

THE UNIVERSITY OF MANITOBA

SOME COGNITIVE, BEHAVIORAL, AND ATTITUDINAL EFFECTS
OF BUSING ON HIGH SCHOOL STUDENTS IN MANITOBA

BY

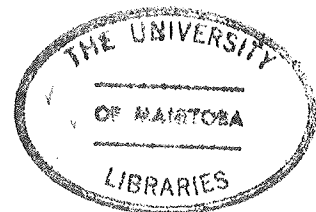
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A THESIS

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A thesis submitted to the Faculty of Graduate Studies of
the University of Manitoba in partial fulfillment of the requirements
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ABSTRACT

The investigated problem was to determine the cognitive, behavioral, and attitudinal effects of busing on high school students in Manitoba. 605 subjects completed an author-constructed questionnaire. 298 of the subjects were bused students, 307 were non-bused students. The subjects ranged from grade 10 to grade 12 and were enrolled in "academic", "business education", and "vocational" major areas of study.

This ex post facto study relied upon a questionnaire which obtained a reliability alpha score of .766.

Factor analysis identified 3 major areas that were being measured by the questionnaire: 1- fatigue associated with the bus ride, 2- comfort associated with the bus ride, and 3- the general attitude of the students toward school. Two and three way ANOVA, Pearson Product Moment Correlation, and Chi Square analysis provided the statistical analysis.

Major findings were that: 1- fatigue associated with bus ride was significantly and negatively related to students' ability to study, students' attention span in class, students' attitude toward school, and the students' cognitive performance. 2- The degree of comfort associated with the bus ride was significantly and positively related to the students' attention span in class and the students' general attitude toward the school. 3- time spent on the bus ride and the distance travelled was not significantly

related to comfort or fatigue. 4- class attendance appeared to be assisted by the busing experience.

The findings of this study will have interest for parents in that the time spent on the bus and the distance travelled does not appear to affect their children's school performance. School boards will want to act to assure regular arrival of buses. Regular arrival of buses tended to reduce the perception of fatigue by the bused student. Transportation supervisors will want to include the effects of busing on students when discussing future policy thereby adding important other dimensions to their considerations.

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CHAPTER 1

Theoretical Foundation

Within the past decade many schools have felt constraints due to decreased enrollments. The recession of the economy had reduced the cash flow in tax revenue growth to provincial and local governments which in turn reduced the growth of funding earmarked for education. School boards responded to this reduction in fund increases through restraints in capital expenditures and in encouraging greater efficiency in spending. At the same time that school divisions were attempting to trim expenses there was a growing demand by students and their parents for more offerings by the schools. Many of the courses such as computer programming or vocational training programs required large commitments of capital which the school divisions could not afford. Provincial governments agreed to assist in the construction of regional schools which would offer a full range of courses in business, vocational skills, and home economics. These schools would accept students from other school divisions who expressed an interest in these high capital areas of education. To accommodate these students school buses were purchased and students were required to spend sizable amounts of time in transport to and from the schools which offered the courses they wished to take.

At the same time interest in French Immersion education was growing. School divisions designated schools in which the instruction would be provided in French. Students wishing to be involved in French immersion classes were required to travel by school bus to the designated schools. The above 2 examples indicate the extent of busing within the educational system.

Despite this tendency to bus students throughout the school system, little attention has been given to the effects of busing on the student. This is evident by the few research papers available from research journals, the U. S. Department of Education, provincial departments of education, other students theses, or provincial transportation supervisors.

Purpose of the Study

The purpose of this study was to provide insight into the extent busing and the learning process of a student is related. The learning process was considered on three planes; cognitive, behavioral, and attitudinal. The cognitive plane was reflected in the academic performance of the student, the behavioral plane in the attendance of classes, and the attitudinal plane in the attitudes students held toward the school. A comparison between the attitudes of bused students and the attitudes of non-bused students would indicate areas where attitudes of students may be

different.

Review of the Literature

Most of the literature on the cognitive, behavioral, and attitudinal effects of busing on students stems from American studies done to determine the efficiency of moving large numbers of students to achieve economic or racial equality. Many of the findings reported were additional findings not central to the design of the reported studies. As little research into the reasons for the reported findings is provided in the literature, this study seeks to identify some of the variables related to busing.

