in the study, revised, and the new form administered to a second class of grade three pupils, also not involved in the study. The final form of the questionnaire was then given to the pupils in the study. A copy of the questionnaire is shown as Figure 2 on page 68.

Each occupation was scored according to the Blishen Occupational Class Scale.<sup>4</sup> This particular scale was used

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<sup>4</sup>Bernard R. Blishen, "The Construction and Use of an Occupational Class Scale," Canadian Society, ed. Bernard R. Blishen et al (New York: The Free Press of Glencoe, Inc., 1961), pp. 477-485.

## PUPIL INFORMATION

DATE \_\_\_\_\_

School \_\_\_\_\_

Pupil's Name \_\_\_\_\_

Pupil's Birthdate \_\_\_\_\_

-----  
FATHER:Does your father live at home? \_\_\_\_\_  
(answer YES or NO)Does your father go to work? \_\_\_\_\_  
(answer YES or NO)If your father works, what kind of work does he do?  
\_\_\_\_\_  
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## MOTHER:

Does your mother live at home? \_\_\_\_\_  
(answer YES or NO)Does your mother go to work? \_\_\_\_\_  
(answer YES or NO)If your mother works, what kind of work does she do?  
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since it is based upon a Canadian census, and includes Canadian occupations.

Home Language. Many Winnipeg schools have pupils of various ethnic origins enrolled. The five elementary schools comprising the experimental group have enrolled, in recent years, many students from European countries. They have, also, many pupils generally referred to as Canadian, but whose parents do not use English as their first language. Many of the pupils are bilingual to a certain extent, speaking English at school and outside of the home, but speaking the parental language at home.

To allow for those cases where a language other than English is spoken at home, this second language was noted. This information was obtained by consulting each pupil's record card where such information is recorded. In order to ensure that this information was, in fact, correct, the pupils were asked what language was used at home and to what extent. Where the non-English language was used as the basic language of communication at home, it was accepted as the home language.

Achievement in the Language Arts. To determine each pupil's achievement in the Language Arts, the Stanford Achievement Test: Elementary Battery, Form J, was administered. All four subjects, Paragraph Meaning, Word Knowledge, Spelling, and Language were administered.

A standardized test was used in preference to a curriculum oriented one, since such a test is designed to measure important knowledges, skills, and understandings, whereas a curriculum-oriented test may tend to be merely a recall of learned facts and information. It may not allow for development outside the classroom environment. The standardized achievement type test, such as the Stanford, is not based upon any specific curriculum but allows for all-round educational development, within and without the classroom.

#### 4. Assumptions in the Testing Program

Initially there were four hundred and forty-seven pupils enrolled in the sixteen classes of grade three pupils enrolled in the ten schools in the experiment. It was felt that for one person to conduct all the sessions required to complete the various tests would require too much time, and would stretch the testing program over too long a time. Most of the schools had on staff a teacher who had had experience in conducting the same or a similar type of test. Where such a teacher was not available, the principal conducted the test program.

Prior to the start of the testing program, a conference was held in each school. At this time the instructions for conducting the tests, as laid down by the test authors, were carefully studied. The acceptable answers for each test

were underscored. This procedure was used to ensure that uniformity of testing and marking would prevail for all subgroups.

All tests were conducted in all schools simultaneously.

The Otis test consists of two parts, both of which were administered at one sitting. The Stanford Achievement Battery, Language Arts section, was administered in three sittings.

It has been assumed that all tests were administered uniformly according to instructions and that all answers marked as correct were acceptable as laid down in the marking guide.

All tests were administered during the first morning session when it was assumed that all pupils would be able to cope with the test program at optimum efficiency.

## 5. Null Hypotheses Tested

Part A. - The role of social status in academic achievement.

Hypothesis 1.

There is no difference in the percentage of retardates among grade three Winnipeg pupils of different social classes.

Hypothesis 2.

There is no difference in the mean age level of grade three Winnipeg pupils of different social classes.

Hypothesis 3.

There is no difference in the mean I.Q.'s of grade three Winnipeg pupils of different social classes.

Hypothesis 4.

There is no difference in achievement in paragraph meaning by grade three Winnipeg pupils of different social classes.

Hypothesis 5.

There is no difference in achievement in word meaning by grade three Winnipeg pupils of different social classes.

Hypothesis 6.

There is no difference in achievement in spelling by grade three Winnipeg pupils of different social classes.

Hypothesis 7.

There is no difference in achievement in language by grade three Winnipeg pupils of different social classes.

Part B. - The role of home language in academic achievement of pupils of the same social class.

Hypothesis 8.

There is no difference in the percentage of retardates among grade three Winnipeg pupils of the same social class with English or non-English home language.

Hypothesis 9.

There is no difference in the mean age levels of grade three Winnipeg pupils of the same social class with English or non-English home language.

Hypothesis 10.

There is no difference in the mean mental abilities of grade three Winnipeg pupils of the same social class with English or non-English home language.

Hypothesis 11.

There is no difference in achievement in paragraph meaning by grade three Winnipeg pupils of the same social class with English or non-English home language.

Hypothesis 12.

There is no difference in achievement in word meaning by grade three Winnipeg pupils of the same social class with English or non-English home language.

Hypothesis 13.

There is no difference in achievement in spelling by grade three Winnipeg pupils of the same social class with English or non-English home language.

Hypothesis 14.

There is no difference in achievement in language by grade three Winnipeg pupils of the same social class with English or non-English home language.

## CHAPTER V

### FINDINGS AND CONCLUSIONS

#### 1. Analysis of the Data

##### Statistical Significance

All data obtained in the study were subjected to statistical analysis. In Statistics in Psychology and Education, Garrett<sup>1</sup> states that the null hypothesis "asserts that there is no true difference between the two population means, and that the difference found between sample means is, therefore, accidental and unimportant." Whether a difference is to be considered statistically significant or not depends upon the probability that the given difference could have arisen "by chance." Two standards, or levels of confidence, have been arbitrarily selected. These are the .05 level of confidence, and the .01 level of confidence. For the purposes of this study, the .05 level of confidence has been selected as the standard to determine if a real difference exists between the means of the various measurements.

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<sup>1</sup> Henry E. Garrett, Statistics in Psychology and Education, 5th ed. (New York: David McKay Company, Inc., 1965), p. 213.

## Tests Applied

### A. The t-test

To test Hypothesis 1, and Hypothesis 8, which were stated in Chapter IV, page 71, and which are concerned with the percentages of retardates, or over-age pupils in the study, the t-test was used. To test if any real difference exists between the percentages of retardates in each group, the following formulae were used:

Standard Error of the Difference in Percents

$$D_{\%} = \sqrt{PQ \left[ \frac{1}{N_1} + \frac{1}{N_2} \right]}$$

in which

$$\text{the pooled percent } P = \frac{N_1 P_1 + N_2 P_2}{N_1 + N_2}$$

where

$N_1$  = number of pupils in first group

$N_2$  = number of pupils in second group

$P_1$  = percentage of retardates in first group

$P_2$  = percentage of retardates in second group

and

$$Q = 1 - P$$

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<sup>2</sup> Ibid., pp. 235-236.

$$\text{Critical Ratio C.R.} = \frac{(P_1 - P_2) - 0}{D\%}$$

### B. Analysis of Variance

To test the remaining hypotheses stated in Chapter IV, pages 71-73, an analysis of variance program was set up for the IBM 360 computer. This analysis was used because of the number of variables involved in the study.

#### 2. Social-Class Difference Between Areas 1 and 2

In Chapter IV, two reasons, both based upon the Census of Canada (1961), were given for accepting the two areas under study, as representative of two distinct social-classes. These reasons have been supported by the distribution of the occupational scores, and the results of the analysis of variance for these occupational scores. Each area is representative of a distinct social-class.

The distribution of occupational scores, Table I, page 77, shows that Area 1 has no representation in the top class, Class 1, while Area 2 has no representation in the lowest class, Class 7.

One hundred sixty-five pupils in Area 1 are in the three lowest occupational classes. This is 93.7 per cent of the pupils in Area 1. One hundred sixty-eight pupils in Area 2 are in the three top occupational classes. This is 81.1 per



TABLE I  
DISTRIBUTION OF PUPILS BY  
OCCUPATIONAL CLASS SCORES

	Area 1	Area 2
Class 1 73.2 - 90		40
Class 2 57.0 - 72.9	3	105
Class 3 52.0 - 56.9	1	23
Class 4 50.5 - 51.9	7	4
Class 5 45.1 - 50.4	44	24
Class 6 41.8 - 45.0	66	11
Class 7 32.0 - 41.7	55	
Totals	176	207
Mean	43.902	61.686

cent of the pupils in Area 2.

It should be noted that very few pupils are shown in Class 4. The scarcity of representation may be accounted for by the fact that this occupational class includes the large group of technicians and highly skilled workmen. Such a group is not likely to live in either of the areas under study. Their homes are located in other areas of Winnipeg.

The mean occupational score for Area 1, 43.9, places the "average" family of this area in Class 6. The mean occupational score for Area 2, 61.6, places the "average" family of this area in Class 2, a considerably higher classification.

The analysis of variance for occupational scores, shown in Table II, page 79, gives a variance ratio, or F value, of 431.32

For  $df_1 = 1$ ,  $df_2 = 363$

F at .05 = 3.86; F at .01 = 6.70

P .01

The high F value, when compared with the table value at the .01 level of confidence, supports the acceptance of the two areas as being distinctly different in regard to social class, on the basis of occupational scores.

### 3. Findings and Conclusions

Part A - The role of social status in academic achievement.