Busing and the Cognitive Effects

Iwaniciki and Gable (1981) reported an improvement in academic achievement for bused students. Howell (1981) reported an improvement in achievement levels for all bused students. The Chicago studies done by Ogletree and Mitchell (1981b) indicate that teachers as well as elementary students believe that busing is effective in increasing the level of academic achievement for those bused. Mahan (1967), in a study of 33 elementary schools using a control and experimental grouping of bused and non-bused children, reported that bused students developed higher academic expectations than non-bused students and

adjusted to new school environments quickly. An evaluation of the community zoning program done in New York city in 1966 using a pairing of selected elementary and secondary schools indicated that bused students frequently exceeded the expected gains in reading and mathematics. Dee (1972), through personal interviews with 93 black parents who had children in a busing program, found that parents believed busing improved the academic achievement and that black students transported to white schools showed significant gains in achievement.

A study done in Chicago on the attitudes of high school staffs indicated that 46% of the staffs of 11 schools felt that busing contributed to a lower level of academic achievement. Ogletree and Starkman (1980) surveying over 1000 black, white, and hispanic students and over 500 of their parents indicated that only 33% felt that academic grades of the students would improve. In a similar study Ogletree and Mitchell (1981b), who surveyed a similar group, found that the majority believed that busing would not improve their grades.

Busing and Behavioral Effects

Mahan (1967) studying minority children in Hartford Connecticut who were divided into groups of those receiving financial aid and those not receiving financial support, found that bused students showed more regular

attendance than non-bused students. The U. S. Department of Health (1966) in a report on the effects of pairing selected elementary schools over the 2 years of the study reported that bused students showed significantly more regular attendance in school and classes than did non-bused students.

Busing and the Attitudinal Effects

Iwaniciki and Gable (1981) in Hartford found evidence from a 4 year study of students', parents', and teachers' attitudes toward busing that busing improves the students' general attitude toward school. Fox (1966) in a 2 day observational comparison of bused and non-bused elementary students in 63 schools, reported that bused students showed a positive attitude to school, their classes and the social opportunities that the school provided. Dee (1972) found that the bused students enjoyed peer acceptance and were quickly taken into the peer group structure. Dee (1972) citing her 4 year study of busing all black core area students to all white suburban schools, reported that there were no difficulties for bused students in developing interpersonal relationships with staff of peers. Mahan (1967) found that bused students participated regularly in extra-curricular activities. Edin (1977) in a study of 3590 students,

155 instructors, and the directors of 19 Minnesota secondary vocational centers, supported Mahans' findings and indicated that bused students perceived no difficulties in participating in the same proportion as non-bused students. Overman (1980) in a study of teachers, parents, and students of 13 elementary, 13 junior high, and 13 senior high schools found no significant difference between bused and non-bused students and school attitude in general. Walkup (1979) studying parent and bused student responses to a questionnaire on attitudes toward school, found that parents and students felt that the general attitude toward school improved with busing if they were pleased with the supervision of the bus. MacDonald (1976) and Ramsay (1980) both indicated that the legislation and school board policy decisions regarding the busing of students is to provide a safe environment where students can ride to and from school in confidence. Reported Canadian studies indicate that the concern for safety is focused on the operation of the school bus and the conduct of the peer students during the bus ride. These studies further indicate that the policy makers assumed that if the bus was operated in a safe manner and the students did not threaten other students then the bused students would hold a positive attitude toward the busing experience.

Busing and the Effects of Fatigue

Edin (1977) in his study of 3590 students, 155 instructors, and 19 directors of bused students found that 70% of the bused students felt that the bus ride itself was the most negative aspect of the busing experience. No reasons were given for the students' feelings toward the bus ride except that they indicated that upon arriving at the school they felt tired and thus not motivated toward school work. The study also indicated that the more negative the attitude toward the bus ride the more negative was the students' attitude toward the school, due to lack of motivation. Fox (1966) using observation, interviews and sociograms of children in 63 elementary schools reported that the quality of the bus supervision, the coordination between the receiving and the sending schools, and the degree of difficulty the administrators experienced in operating an acceptable schedule were the largest contributing elements toward bus fatigue. Fox indicated that fatigue contributed toward low academic motivation. Mahan (1967) supported Fox's findings by reporting that the greater the degree of fatigue felt by the student the lower was the students' academic performance.

Busing and Career Choices

Iwaniciki and Gable (1981) reported from their 4 year study of bused students from the core areas to the suburbs

of Hartford, Connecticut found that bused students had higher career aspirations than non-bused students. On the socio-economic scale, bused students tended to choose vocations that rank higher up the scale, such as doctors and lawyers, more often than non-bused students. 155 instructors, and 19 directors, reported that the bused students viewed the vocational training experience positively and recognized the impact of education on post-high school plans and life goals. A study done on the attitudes of Pontiac secondary school students and their parents at the end of each year by the United States Department of Health in 1975 found that bused students valued education significantly more than non-bused students and they felt that the acquisition of an education is necessary for a happier life.

Summary

Most studies reported that the quality of education improved with busing and that the parents and students viewed busing as a positive vehicle toward better education and more understanding for all concerned.

Studies found that academic achievement or the cognitive variable, improved for bused students. Improvement was maximized for those students who found less fatigue in the ride itself. All studies reported that

attitude toward school was positive and that bused students have little difficulty with peer acceptance or fitting into the extra-curricular activities of the school. Studies dealing with bused students' career aspirations found that bused students formed higher socio-economic career goals and held these goals longer than non-bused students. Bused students appeared to value education more than non-bused students and saw education as necessary for a happier life. Bused students were reported to attend classes more regularly and their attention span was longer than non-bused students.

Studies also seemed to indicate that the most negative aspect of busing is fatigue associated with the ride itself. Fatigue associated with busing was found to lower academic performance, lower general attitude toward school, and reduce attention span. One noted variable of bus fatigue was the quality of the supervision of the bus.

Theoretical Framework

The noted concern for bused students in the educational areas of academic achievement or the cognitive realm, class attendance or the behavioral realm, attitudes toward school, and in comparisons between bused and non-bused students, was pursued by this researcher. Figure

1.1 and 1.2 indicate the theoretical structure which guided the investigation.

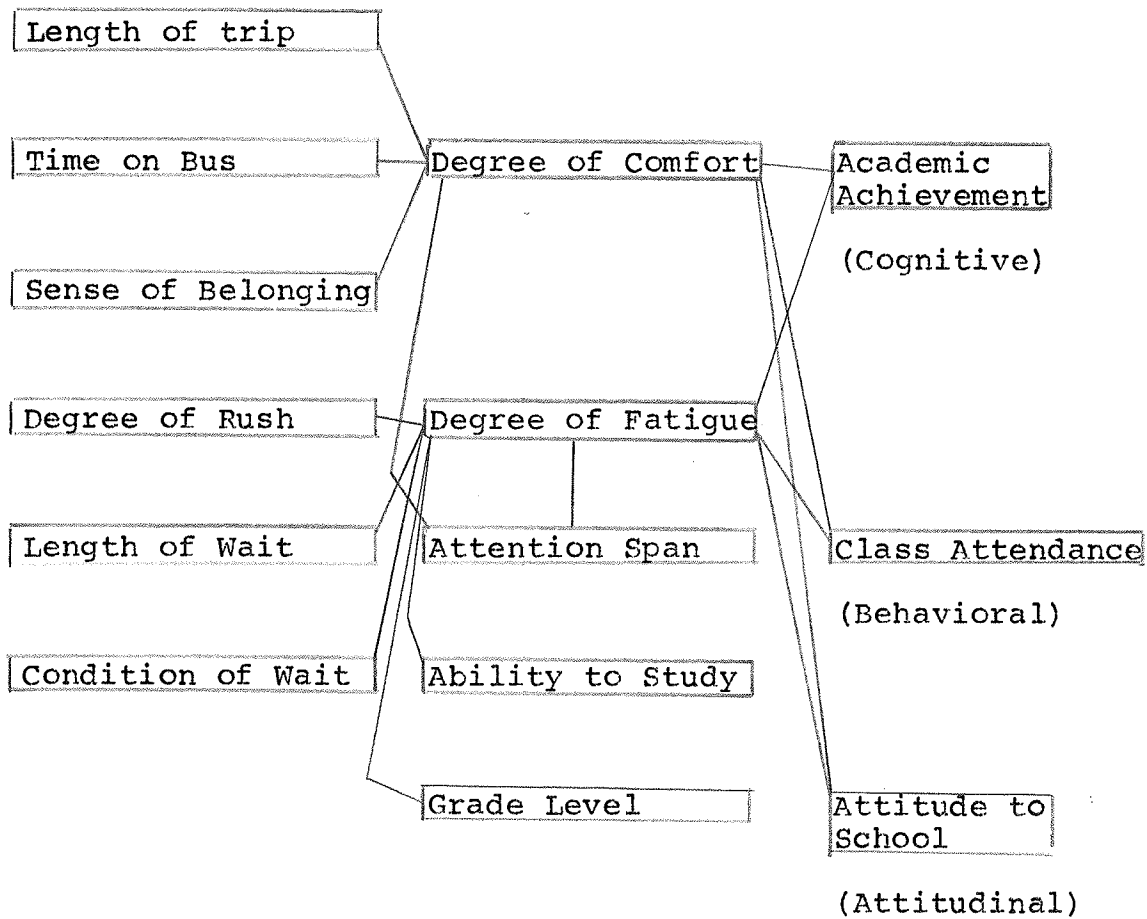
Cognitive

Iwaniciki and Gable (1981) and Howell (1981) both indicated that bused students attained higher academic levels than non-bused students. Ogletree and Mitchell (1981b) reported that teachers expected that bused students would show an increase in academic achievement. At the same time Ogletree and Starkman (1980) reported that only 33% believed that busing would improve academic grades. Mahan (1967) found that the greater the fatigue felt by the bused student the lower was their academic performance or cognitive level. Edin (1977) found that 70% of the bused students felt that the bus ride was the most negative part of the busing experience. Fox (1966) reported that the quality of the bus supervision and the busing experience was contributive to the perception of fatigue.

As there is reported to be opposite results in cognitive performance levels for bused students depending on their perception of fatigue with the bus ride, the model shows a testing of the relationship between the variable of academic achievement and the variables of fatigue and comfort. Comfort with the bus ride was assumed to be the opposite of fatigue with the bus ride.

Figure 1.1

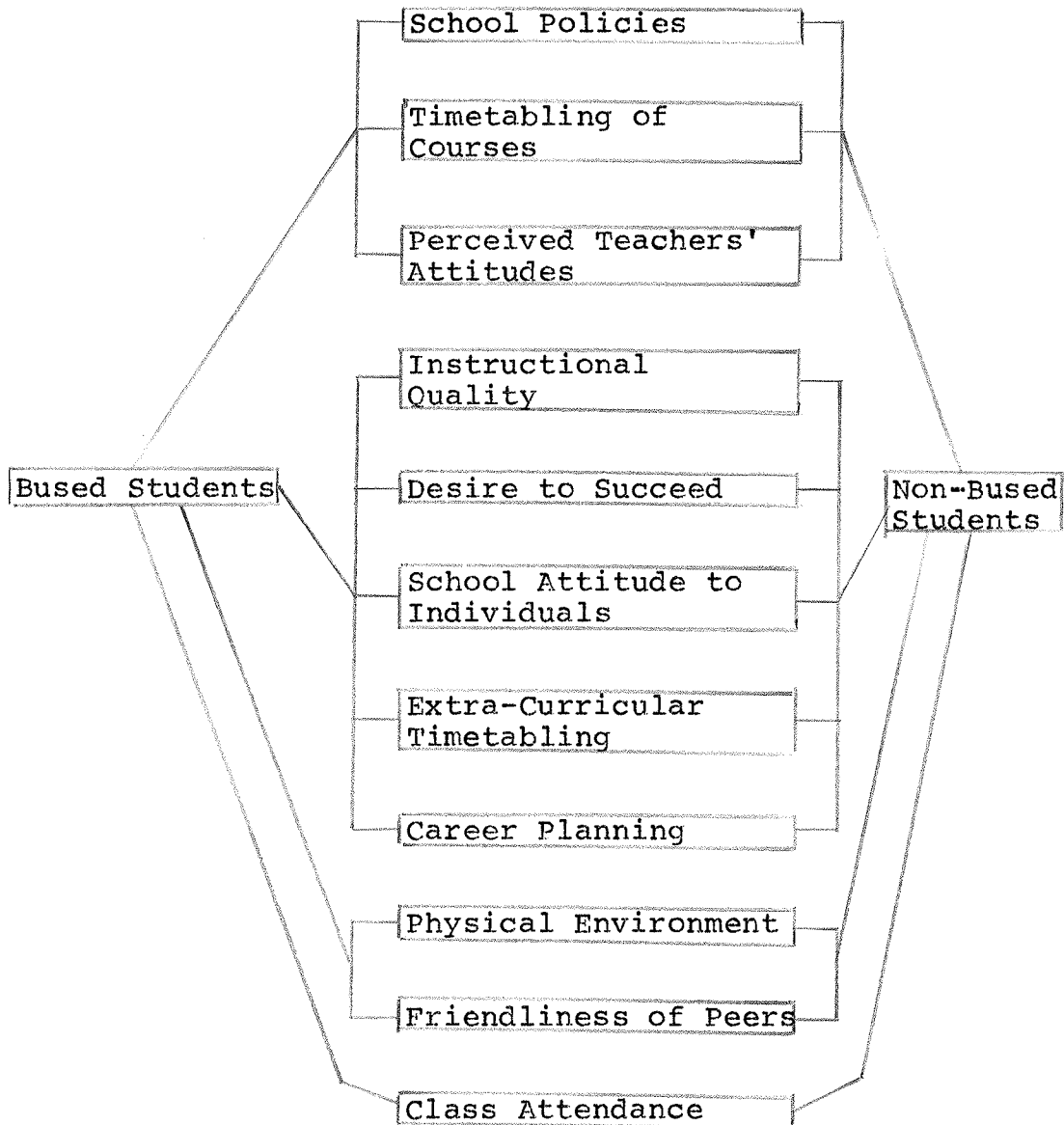
Some Cognitive, Behavioral, and Attitudinal Effects of Busing on High School Students in Manitoba (Theoretical Model)