TABLE II  
ANALYSIS OF VARIANCE FOR OCCUPATIONAL SCORES

Variables	Degrees of Freedom	Sum of Squares	Mean Squares	F
Areas	1	29185.57	29185.57	431.32
Sex	1	34.82	34.82	0.51
Area by Sex	1	30.08	30.08	0.44
Schools	8	1023.75	127.97	1.89
School by Sex	8	413.11	51.64	0.76
Within	363	24562.38	67.66	
Approx. Error	0	954.29		
Totals	382	56204.00		

Hypothesis 1.

There is no difference in the percentage of retardates among grade three Winnipeg pupils of different social classes.

The age regulations of the Winnipeg School Division No. 1 permit enrolment of a child in Kindergarten in September, provided he is, or will be, five years old on or before Novem-

ber 30 of that year. Any child who is not five years old until December 1, or later, must await enrolment until the September following. Under this regulation, the range of ages in Kindergarten may be four years nine months to five years nine months at school opening in September.

Assuming normal progress of one grade per year, pupils entering grade three in September may vary in age from seven years nine months to eight years nine months.

For the purpose of this study, all pupils' ages were recorded as of the time of the achievement testing, during the month of January. At this time, the youngest average-progress pupil would be eight years one month, or ninety-seven months. Any pupil under this age would be considered under age for the grade level.

At the same time, the oldest average-progress pupil would be nine years one month, or one hundred nine months. Any pupil older than this would be over age, or retarded, for the grade.

Table III refers to the distribution of pupils by age. An examination of this table shows that in Area 1, fifty-nine pupils, or 33.52 per cent of the total Area 1 pupils, are over age, or retarded, for the grade. In Area 2, only seventeen pupils, or 8.21 per cent of the total Area 2 pupils, are over age, or retarded, for the grade.

To determine if the difference between these two per-

TABLE III  
DISTRIBUTION OF PUPILS BY AGE

	Interval	Area 1	Area 2
	(months)		
R E T A R D A T E S	140 - 144	1	
	135 - 139	1	
	130 - 134	6	
	125 - 129	5	
	120 - 124	5	1
	115 - 119	25	1
	110 - 114	16	15
	105 - 109	52	69
	100 - 104	46	79
	95 - 99	18	40
	90 - 94	1	2
	Total	176	207
	Range	92 - 144	93 - 123
	Mean	108.58	103.41

centages is significant, the t-test was used.

$$P = \frac{176 \times 33.52 + 207 \times 8.21}{176 + 207}$$

$$= 15.94\%$$

$$Q = 1 - 15.94\%$$

$$= 84.06\%$$

$$D\% = \sqrt{15.94 \times 84.06 \left[ \frac{1}{176} + \frac{1}{207} \right]}$$

$$= 3.65\%$$

$$C.R. = \frac{33.52 - 8.21}{3.65} - 0$$

$$= 6.93$$

For  $df = 381$ , the .05 level is 1.97; and the .01 level is 2.59.

$\therefore P < .01$ .

The difference between the two percentages is highly significant, and the null hypothesis that there is no difference in the percentage of retardates within each area is rejected.

Hypothesis 2.

There is no difference in the mean age levels of grade three Winnipeg pupils of different social classes.

The distribution of the data pertaining to pupils' ages is presented in Table III. A study of

this table reveals some real differences in the distribution of ages.

In Area 1, there is a very wide age range, fifty-two months, or four years four months. Such a spread of age between the oldest and youngest pupils would produce wide variations in social and physical development. In Area 2, the age range is much narrower, being only thirty months, or two years six months.

The oldest pupil in Area 2 is twenty-one months, or one year nine months, younger than the oldest pupil in Area 1. The oldest pupil in Area 2 is one hundred twenty-three months, or ten years three months. The oldest pupil in Area 1 is one hundred forty-four months, or twelve years.

All Area 1 pupils in the interval 120-124 months are one hundred twenty-three months or less. Accordingly, there are thirteen Area 1 pupils older than the oldest Area 2 pupil. This number of pupils is 7.38 per cent of the total Area 1 pupils.

The mean age of the Area 1 pupils, 108.58 months, indicates that the "average" pupil in Area 1 is less than one-half month younger than the maximum age possible for an average-progress pupil, under the age regulations as set out previously. The mean age of the Area 2 pupils, 103.41 months, indicates the "average" pupil in Area 2 to be almost five months below the maximum possible for the average-progress pupil.

The difference between the two means indicates that the "average" pupil in Area 1 is approximately five months older than the "average" Area 2 pupil. This difference represents half a school year, a sizeable difference at this grade level.

The analysis of variance for age, shown in Table IV, gives a variance ratio, or F value, of 51.25.

$$\text{For } df_1 = 1, df_2 = 363$$

$$F \text{ at } .05 = 3.86; F \text{ at } .01 = 6.70$$

$$P < .01$$

This high F value, compared with the table values, indicates a highly significant difference in mean ages between the pupils in the two areas.

On the basis of this finding, the null hypothesis that there is no difference in the mean age levels of the pupils in each area is rejected.

### Hypothesis 3.

There is no difference in the mean I.Q.'s of grade three Winnipeg pupils of different social classes.

Table V refers to the distribution of the I.Q.'s of the pupils in the two areas

A study of Table V points to several pertinent features regarding the I.Q.'s of the pupils in the two areas. Of the three pupils in Area 2, whose I.Q.'s are shown in the interval



TABLE IV  
ANALYSIS OF VARIANCE FOR AGE

Variables	Degrees of Freedom	Sum of Squares	Mean Squares	F
Areas	1	2198.52	2198.52	51.25
Sex	1	488.26	488.26	11.38
Area by Sex	1	242.39	242.39	5.65
Schools	8	1043.27	130.41	3.04
School by Sex	8	400.82	50.10	1.17
Within	363	15571.50	42.90	
Approx. Error	0	520.23		
Totals	382	20465.00		

130-134, two have I.Q.'s of 133. Thus, there are eight Area 2 pupils whose I.Q.'s are higher than the I.Q. of 131, the highest in Area 1. These eight pupils are 3.86 per cent of the total Area 2 pupils.

In the Winnipeg School Division No. 1, special classes have been established for those pupils whose I.Q.'s indicate

TABLE V  
DISTRIBUTION OF PUPILS BY I.Q.'S

Interval	Area 1	Area 2
140 - 144		3
135 - 139		3
130 - 134	1	3
125 - 129	1	21
120 - 124	5	23
115 - 119	9	20
110 - 114	9	18
105 - 109	16	39
100 - 104	20	40
95 - 99	25	16
90 - 94	21	13
85 - 89	27	4
80 - 84	24	4
75 - 79	10	
70 - 74	6	
65 - 69	2	
Total	176	207
Range	69 - 131	83 - 141
Mean	94.898	110.087

an ability to carry a richer program than can the average pupil. To locate such pupils, all grade three pupils are tested in an initial screening. Those pupils scoring an I.Q. of 125 or higher are given a further test before final selection. On the basis of the scores shown in Table V, thirty pupils, or 14.4 per cent of the Area 2 pupils, would be given consideration for placement in the enriched program. In Area 1, two pupils, or 1.13 per cent of the Area 1 pupils, would be given consideration for placement in such a program.

Pupils with I.Q.'s of 120 or higher are generally referred to as quick-learners. In this category, there are fifty-three pupils, or 25.6 per cent, of the Area 2 pupils, but only seven, or 3.9 per cent, of the Area 1 pupils.

There is a disproportionate number of Area 2 pupils with I.Q.'s above 100. In this range, there are one hundred seventy Area 2 pupils, or 82.1 per cent of the total number, but only sixty-one, or 34.6 per cent, of the Area 1 pupils.

Of those pupils who have I.Q.'s below 100, there are one hundred fifteen, or 65.34 per cent, of the total Area 1 pupils, compared to only thirty-seven, or 17.87 per cent, of the pupils in Area 2.

Those pupils scoring an I.Q. of 80 or less are further screened for possible placement in Special Education classes. These pupils are generally unable to carry the regular program of the grade. The special program offered to such pupils is

adjusted to their reduced ability. From Table V, it is noted that eighteen pupils, or 10.2 per cent, of the Area 1 pupils should be tested for such placement. There are no pupils in this category in Area 2.

The range of I.Q.'s in the two areas is approximately the same, sixty-two I.Q. points in Area 1, and fifty-eight I.Q. points in Area 2. However, the highest I.Q. in Area 2 is ten I.Q. points above that in Area 1. The lowest I.Q. in Area 1 is fourteen I.Q. points below the lowest in Area 2.

The mean I.Q.'s show rather a noticeable difference, approximately fifteen I.Q. points. The mean I.Q. in Area 1 is almost five I.Q. points below the normal I.Q. of 100, while the mean I.Q. in Area 2 is slightly more than ten I.Q. points above the normal I.Q. of 100.

The analysis of variance for I.Q., shown in Table VI, gives a variance ratio, or F value, of 127.01.

$$\text{For } df_1 = 1, df_2 = 363$$

$$F \text{ at } .05 = 3.86; F \text{ at } .01 = 6.70$$

$$P < .01.$$

The high F value, compared with the table value, indicates a highly significant difference between the mean I.Q.'s of the pupils in the two areas.

On the basis of this finding, the null hypothesis that there is no difference in mean I.Q.'s between the pupils of

TABLE VI  
ANALYSIS OF VARIANCE FOR I.Q.

Variables	Degrees of Freedom	Sum of Squares	Mean Squares	F
Areas	1	20286.10	20286.10	127.01
Sex	1	3.56	3.56	0.02
Area by Sex	1	5.85	5.85	0.04
Schools	8	4110.22	513.78	3.22
School by Sex	8	1024.02	128.00	0.80
Within	363	57979.69	159.72	
Approx. Error	0	1801.55		
<b>Totals</b>	<b>382</b>	<b>85211.00</b>		

the two areas is rejected.

#### Hypothesis 4.

There is no difference in achievement in paragraph meaning by grade three Winnipeg pupils of different social classes.

The paragraph meaning sub-test consists of fifty questions. Table VII presents the data referring to this test.

TABLE VII  
DISTRIBUTION OF PARAGRAPH MEANING SCORES

Interval	Area 1	Area 2
50 -		
45 - 49		9
40 - 44	8	40
35 - 39	13	52
30 - 34	30	51
25 - 29	50	28
20 - 24	37	21
15 - 19	21	5
10 - 14	16	1
5 - 9	1	
<b>Total</b>	<b>176</b>	<b>207</b>
<b>Range</b>	<b>7 - 44</b>	<b>13 - 48</b>
<b>Mean</b>	<b>25.563</b>	<b>33.502</b>

No pupil in either area had a perfect score. One pupil in Area 2 had forty-eight correct answers, and nine pupils in Area 2 had forty-five or more correct answers. The best score in Area 1 was forty-two correct answers. The nine pupils in Area 2 with forty-five or more correct answers, 90 per cent of the possible number, are 4.3 per cent of the total number of Area 2 pupils.

Forty-nine pupils, or 23.6 per cent of the total Area 2 pupils, had forty or more correct answers, scoring 80 per cent or higher, while only eight Area 1 pupils, or 4.5 per cent of the total Area 1 pupils, did as well.

Scoring 70 per cent or higher, with thirty-five or more correct answers, were one hundred one Area 2 pupils, 4.8 per cent of the total Area 2 pupils. With the same score, there were only twenty-one Area 1 pupils, or 11.9 per cent of the total Area 1 pupils.

With scores of thirty or more correct answers, 60 per cent of the possible, were one hundred fifty-two Area 2 pupils, 73.4 per cent of the total Area 2 pupils. Scoring as well were only fifty-one pupils, or 28.9 per cent of the total Area 1 pupils.

One hundred eighty Area 2 pupils, 86.9 per cent of the total Area 2 pupils, scored twenty-five or more correct answers. Only one hundred one Area 1 pupils, or 57.3 per cent of the

Area 1 pupils scored twenty-five or more correct answers. It is noted that fifty of these one hundred one pupils are in the range of scores twenty-five to twenty-nine.

Scoring less than 50 per cent correct were seventy-five Area 1 pupils, 42.6 per cent of the total Area 1 pupils. In the same range of scores were only twenty-seven Area 2 pupils, or only 13.0 per cent of the total number of Area 2 pupils.

The range of scores for the two groups is approximately the same, thirty-five for Area 2 and thirty-seven for Area 1. The lowest score for Area 1, however, is six scores below the lowest score in Area 2.

The mean score for Area 2 at 33.502 indicates that the "average" pupil in Area 2 had 67 per cent correct answers. The mean score for Area 1 at 25.562 indicates that the "average" pupil in Area 1 answered only 51 per cent of the questions correctly.

The analysis of variance for paragraph meaning, shown in Table VIII, gives a variance ratio, or F value of 105.85.

$$\text{For } df_1 = 1, df_2 = 363$$

$$F \text{ at } .05 = 3.86, F \text{ at } .01 = 6.70$$

$$P < .01$$

The high F value indicates a highly significant difference in achievement in paragraph meaning.



TABLE VIII

## ANALYSIS OF VARIANCE FOR PARAGRAPH MEANING

Variables	Degrees of Freedom	Sum of Squares	Mean Squares	F
Areas	1	5904.96	5904.96	105.85
Sex	1	97.49	97.49	1.75
Area by Sex	1	7.54	7.54	0.14
Schools	8	345.48	43.19	0.77
School by Sex	8	156.57	19.57	0.35
Within	363	20249.68	55.78	
Approx. Error	0	194.14		
Totals	382	26955.88		

On the basis of this finding, the null hypothesis that there is no difference in achievement in paragraph meaning by the two groups of pupils is rejected

Hypothesis 5.

There is no difference in achievement in word meaning

by grade three Winnipeg pupils of different social classes.

The word meaning sub-test consists of thirty-eight questions. The data obtained from this test are presented in Table IX. An examination of the table indicates that some real differences exist between the pupils of the two areas as regards word knowledge as measured by this test.

One perfect score was recorded, that by an Area 2 pupil. The highest score recorded by an Area 1 pupil was thirty-seven.

The Area 2 pupils show a disproportionate number of scores among the highest scores. In the interval, 35-38, there are twenty-eight Area 2 pupils, 13.5 per cent of the total Area 2 pupils. In comparison, there are only two Area 1 pupils, 1.1 per cent of the total Area 1 pupils.

In the range 31-38, there are one hundred one Area 2 pupils, 48.7 per cent of their total number. In the same range, there are only ten Area 1 pupils, 5.6 per cent of their total number.

One hundred eighty-seven Area 2 pupils, or 90.3 per cent of their total number, achieved nineteen or more correct answers. Only one hundred twelve pupils, 63.6 per cent of the total number of Area 1 pupils, achieved as well.

Among those who had less than 50 per cent correct answers were only twenty Area 2 pupils, 9.6 per cent of the

TABLE IX

## DISTRIBUTION OF WORD MEANING SCORES

Interval	Area 1	Area 2
35 - 38	2	28
31 - 34	8	73
27 - 30	34	40
23 - 26	38	31
19 - 22	30	15
15 - 18	24	13
11 - 14	27	7
7 - 10	12	
3 - 6	1	
Total	176	207
Range	3 - 37	11 - 38
Mean Score	20.983	28.551

total Area 2 pupils. In the same range, there were sixty-four Area 1 pupils, 36.3 per cent of their total number.

The ranges of scores for the two groups of pupils shows a much narrower spread for Area 2, only twenty-seven compared to thirty-four for Area 1.

The mean score for each area shows a real difference in word knowledge. The "average" pupil in Area 2, with a score of 28.551, has a knowledge of 75.1 per cent of the words. The "average" pupil in Area 1, with a score of 20.983, has a knowledge of only 55.2 per cent of the words.

The analysis of variance for word meaning, shown in Table X, gives a variance ratio, or F value, of 123.09,

$$\text{For } df_1 = 1, df_2 = 363$$

$$F \text{ at } .05 = 3.86; F \text{ at } .01 = 6.70$$

$$P < .01.$$

The high F value indicates a highly significant difference in achievement in word meaning between the pupils in the two areas.

On the basis of this finding, the null hypothesis that there is no difference in achievement in word meaning is rejected.

Hypothesis 6.

There is no difference in achievement in spelling by grade three Winnipeg pupils of different social classes.

TABLE X

## ANALYSIS OF VARIANCE FOR WORD MEANING

Variables	Degrees of Freedom	Sum of Squares	Mean Squares	F
Areas	1	5029.24	5029.24	123.09
Sex	1	70.46	70.46	1.72
Area by Sex	1	5.49	5.49	0.13
Schools	8	720.12	90.01	2.20
School by Sex	8	194.49	24.31	0.60
Within	363	14831.54	40.86	
Approx. Error	0	542.66		
Totals	382	21394.00		

The spelling sub-test consists of fifty words. The data, presented in Table XI, indicate that real differences exist between the pupils of the two areas in their ability to spell the words of this particular test.

There are only two perfect scores, of fifty words correctly spelled, both made by Area 2 pupils. The highest score made by an Area 1 pupil was forty-eight.

Area 2 pupils show a marked superiority in scores of

TABLE XI  
DISTRIBUTION OF SPELLING SCORES

Interval	Area 1	Area 2
50 -		2
45 - 49	10	46
40 - 44	30	51
35 - 39	42	50
30 - 34	31	31
25 - 29	31	17
20 - 24	21	8
15 - 19	5	2
10 - 14	5	
5 - 9	1	
Total	176	207
Range	7 - 48	18 - 50
Mean Score	32.483	38.300

35 or higher. One hundred forty-nine, or 71.9 per cent, of the Area 2 pupils spelled thirty-five or more words correctly. Only eighty-two, 46.0 per cent, of the Area 1 pupils, spelled thirty-five or more words correctly.

One hundred forty-four, or 81.8 per cent, of the Area 1 pupils spelled twenty-five or more words correctly. One hundred ninety-seven, 95.1 per cent, of the Area 2 pupils, spelled twenty-five or more words correctly.

At the low end of the range, the poorest speller in Area 2 showed a superiority of eleven correctly-spelled words above the poorest speller in Area 1.

The analysis of variance for spelling, given in Table XII, gives a variance ratio, or  $F$ , of 44.55.

$$\text{For } df_1 = 1, df_2 = 363$$

$$F \text{ at } .05 = 3.86; F \text{ at } .01 = 6.70$$

$$P < .01.$$

The high  $F$  factor indicates a highly significant difference in achievement in spelling between the pupils in Area 1 and Area 2.

On the basis of this finding, the null hypothesis that there is no difference in achievement in spelling by the two groups of pupils is rejected.

TABLE XII  
ANALYSIS OF VARIANCE FOR SPELLING

Variables	Degrees of Freedom	Sum of Squares	Mean Squares	F
Areas	1	2671.16	2671.16	44.55
Sex	1	174.34	174.34	2.91
Area by Sex	1	105.68	105.68	1.76
Schools	8	880.39	110.05	1.84
School by sex	8	479.54	59.94	1.00
Within	363	21767.43	59.97	
Approx. Error	0	511.13		
Totals	382	26589.69		

#### Hypothesis 7

There is no difference in achievement in language by grade three Winnipeg pupils of different social classes.

The language sub-test consists of seventy-four answers. From Table XIII, which presents the data relative to this test, it is noted that no pupil in Area had more than sixty-eight correct answers. Twenty-three Area 2 pupils scored seventy or



TABLE XIII  
DISTRIBUTION OF LANGUAGE SCORES

Interval	Area 1	Area 2
70 - 74		23
65 - 69	15	46
60 - 64	31	65
55 - 59	49	41
50 - 54	31	18
45 - 49	25	6
40 - 44	15	6
35 - 39	5	2
30 - 34	2	
25 - 29	2	
20 - 24		
15 - 19	1	
Total	176	207
Range	19 - 68	39 - 73
Mean	53.881	61.213

more correct answers. Of these, two pupils scored seventy-three.

At various levels of scores, the Area 2 pupils outnumber disproportionately the Area 1 pupils. Sixty-nine pupils, 33.3 per cent of the Area 2 pupils, scored 69 or more, while only fifteen, or 8.5 per cent, of the Area 1 pupils did as well. One hundred thirty-four, 64.7 per cent of the Area 2 pupils, scored 60 or more, while only forty-six, or 26.1 per cent, of the Area 1 pupils achieved as well.

The lowest score recorded by an Area 2 pupil was 39, while the lowest in Area 1 was 19, a rather considerable difference of twenty answers, actually, 2.2 per cent of the possible of seventy-four answers.

Eight pupils, or 4.5 per cent of the Area 1 pupils, actually scored less than the lowest mark recorded by an Area 2 pupil.

The difference of 7.332 between the means of the two areas is actually 9.9 per cent of the total mark of 74. The significance of this difference is apparent in the analysis of variance for language, shown in Table XIV.

The analysis of variance ratio, or F value, is 79.18.

For  $df_1 = 1$ ,  $df_2 = 363$

F at .05 = 3.86; F at .01 = 6.70

$P < .01$ .

TABLE XIV  
ANALYSIS OF VARIANCE FOR LANGUAGE

Variables	Degrees of Freedom	Sum of Squares	Mean Squares	F
Areas	1	4437.47	4437.47	79.18
Sex	1	797.14	797.14	14.22
Area by Sex	1	305.62	305.62	5.45
Schools	8	1235.76	154.47	2.76
School by Sex	8	333.63	41.70	0.74
Within	363	20343.19	56.04	
Approx. Error	0	720.19		
<b>Totals</b>	<b>382</b>	<b>28173.00</b>		

The high F factor indicates a highly significant difference in achievement in language.

On the basis of this finding, the null hypothesis that there is no difference in achievement in language by the two groups of pupils is rejected.

Part B. The role of home language in academic achievement.

It was stated in the earlier part that many of the pupils enrolled in the schools in Area 1 come from homes where a second language, rather than English, is commonly used. To determine if the use of this second language outside of school plays any role in the pupil's academic achievement, this second part of the project was undertaken.

In this part of the study, only the pupils in Area 1 were involved.

From Table XV it is noted that of the one hundred seventy-six pupils in Area 1, one hundred two, or 57.9 per cent, come from homes where English is used as the principal means of communication. Seventy-four, or 42.0 per cent, come from homes where a language other than English is used.

Hypothesis 8.

There is no difference in the percentages of retardates among grade three Winnipeg pupils of the same social class with either English or non-English home language.

From Table XV it is noted that of the one hundred two pupils whose home language is English, thirty-one, or 30.4 per cent, are over age, or retarded, for the grade level. Of the seventy-four pupils whose home language is non-English, twenty-eight, or 37.8 per cent, are over age, or retarded, for the grade level.

TABLE XV  
 DISTRIBUTION OF AGES OF PUPILS IN  
 AREA 1 BY HOME LANGUAGE

Interval (months)	English	Non-English
140 - 144		1
135 - 139		1
130 - 134	3	3
125 - 129	4	1
120 - 124	2	3
115 - 119	12	13
110 - 114	10	6
105 - 109	26	26
100 - 104	34	12
95 - 99	10	8
90 - 94	1	
<b>Total</b>	<b>102</b>	<b>74</b>
<b>Range</b>	<b>92 - 133</b>	<b>98 - 144</b>
<b>Mean</b>	<b>107.676</b>	<b>109.824</b>

To determine if the difference between these two percentages is significant, the t-test was used.

$$P = \frac{(102 \times 30.4) + (74 \times 37.8)}{102 + 74}$$

$$P = 33.5\%$$

$$Q = 1 - 33.5$$

$$Q = 66.5\%$$

$$D\% = \sqrt{(33.5 \times 66.5) \left( \frac{1}{102} + \frac{1}{74} \right)}$$

$$D = 44.55\%$$

$$C.R. = \frac{(37.8 - 30.4) - 0}{44.55}$$

$$C.R. = .17$$

For  $df = 176$ , the .05 level is 1.66;

$$\therefore P > .05$$

The null hypothesis that there is no difference in the percentages of retardates among grade three Winnipeg pupils of the same social-class with either English or non-English home language is accepted.

Hypothesis 9.

There is no difference in the mean age level of grade three Winnipeg pupils of the same social-class with either English or non-English home language.

Table XV gives the distribution of pupils' ages by home language. It is noted that two non-English pupils are

older than the oldest in the English group. The oldest in the non-English group is, in fact, one hundred forty-four months, or twelve years old. The oldest in the English group is one hundred thirty-three months, or eleven years one month. This indicates a difference of eleven months between the oldest pupil in each group. This difference is actually one month more than a full school year of ten months.

Comparing pupils who are one hundred ten months old, nine years two months, or older, it is found that in the English group there are nine pupils. This number of pupils is 8.8 per cent of the total number of English pupils. In the non-English group at the same age level there are also nine pupils. This number of pupils is 12.1 per cent of the total number of pupils in the non-English group.

Table XV indicates there are seventy English pupils whose ages are in the range ninety-five months to one hundred nine months. Included in this group are two pupils whose ages are ninety-six months. These two pupils may be considered to be one month under age for this grade level. There are no pupils ninety-five months of age.

The sixty-eight pupils whose ages range from ninety-seven months to one hundred nine months are of normal age for this grade level. This number is 66.66 per cent of the total number of English pupils.

In the non-English group, the eight pupils whose ages

range from ninety-five to ninety-nine months are actually ninety-seven to ninety-nine months old. The total number of pupils in the normal age-grade level range is forty-six, or 62.16 per cent of the total number of non-English pupils.

There are three under-age pupils in the English group of pupils; there are no under-age pupils in the non-English group.

Both groups show a wide range of ages. For the English pupils there is a range of forty-one months, or three years five months; for the non-English group, the range is forty-six months, or three years eight months.

The mean age for the "average" English pupil shows him to be within the normal age range for this grade. The mean age for the "average" pupil in the non-English group is less than a month over-age for this grade level.

The difference in ages between the "average" pupils in each group is small, being just over two months.

The analysis of variance for age, given in Table XVI, shows a variance ratio, or F value, of 3.27.

$$\text{For } df_1 = 1, df_2 = 156$$

$$F \text{ at } .05 = 3.90, F \text{ at } .01 = 6.80$$

$$P > .05$$

On the basis of this finding, the null hypothesis that there is no difference in the mean age levels is accepted.



TABLE XVI

## ANALYSIS OF VARIANCE FOR AGE

Variables	Degrees of Freedom	Sum of Squares	Mean Squares	F
Language	1	231.05	231.05	3.27
Sex	1	446.92	446.92	6.33
Language by Sex	1	76.61	76.61	1.08
Schools	4	1025.72	256.43	3.63
School by Sex	4	354.81	88.70	1.26
School by Language	4	274.76	68.69	0.97
Language by Sex by School	4	265.93	66.48	0.94
Within	156	11016.19	70.62	
Approx. Error	0	2143.23		
Totals	175	13924.00		

## Hypothesis 10.

There is no difference in the mean I.Q. of grade three Winnipeg pupils of the same social class with either English or non-English home language.

Table XVII refers to the distribution of I.Q.'s of Area 1 pupils by home language.

A study of this table reveals several points of comparison with reference to the I.Q.'s of the English group of pupils and the non-English group of pupils.

It is noted that the highest I.Q. in the area is that of a non-English pupil, an I.Q. of 131. This I.Q. is five I.Q. points higher than the highest I.Q. in the English group of pupils.

Of the one hundred two pupils in the English group, thirty-seven pupils, 36.2 per cent of their total number, have I.Q.'s of 100 or higher. Of the seventy-four pupils in the non-English group, twenty-four, 32.4 per cent of their total number, have I.Q.'s of 100 or higher.

In the I.Q. range of 80-99, there are sixty, or 58.8 per cent, of the English pupils. In this same range, there are thirty-seven, or 50.0 per cent, of the non-English pupils.

In the lowest range of the I.Q. distribution, 65-79, there is a much greater proportion of non-English pupils than of English pupils. In this range, there are only five, or 4.9 per cent, of the English pupils, while there are thirteen, or 17.5 per cent of the non-English pupils.

In comparing the range of I.Q.'s, it is noted that the English pupils have a range of fifty-two, compared to the non-English pupils who have a range of sixty-two.

TABLE XVII

DISTRIBUTION OF I.Q.'S OF AREA 1 PUPILS  
BY HOME LANGUAGE

Interval	English	Non-English
130 - 134		1
125 - 129	1	
120 - 124	4	1
115 - 119	7	2
110 - 114	2	7
105 - 109	10	6
100 - 104	13	7
95 - 99	18	7
90 - 94	14	7
85 - 89	15	12
80 - 84	13	11
75 - 79	4	6
70 - 74	1	5
65 - 69		2
Total	102	74
Range of I.Q.'s	74-126	69-131
Mean I.Q.	96.461	92.743

The mean I.Q. of each group shows the "average" pupil in each group to be below the normal I.Q. of 100. A direct comparison of the mean I.Q. shows the "average" English pupil to be 3.718 I.Q. points above the "average" non-English pupil.

The analysis of variance for I.Q., given in Table VIII, shows a variance ratio, or F value, of 5.10.

For  $df_1 = 1$ ,  $df_2 = 156$

F at .05 = 3.90, F at .01 = 6.80

$P < .05$ ,  $P > .01$ .

On the basis of this finding, the null hypothesis that there is no difference in the mean I.Q. of the two groups is rejected at the .95 confidence level.

#### Hypothesis 11.

There is no difference in achievement in paragraph meaning by grade three Winnipeg pupils of the same social class with either English or non-English home language.

The distribution of scores on the paragraph meaning sub-test are recorded in Table XIX. Of the possible of fifty correct answers, the best score, 44, was made by a non-English pupil. This is 88 per cent of the possible. The next best score, 43, or 86 per cent of the possible, was made by an English pupil. In the range 40-44, or 80-88 per cent, of the possible score, the non-English pupils show a slight superiority over the English pupils. In this range there are four

TABLE XVIII  
ANALYSIS OF VARIANCE FOR I.Q.

Variables	Degrees of Freedom	Sum of Squares	Mean Squares	F
Language	1	783.75	783.75	5.10
Sex	1	148.97	148.97	0.97
Language by Sex	1	390.01	390.01	2.54
Schools	4	4009.69	1002.42	6.52
School by Sex	4	992.96	248.24	1.61
School by Language	4	1138.01	284.50	1.85
Language by Sex by School	4	800.42	200.11	1.30
Within	156	23982.19	153.73	
Approx. Error	0	4790.07		
Totals	175	30105.00		

pupils, or 5.4 per cent, of the non-English pupils. Although there are also four English pupils, these are only 3.9 per cent of the total number of English pupils.

TABLE XIX  
 DISTRIBUTION OF PARAGRAPH MEANING  
 SCORES BY HOME LANGUAGE

Interval	English	Non-English
40 - 44	4	4
35 - 39	8	5
30 - 34	22	8
25 - 29	29	21
20 - 24	20	17
15 - 19	12	9
10 - 14	7	9
5 - 9		1
Total	102	74
Range	10 - 43	7 - 44
Mean	26.373	24.446

In the range 25-44, or 50-88 per cent of the possible score, the English pupils show superiority. In this range there are sixty-three pupils, or 61.7 per cent of all English pupils. In the same range, there are thirty-eight, or 51.3 per cent of all non-English pupils.

Of the scores below twenty-five correct answers, or less than 50 per cent correct, the English pupils have a better record. In this group, there are thirty-nine pupils, 38.2 per cent of the English pupils. In the same group there are thirty-six pupils, 48.6 per cent of the non-English pupils.

The lowest score on the sub-test was recorded by a non-English pupil with a total of seven correct. This is three below the lowest score for the English pupils.

The mean scores for the two groups show only a small difference, 1.927. It is to be noted, however, that the mean score of 26.373 for the English group is above the 50 per cent correct mark, while the mean score of 24.446 for the non-English group is below the 50 per cent correct mark.

The analysis of variance for paragraph meaning, shown in Table XX, shows a variance ratio, or F value, of 3.85.

$$\text{For } df_1 = 1, df_2 = 156$$

$$F \text{ at } .05 = 3.90, F \text{ at } .01 = 6.80$$

$$P > .05.$$

On the basis of this finding, the null hypothesis that

TABLE XX  
ANALYSIS OF VARIANCE FOR PARAGRAPH MEANING

Variables	Degrees of Freedom	Sum of Squares	Mean Squares	F
Language	1	220.73	220.73	3.85
Sex	1	3.95	3.95	0.07
Language by Sex	1	67.50	67.50	1.18
Schools	4	245.82	61.45	1.07
School by Sex	4	266.17	66.54	1.16
School by Language	4	600.61	150.15	2.62
Language by Sex by School	4	94.80	23.70	0.41
Within	156	8943.05	57.33	
Approx. Error	0	944.14		
Totals	175	10189.38		

there is no difference in achievement in paragraph meaning by the two groups is accepted.



### Hypothesis 12.

There is no difference in achievement in word meaning by grade three Winnipeg pupils of the same social class with English or non-English home language.

Table XXI gives the data obtained from the word meaning sub-test. A study of this data reveals that in the upper range of scores, 31-38, the two groups of pupils are about equally represented. In this range, there are six English pupils, or 5.8 per cent of the group. In the same range there are four non-English pupils, or 5.4 per cent of the group.

In the range of scores 27-38, the English group has twenty-nine pupils, or 28.4 per cent of the group, compared to the non-English group, which has fifteen pupils, or 20.2 per cent of the group, in the same range. This difference is accounted for by the fact that in the 27-30 range, the English group has twenty-three pupils, or 22.5 per cent of the group. In the same range, the non-English group has only eleven pupils, or 14.9 per cent of the group.

The English group shows only a slightly better representation among those pupils who scored 50 per cent or more correct answers. In the range 19-38, the English group has sixty-seven pupils, or 65.2 per cent of the group. In the same range, the non-English group has forty-five pupils, or 60.8 per cent of the group.

In the range of scores below 19, or less than 50 per

TABLE XXI  
 DISTRIBUTION OF WORD MEANING  
 SCORES BY HOME LANGUAGE

Interval	English	Non-English
35 - 38	1	1
31 - 34	5	3
27 - 30	23	11
23 - 26	21	17
19 - 22	17	13
15 - 18	13	11
11 - 14	15	12
7 - 10	7	5
3 - 6		1
Total	102	74
Range	8 - 37	3 - 36
Mean	21.461	20.324

cent correct, the English group has thirty-five pupils, or 34.3 per cent of the group. The non-English group placed twenty-nine pupils, or 39.1 per cent of the group, in this range.

The range of scores for each group shows only a slight difference. With a range of thirty-three, the non-English group has a slightly wider range of scores than the English group with twenty-nine.

The mean scores for the groups show a difference of one word, twenty-one for the English group compared to twenty for the non-English group. The mean score for the English group, 21.461, indicates that the "average" pupil of this group had 55.2 per cent of the words correct. The mean for the non-English group, 20.324, indicates that the "average" pupil of this group had 52.6 per cent of the words correct.

The analysis of variance for word meaning, shown in Table XXII, gives a variance ratio, or F value, of 4.17.

$$\text{For } df_1 = 1, df_2 = 156$$

$$F \text{ at } .05 = 3.90, F \text{ at } .01 = 6.80$$

$$P < .05, P > .01.$$

On the basis of this finding, the null hypothesis that there is no difference between the two groups in word meaning is rejected at the .95 level of confidence.

TABLE XXII  
ANALYSIS OF VARIANCE FOR WORD MEANING

Variables	Degrees of Freedom	Sum of Squares	Mean Squares	F
Language	1	184.18	184.18	4.17
Sex	1	3.06	3.06	0.07
Language by Sex	1	159.68	159.68	3.62
Schools	4	655.15	163.79	3.71
School by Sex	4	160.76	40.19	0.91
School by Language	4	263.54	65.88	1.49
Language by Sex by School	4	51.20	12.80	0.29
Within	156	6882.35	44.12	
Approx. Error	0	931.73		
Totals	175	8171.00		

Hypothesis 13.

There is no difference in achievement in spelling by grade three Winnipeg pupils of the same social class with English or non-English home language.

The data obtained from the spelling sub-test are tabulated in Table XXIII. No pupil in either group achieved a perfect score of fifty words correctly spelled. For the English pupils, the best score was forty-eight correctly spelled words, or 96 per cent of the possible score. For the non-English pupils, the best score was forty-six correct, or 92 per cent of the possible score.

Seven pupils, 6.8 per cent of the English pupils, had forty-five or more words correct, scoring 90 per cent of the possible, or higher. Of the non-English pupils, only three pupils, or 4.0 per cent of the total number, scored as well.

Scores of forty or more correct, 80 per cent of the possible, or higher, were made by twenty-four pupils, 23.5 per cent of the English pupils. In comparison, scores of this level were made by sixteen pupils, 21.6 per cent, of the non-English pupils.

A real difference between the two groups of pupils is shown in the scores of 35 or more, 70 per cent of the possible, or higher. At this level, there are fifty-three pupils, or 51.9 per cent, of the English group, but only twenty-nine, or 39.1 per cent, of the non-English pupils.

However, when scores of 30 or more correct, 60 per cent of the possible or higher, are considered, the non-English pupils show a better record. With such scores, there are

TABLE XXIII

DISTRIBUTION OF SPELLING SCORES  
BY HOME LANGUAGE

Interval	English	Non-English
45 - 49	7	3
40 - 44	17	13
35 - 39	29	13
30 - 34	10	21
25 - 29	17	14
20 - 24	12	9
15 - 19	4	1
10 - 14	5	
5 - 9	1	
Total	102	74
Range	7 - 48	17 - 46
Mean	32.206	32.865

fifty non-English pupils, 67.5 per cent of the total number. In the other group, there are only sixty-three English pupils, or 61.7 per cent of the total number.

Of the scores above twenty-five, 50 per cent of the possible or higher, the non-English pupils achieved much better than did the English pupils. In this range, there were sixty-four, or 86.4 per cent, of the non-English pupils, and only eighty, or 78.4 per cent, of the English pupils.

Of the scores below twenty-five, less than 50 per cent of the possible, again the non-English pupils made the better showing. In this group, there are twenty-two, or 21.5 per cent, of the English pupils, but only ten, or 13.5 per cent, of the non-English pupils.

In a comparison of the range of scores, the non-English pupils show a better record with a spread of twenty-nine, from seventeen correct to forty-six correct. The English pupils' scores show a greater spread, forty-one scores, from seven to forty-eight correct answers.

The mean scores show little variation, less than one. The mean score for each group indicates that the "average" English pupil spelled 65 per cent of the words correctly, while the "average" non-English pupil spelled 64 per cent of the words correctly.

The analysis of variance for spelling, shown in Table

TABLE XXIV  
ANALYSIS OF VARIANCE FOR SPELLING

Variables	Degrees of Freedom	Sum of Squares	Mean Squares	F
Language	1	0.13	0.13	0.00
Sex	1	81.15	81.15	1.21
Language by Sex	1	233.91	233.91	3.48
Schools	4	593.12	148.28	2.21
School by Sex	4	137.87	34.47	0.51
School by Language	4	495.94	123.98	1.85
Language by Sex by School	4	160.84	40.21	0.60
Within	156	10481.94	67.19	
Approx. Error	0	1700.85		
Totals	175	12508.00		

XXIV, gives a variance ratio, or F value, of 0.00. This indicates no difference in spelling achievement.

On the basis of this finding, the null hypothesis that



there is no difference in achievement in spelling between the two groups is accepted.

#### Hypothesis 14.

There is no difference in achievement in language by grade three Winnipeg pupils of the same social class with English or non-English home language.

Table XXV refers to the data obtained from the language sub-test. Noteworthy is the fact that the highest score for each group is the same, sixty-eight, or 91.8 per cent of the possible score of 74.

Comparison of the two groups at the various score intervals reveals no particular variation between the two groups of pupils. The greatest variation, less than 5 per cent, actually, occurs in the 40-49 score interval. In this range, there are ninety-eight pupils, or 96.0 per cent of the English group, and sixty-eight non-English pupils, 91.8 per cent of the total number.

Those scores recorded in the 35-39 score interval are actually 37 to 39, there being no 35 or 36 scores.

Ninety-nine English pupils, or 97.0 per cent of all English pupils, and seventy-two non-English, or 97.2 per cent of all non-English pupils, spelled thirty-five or more words correctly.

The record of pupils who failed to answer half the questions correctly is approximately the same. In the English

TABLE XXV

DISTRIBUTION OF LANGUAGE SCORES  
BY HOME LANGUAGE

Interval	English	Non-English
70 - 74		
65 - 69	9	6
60 - 64	17	14
55 - 59	31	18
50 - 54	15	16
45 - 49	15	10
40 - 44	11	4
35 - 39	1	4
30 - 34	1	1
25 - 29	2	
20 - 24		
15 - 19		1
Total	102	74
Range	28 - 68	19 - 68
Mean	53.804	53.986

group, three pupils, or 2.9 per cent of their total number, and in the non-English group, two pupils, or 2.7 per cent of their total number, had less than 50 per cent of the questions correct.

The range of scores for the non-English pupils is much greater than that of the English pupils, forty-nine to nineteen.

The mean score for each group, 53.804 for the English group and 53.986 for the non-English group, indicates that the "average" pupil in each group achieved about the same.

The analysis of variance for language, shown in Table XXVI, gives a variance ratio, or F value, of 0.53.

$$\text{For } df_1 = 1, df_2 = 156$$

$$F \text{ at } .05 = 3.90; F \text{ at } .01 = 6.80$$

$$P \gg .05$$

On the basis of this finding, the null hypothesis is accepted.

#### 4. Summary

##### Part A.--Social Status and Academic Achievement

In the comparison of the pupils of different social-classes, highly significant differences ( $P < .01$ ), in favor of the upper social-class pupils, were found on all variables.

TABLE XXVI

## ANALYSIS OF VARIANCE FOR LANGUAGE

Variables	Degrees of Freedom	Sum of Squares	Mean Squares	F
Language	1	37.36	37.36	0.53
Sex	1	651.45	651.45	9.29
Language by Sex	1	19.62	19.62	0.28
Schools	4	980.84	245.21	3.50
School by Sex	4	328.61	82.15	1.17
School by Language	4	602.95	150.74	2.15
Language by Sex by School	4	140.30	35.08	0.50
Within	156	10935.98	70.10	
Approx. Error	0	1604.16		
Totals	175	13258.56		

Part B.--Home Language and Academic Achievement

1. In the comparison of the pupils of the same social-class having either English or non-English home language, differences in favor of the English group were found in I.Q. and word meaning. These differences were significant at the .05 level of confidence.

2. On all other variables, no difference was found to exist between the two groups.

In view of the results of this study, it would appear that compensatory programs for the lower social-class pupils are not only desirable but essential. Such programs would assist in reducing the academic differential which presently exists between the upper and lower social-class pupils. Deprived children should be introduced into such a program as early as possible, certainly by the age of four years. The stress in any compensatory program should be all-round mental development, with particular reference to the skills of the language arts.

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APPENDIX "A"

TABLE XXVII

## PUPIL DATA -- DUFFERIN SCHOOL

Pupil No.	Sex	Age in Months	I.Q.	Occup: Score	Home Language	Para. Mean	Word Mean	Spelling	Language
1	G	112	96	37.4	E	24	14	38	59
2	B	130	87	40.8	NE	14	14	33	42
3	G	105	74	37.8	NE	17	18	30	47
4	B	137	79	42.3	NE	19	13	31	49
5	G	122	80	44.4	E	25	21	30	54
6	G	119	76	47.2	NE	17	9	26	42
7	B	105	89	40.8	NE	21	19	25	37
8	B	109	77	41.4	E	23	25	39	59
9	B	102	103	40.8	E	35	28	36	60
10	B	116	77	40.8	E	22	17	41	45
11	B	102	91	43.6	E	19	15	13	37
12	B	116	78	36.2	NE	23	10	28	39
13	G	109	89	44.4	E	29	26	36	58
14	B	128	87	40.8	E	38	22	23	50
15	G	100	107	40.8	E	29	28	40	45
16	B	105	109	43.2	NE	38	29	42	66
17	B	110	95	45.4	E	27	24	36	60
18	G	92	101	40.8	E	30	27	40	59
19	B	105	105	41.3	NE	27	26	37	59
20	G	100	92	43.2	E	31	25	45	57
21	B	117	100	40.8	NE	20	23	24	52
22	B	103	122	48.2	E	42	30	42	59
23	G	106	88	40.8	E	34	24	47	62
24	G	103	98	40.8	E	25	20	26	54
25	G	102	104	36.2	E	28	25	42	62
26	B	98	100	40.8	E	30	20	37	68
27	G	101	98	44.4	E	32	30	42	56
28	G	108	116	45.9	E	24	24	37	57
29	G	104	85	43.6	E	33	18	38	55
30	G	129	81	37.4	E	22	14	29	48



TABLE XXVIII  
PUPIL DATA -- MONTCALM SCHOOL

Pupil No.	Sex	Age in Months	I.Q.	Occup. Score	Home Language	Para. Mean	Word Mean	Spelling	Language
1	G	97	105	47.2	E	13	12	10	44
2	G	104	114	41.6	E	30	29	29	56
3	G	105	112	51.2	NE	35	29	46	67
4	G	104	97	45.9	E	15	11	7	45
5	B	102	95	51.7	E	29	29	39	57
6	G	101	105	45.6	E	27	25	25	58
7	G	105	92	42.8	E	26	28	35	57
8	G	125	75	43.2	NE	20	15	28	54
9	G	106	119	37.8	NE	20	15	28	68
10	B	105	112	61.0	NE	28	26	31	57
11	G	105	108	61.0	NE	28	23	31	64
12	G	115	85	47.2	NE	14	11	17	54
13	B	104	96	43.8	NE	21	14	27	44
14	G	101	124	44.4	E	42	29	38	60
15	G	98	89	45.6	NE	19	14	27	56
16	B	107	96	43.2	E	35	26	46	63
17	G	108	88	43.6	NE	40	27	46	64
18	G	103	98	47.2	NE	22	24	43	64
19	B	101	101	49.6	E	24	27	35	50
20	B	98	89	44.5	NE	30	20	35	53
21	B	115	80	40.8	E	13	12	15	49
22	G	103	120	40.8	NE	26	27	22	58
23	B	99	124	41.8	E	36	34	40	66
24	G	96	90	50.2	E	32	30	38	60
25	B	115	105	47.7	E	16	17	12	46
26	G	102	117	43.2	NE	42	32	44	68
27	G	119	83	40.8	E	24	22	33	59
28	G	96	117	52.2	E	34	30	47	65
29	B	116	116	43.0	E	18	9	24	46
30	B	98	131	49.4	NE	36	34	41	60

TABLE XXIX

## PUPIL DATA -- PINKHAM SCHOOL

Pupil No.	Sex	Age in Months	I.Q.	Occup. Score	Home Language	Para. Mean	Word Mean	Spelling	Language
1	G	104	103	43.6	E	36	37	47	67
2	B	104	90	43.6	E	20	20	32	42
3	B	106	96	43.6	E	23	26	36	42
4	B	133	85	43.6	E	31	28	40	63
5	G	109	97	45.6	E	24	23	32	61
6	B	133	84	40.8	NE	27	22	34	59
7	G	108	101	43.8	E	29	31	42	58
8	B	101	100	47.2	NE	29	28	39	57
9	G	104	88	47.2	E	17	18	37	58
10	B	101	112	46.3	NE	13	12	30	49
11	G	108	84	43.2	NE	22	17	27	62
12	B	104	90	40.8	E	16	13	22	49
13	G	99	103	45.6	NE	27	19	37	58
14	G	105	87	44.5	E	27	24	37	57
15	G	99	105	51.8	NE	40	30	42	67
16	G	107	100	43.2	NE	26	23	37	60
17	B	108	100	40.8	NE	18	17	35	58
18	B	102	104	43.6	E	22	29	42	55
19	B	107	89	40.8	NE	25	23	38	59
20	G	112	107	45.4	NE	23	22	36	51
21	B	107	100	43.6	E	43	34	44	66
22	B	101	106	46.8	E	21	17	35	52
23	B	115	80	47.2	NE	27	23	28	53
24	B	112	104	46.8	NE	26	22	35	52
25	B	103	88	43.6	E	26	25	28	56

TABLE XXX

## PUPIL DATA -- SOMERSET SCHOOL

Pupil	Sex	Age in Months	I.Q.	Occup. Score	Home Lan- guage	Para. Mean	Word Mean	Spell- ing	Lan- guage
1	G	105	97	43.6	E	32	24	34	58
2	B	107	85	46.5	NE	11	12	27	33
3	B	118	83	46.5	NE	27	27	45	64
4	B	111	96	41.3	NE	29	23	35	49
5	B	109	81	51.8	NE	17	17	34	53
6	G	105	100	57.7	E	32	31	44	65
7	G	102	88	40.8	E	17	18	27	61
8	B	120	73	40.8	NE	10	3	23	19
9	G	108	92	40.0	E	28	20	27	54
10	B	109	84	41.6	NE	33	23	33	61
11	G	110	74	43.6	E	11	8	22	40
12	G	99	114	47.2	NE	25	17	31	58
13	B	115	89	40.8	NE	24	27	35	53
14	B	125	89	47.7	E	12	11	21	28
15	G	101	109	41.6	E	17	18	29	58
16	B	111	97	41.8	E	34	31	29	54
17	G	110	77	46.3	NE	21	16	33	46
18	B	113	98	40.8	E	32	28	37	51
19	B	103	98	43.6	E	24	22	49	59
20	B	109	79	43.2	E	11	11	17	44
21	B	102	126	45.6	E	31	27	29	53
22	B	100	94	43.2	NE	36	24	40	56
23	G	118	74	40.8	NE	26	20	30	54
24	G	108	92	43.0	NE	25	16	30	55
25	G	106	96	46.3	NE	22	25	41	66
26	B	105	96	41.7	E	32	19	29	29
27	B	97	96	46.8	E	21	19	24	45
28	B	108	119	47.0	E	29	27	38	61
29	B	111	105	43.0	E	33	21	35	51
30	G	117	84	43.0	NE	27	23	24	59
31	G	99	119	45.4	E	35	28	39	66
32	G	104	80	37.4	E	27	16	31	63
33	G	106	89	43.6	E	23	13	25	44
34	G	104	100	43.6	E	33	27	39	66
35	B	106	111	47.1	E	38	17	40	64
36	G	105	81	43.6	E	29	22	42	59
37	B	100	107	43.2	NE	35	36	42	64
38	B	121	95	45.4	NE	25	23	33	60
39	G	106	84	43.6	E	27	27	33	43
40	B	106	101	37.4	NE	32	24	41	55
41	G	105	87	43.0	NE	32	27	34	61
42	G	120	70	43.0	NE	7	10	32	47

TABLE XXXI

## PUPIL DATA--VICTORIA-ALBERT SCHOOL

Pupil No.	Sex	Age in Months	I.Q.	Occup. Score	Home Language	Para. Mean	Word Mean	Spelling	Language
1	B	107	111	47.1	NE	31	28	36	63
2	G	98	112	45.6	NE	34	30	42	63
3	B	144	69	37.8	NE	20	15	33	37
4	G	102	91	40.8	E	36	25	40	59
5	G	101	80	43.2	NE	18	19	28	55
6	B	130	83	44.6	NE	26	26	33	56
7	B	107	94	43.2	NE	32	22	44	44
8	G	104	108	51.2	E	30	20	35	48
9	B	106	94	46.8	E	29	25	35	55
10	G	98	108	51.9	E	42	27	39	55
11	G	103	82	41.8	E	21	17	34	58
12	G	118	89	42.4	NE	33	25	44	63
13	B	129	95	40.8	E	30	24	35	30
14	G	99	108	44.4	E	27	20	35	59
15	B	102	112	46.5	NE	27	21	31	49
16	G	99	119	43.2	E	29	25	48	64
17	B	113	83	47.1	E	27	30	47	65
18	G	112	81	42.4	NE	22	19	30	50
19	G	106	85	43.2	E	28	27	36	52
20	G	107	119	43.6	E	34	23	30	60
21	G	116	96	40.8	NE	26	22	33	58
22	B	115	83	41.2	E	16	10	12	58
23	G	118	88	40.8	E	31	26	41	62
24	G	109	104	43.2	E	27	25	38	56
25	B	120	91	43.6	E	24	12	26	53
26	G	116	79	36.9	NE	12	12	27	50
27	B	115	94	36.2	E	14	8	11	45
28	B	107	69	43.2	NE	14	10	28	51
29	G	119	73	40.8	NE	24	14	29	53
30	G	109	80	43.2	NE	17	11	20	51
31	B	104	81	47.2	E	14	9	21	44
32	B	116	91	43.6	E	25	15	29	61
33	B	114	98	44.6	E	25	14	28	48
34	G	113	88	40.8	E	15	13	21	47
35	B	116	84	43.6	E	21	10	23	46
36	G	103	98	40.8	E	27	20	32	52
37	B	131	89	40.8	E	17	13	20	50
38	B	116	92	41.8	E	27	22	28	55
39	B	132	75	45.6	E	25	15	24	50
40	B	110	80	40.8	E	18	10	16	40

## PUPIL DATA--VICTORIA-ALBERT SCHOOL (cont'd)

Pupil No.	Sex	Age in Months	I.Q.	Occup. Score	Home Language	Para. Mean	Word Mean	Spelling	Language
41	B	99	92	51.2	NE	10	20	23	48
42	B	117	100	43.6	E	21	12	18	41
43	G	107	89	43.6	NE	23	18	36	39
44	G	109	94	46.8	E	22	14	27	42
45	B	110	91	43.2	NE	20	10	22	47
46	G	103	91	40.5	NE	18	14	24	49
47	G	100	91	43.2	NE	20	18	28	51
48	G	100	124	43.2	E	29	21	21	46
49	G	107	95	47.1	NE	14	11	23	56

TABLE XXXII  
PUPIL DATA--BROCK-CORYDON SCHOOL

Pupil No.	Sex	Age in Months	I.Q.	Occup. Score	Home Language	Para. Mean	Word Mean	Spelling	Language
1	G	107	105	57.0	E	36	32	34	59
2	B	98	107	44.4	E	23	14	32	58
3	B	108	116	43.6	E	43	32	35	59
4	G	107	100	57.0	E	34	25	27	57
5	B	100	126	78.8	E	37	30	44	66
6	B	102	119	63.0	E	37	35	43	61
7	B	101	119	61.8	E	32	33	38	57
8	G	100	109	57.0	E	37	33	45	54
9	B	98	117	81.2	E	40	32	40	69
10	B	106	107	81.2	E	27	26	39	62
11	G	99	128	65.0	E	38	30	38	59
12	G	103	90	63.5	E	19	30	35	59
13	G	104	122	46.8	E	45	32	29	61
14	B	123	95	58.2	E	32	26	40	61
15	G	105	100	57.7	E	33	30	37	60

TABLE XXXIII  
PUPIL DATA -- MONTROSE SCHOOL

Pupil No.	Sex	Age in Months	I.Q.	Occup. Score	Home Language	Para. Mean	Word Mean	Spelling	Language
1	B	112	109	57.7	E	26	24	22	49
2	G	102	108	57.7	E	32	32	37	67
3	B	97	119	57.0	E	37	33	39	63
4	B	98	100	81.2	E	29	28	44	60
5	B	114	92	57.0	E	25	19	26	44
6	G	107	126	75.0	E	28	26	41	65
7	G	110	94	57.7	E	25	21	33	67
8	B	112	101	45.0	E	33	21	34	59
9	G	110	112	78.8	E	24	28	47	62
10	B	106	114	57.0	E	37	29	35	62
11	G	98	109	43.6	E	38	26	33	62
12	B	103	101	49.1	E	37	31	44	61
13	G	108	104	45.0	E	32	24	41	65
14	B	102	124	63.5	E	34	29	42	63
15	G	112	84	45.6	E	24	24	38	51
16	B	112	103	43.6	E	43	30	21	66
17	G	105	101	51.2	E	34	31	41	61
18	G	109	122	51.2	E	35	31	37	63
19	B	101	103	57.6	E	30	17	38	55
20	B	109	101	48.2	E	33	29	37	58
21	G	108	111	50.8	E	32	31	32	62
22	G	102	104	64.0	E	42	33	44	67
23	G	102	122	72.0	E	40	35	44	70
24	B	109	104	47.2	E	34	34	46	62
25	G	103	114	50.2	E	40	36	43	68
26	G	99	141	50.2	E	40	33	44	61
27	G	102	108	57.0	E	27	27	40	63
28	G	105	100	50.2	E	22	20	21	53
29	B	102	129	64.0	E	42	36	49	72
30	B	99	101	49.8	E	22	24	36	62
31	B	101	116	81.2	E	34	34	38	61
32	B	101	90	45.4	E	30	17	37	59
33	G	103	128	57.0	E	44	38	47	66
34	B	105	128	81.2	E	48	36	49	72
35	G	104	100	64.0	E	40	35	32	64
36	B	105	124	63.5	E	37	35	43	68
37	G	107	109	57.7	E	40	34	37	70
38	B	105	119	62.2	E	45	37	48	69

## PUPIL DATA -- MONTROSE SCHOOL (cont'd)

Pupil No.	Sex	Age in Months	I.Q.	Occup. Score	Home Language	Para. Mean	Word Mean	Spelling	Language
39	B	100	120	77.8	E	23	15	32	58
40	B	99	124	53.7	E	41	30	46	64
41	B	109	100	62.2	E	34	31	36	64
42	B	108	109	56.7	E	38	28	31	62
43	B	105	120	57.7	E	39	36	40	68
44	G	105	114	57.7	E	32	30	46	71
45	B	103	128	64.0	E	43	36	49	71
46	B	105	105	78.8	E	36	32	47	68
47	G	107	116	64.0	E	37	35	45	69
48	B	107	91	57.7	E	27	29	37	59
49	G	98	108	55.0	E	36	30	44	65
50	B	117	117	49.6	E	47	36	44	68
51	G	101	101	57.7	E	39	34	39	67



TABLE XXXIV

## PUPIL DATA -- QUEENSTON SCHOOL

Pupil No.	Sex	Age in Months	I.Q.	Occup. Score	Home Language	Para. Mean	Word Mean	Spelling	Language
1	B	104	105	63.0	E	35	21	32	47
2	B	110	103	62.2	E	22	17	22	39
3	G	98	103	56.7	E	22	26	32	55
4	B	103	104	46.8	E	40	33	28	63
5	B	104	94	46.0	E	30	26	42	44
6	G	106	124	81.2	E	42	31	40	61
7	B	104	124	57.0	E	40	35	35	61
8	B	100	135	81.2	E	40	36	47	67
9	G	98	101	42.8	E	30	22	38	52
10	B	107	97	57.0	E	25	30	36	58
11	B	105	97	63.5	E	36	35	45	67
12	B	102	114	73.2	E	34	37	47	63
13	G	105	114	64.9	E	41	30	45	55
14	G	101	98	75.2	E	39	31	39	68
15	G	105	108	60.6	E	40	35	46	67
16	G	102	109	63.0	E	35	30	32	61
17	B	107	105	57.0	E	35	31	38	54
18	G	109	95	47.3	NE	32	25	40	59
19	G	104	107	44.0	NE	38	23	35	61
20	G	100	100	50.2	E	25	19	34	48
21	B	113	84	50.2	E	19	20	46	52
22	B	99	116	45.9	E	24	20	26	51
23	B	106	109	54.8	E	34	33	43	60
24	B	104	95	57.0	E	34	34	45	63
25	B	101	128	60.6	E	43	36	37	63
26	B	105	97	60.1	E	29	28	34	51
27	B	98	108	72.0	E	31	32	46	66
28	G	101	100	72.0	E	31	26	38	54
29	B	102	109	62.2	E	39	34	42	61
30	B	103	100	57.0	E	36	33	39	60
31	G	98	105	56.7	E	32	30	36	59
32	G	101	114	57.0	E	35	26	35	57
33	B	99	101	78.8	E	45	28	44	68
34	B	105	109	67.7	E	35	35	42	61
35	B	101	92	60.6	E	29	26	42	57
36	G	103	98	81.2	NE	31	25	33	56
37	B	103	90	57.7	E	28	25	34	56
38	B	100	111	72.0	E	33	33	37	58
39	B	102	97	57.7	E	36	32	40	58
40	B	105	101	56.7	E	15	31	36	63
41	B	101	97	63.4	E	31	31	42	60
42	G	104	126	81.2	E	40	34	43	69

TABLE XXXV

## PUPIL DATA -- ROBERT H. SMITH SCHOOL

Pupil No.	Sex	Age in Months	I.Q.	Occup. Score	Home Language	Para. Mean	Word Mean	Spelling	Language
1	B	99	108	49.8	E	27	14	18	42
2	B	97	90	57.0	E	20	18	28	44
3	G	100	117	75.2	E	37	34	36	64
4	B	104	124	60.6	E	44	35	46	68
5	B	105	91	54.8	E	22	14	18	54
6	B	97	117	81.2	E	21	19	32	58
7	B	105	100	62.2	E	22	23	31	56
8	B	98	107	60.1	E	34	24	21	57
9	B	105	107	65.1	E	38	34	48	69
10	B	102	104	61.8	E	37	28	40	63
11	B	97	112	57.0	E	25	15	29	53
12	B	99	109	56.0	E	31	30	29	63
13	G	98	104	61.2	E	26	29	41	61
14	B	105	108	73.2	E	23	27	27	54
15	B	111	95	67.7	E	33	26	43	60
16	G	111	87	49.8	E	25	21	33	49
17	G	106	112	78.8	E	32	25	36	60
18	G	99	109	64.0	E	26	15	32	61
19	B	100	109	50.2	E	32	28	37	58
20	B	107	129	57.0	E	41	32	37	70
21	B	108	109	47.2	E	37	34	47	62
22	B	109	94	81.2	E	31	15	23	49
23	B	103	103	72.0	E	13	14	22	39
24	B	102	89	63.4	E	27	31	37	60
25	G	101	116	57.0	E	32	21	38	62
26	G	99	101	81.2	E	24	24	33	58
27	B	114	100	63.5	E	28	26	29	54
28	G	96	108	63.5	E	15	17	28	56
29	B	96	129	72.0	E	43	34	44	67
30	B	108	101	81.2	E	20	14	28	41
31	G	105	108	56.0	E	41	33	42	67
32	B	99	120	75.0	E	27	28	30	60
33	G	106	103	44.5	E	39	31	49	73
34	B	100	141	56.7	E	46	36	44	63
35	G	99	129	67.7	E	40	32	44	67
36	G	97	135	57.7	E	43	34	48	70
37	B	103	126	54.2	E	40	32	43	64
38	B	102	112	75.2	E	42	34	49	70
39	B	98	122	77.8	E	31	28	47	70
40	B	101	122	57.7	E	40	32	30	63

## PUPIL DATA -- ROBERT H. SMITH SCHOOL (cont'd)

Pupil No.	Sex	Age in Months	I.Q.	Occup. Score	Home Language	Para. Mean	Word Mean	Spelling	Language
41	B	101	120	81.2	E	45	29	37	70
42	G	101	129	62.4	E	47	32	37	71
43	G	101	128	77.8	E	38	33	50	72
44	B	102	141	50.7	E	44	32	40	58
45	G	102	131	61.8	E	36	35	47	68
46	G	100	108	62.2	E	43	35	46	70
47	G	98	122	63.4	E	39	34	47	67
48	B	102	111	57.7	E	36	29	45	71
49	B	99	114	61.8	E	35	32	45	70
50	B	106	124	56.0	E	37	32	46	60
51	G	97	128	61.0	E	40	30	48	68
52	B	109	96	63.0	E	38	32	48	66
53	G	98	129	56.0	E	35	25	36	67
54	B	97	111	81.2	E	38	32	38	59
55	B	100	135	61.8	E	44	31	45	73
56	B	107	117	56.7	E	39	33	49	69
57	B	105	119	67.7	E	30	29	45	65

TABLE XXXVI

## PUPIL DATA -- WILLIAM OSLER SCHOOL

Pupil No.	Sex	Age in Months	I.Q.	Occup. Score	Home Language	Para. Mean	Word Mean	Spelling	Language
1	B	102	109	56.7	E	39	28	45	67
2	B	105	101	57.7	E	36	31	34	61
3	B	113	117	82.5	E	20	14	27	48
4	G	98	124	82.5	E	32	24	31	60
5	G	101	100	56.7	E	33	27	37	60
6	B	114	90	57.7	E	15	11	28	53
7	G	100	83	50.1	E	22	15	32	58
8	B	107	111	57.7	E	31	28	30	57
9	G	108	88	82.5	E	31	30	41	57
10	G	103	117	81.2	E	40	27	41	62
11	G	106	83	54.8	E	29	19	26	54
12	B	100	107	57.7	E	29	24	33	57
13	G	112	100	57.0	E	32	18	36	55
14	G	106	100	57.7	E	30	23	31	60
15	B	105	94	47.0	E	32	23	31	58
16	G	100	110	63.4	E	31	26	35	59
17	B	105	89	56.7	E	27	19	27	53
18	B	101	98	82.5	E	35	30	41	59
19	B	100	96	82.5	E	28	21	31	58
20	B	99	122	56.4	E	44	31	35	68
21	B	108	95	45.0	E	23	18	28	53
22	B	109	97	60.1	E	21	16	24	43
23	B	105	119	57.7	E	44	37	49	66
24	B	105	107	57.7	E	36	35	43	65
25	G	107	109	57.0	E	38	33	48	71
26	B	94	117	63.0	E	36	33	43	67
27	G	105	122	81.2	E	46	36	44	69
28	B	103	108	57.0	E	31	32	40	70
29	G	105	114	70.9	E	35	32	38	65
30	B	93	128	56.7	E	32	33	50	70
31	G	102	122	56.0	E	34	24	36	60
32	G	106	129	73.2	E	35	33	44	70
33	G	100	133	61.8	E	32	33	36	64
34	G	99	109	81.2	E	31	34	49	61
35	B	100	126	81.2	E	40	34	47	70
36	G	106	103	63.0	E	27	33	45	68
37	G	104	119	57.7	E	26	33	49	63
38	B	107	124	63.0	E	40	34	41	62
39	G	104	133	56.7	E	40	36	46	69
40	G	106	103	48.2	E	22	32	43	64
41	G	104	122	63.5	E	36	28	41	52
42	B	96	128	72.0	E	25	31	49	62