Note: _____ Presumed Relationship

Figure 1.2

Comparison of General Attitudes of Bused and Non-bused Students (Theoretical Model)



Note: _____ Presumed Relationship

Comfort and Fatigue

Edin (1977), Fox (1966), and Mahan (1967) all reported that fatigue resulting from the bus ride seemed to lead to lower academic scores. Iwaniciki and Gable (1981), Howell (1981), Ogletree and Mitchell (1981b), and Evaluation of the Zoning Program in New York (1966), and Dee (1972) all reported gains in academic achievement through busing. The model indicated investigation to determine if perceptions of comfort or fatigue resulting from the bus ride would affect cognitive performance, behavior as reflected in class attendance, and the students' attitude toward school.

Edin (1977) was reported that the fatigue felt by the bused student was not related to the time spent on the bus or the distance travelled. The model indicated investigation to determine if the length of the trip in distance and the time spent on the bus was related to the degree of comfort resulting from the bus ride. The writer reasoned that if a student felt accepted and safe on the bus the student would perceive the bus ride to be positive or comfortable.

The literature provides few indications as to the variables responsible for the fatigue felt by a student on the bus. Fox (1966) reported that the quality of the supervision was felt to contribute to fatigue felt on the bus. Edin (1977) reported that the distance travelled

or time spent on the bus did not contribute to fatigue, and Mahan (1967) offers no explanation of the cause of fatigue. The writer reasoned that a student would find the bus ride fatiguing in general if the student was uncertain of the arrival time of the bus. Uncertain arrival time of the bus would encourage the student to be prepared to catch the bus at the earliest time of bus arrival that the student had experienced. This anxiety was reasoned to contribute to a sense of rush and to a perception of fatigue resulting from the bus ride.

The writer presumed that if the student was ready to catch the bus at the earliest time the student had experienced the bus arrival and the bus was late that day when the student would have a long wait for the bus. This wait would be frustrating to the student as the student rushed more than needed. The model indicates an examination of the relationship between the degree of rush felt by the student and the length of the wait for the bus and the condition of the wait. The writer further presumed that if the day was cold or windy and the student had no shelter against the elements than the wait for the bus would seem more unpleasant and frustrating. The model indicates an examination of the relationship of the variables "degree of rush", "length of wait", and "condition of wait", to the perceived degree of fatigue resulting with the bus ride.

Attention Span and the Ability to Study

Mahan (1967) reported that bused students had a longer attention span than non-bused students. Fox (1966) and Iwaniciki and Gable (1981) both reported that busing improves students' general attitude toward classes. The writer reasoned the student would feel more comfortable and positive about the bus ride if the ride was comfortable and this feeling would result in a longer attention span in class. If the student found concentrating in class easy then the student would experience an improvement in the students' ability to study. Mahan (1967) also reported that the higher the level of fatigue felt by the bused student the lower was the students' academic performance. The model indicates an examination of the relationship between fatigue felt and the attention span of the student and the students' ability to study. If fatigue leads to lower academic performance then fatigue may also lead to shorter attention spans in class and a lower ability to study.

Grade Level

Mahan (1967) studied the responses from students in 33 elementary schools, Howell (1981) studied elementary students, Ogletree and Mitchell (1981b) and Iwaniciki and Gable (1981) studied junior high students and all reported

that lower grade students adjusted to being bused more easily than higher grade students. The model indicates that the variable of fatigue is compared to the grade level of high school students to determine if the grade level of a student affects the students' perception of fatigue.

Behavioral

The behavioral variable is measured by the attendance of students in class. Mahan (1967) studying minority group children in Hartford who were divided into bused and non-bused groupings, found that bused students showed more regular attendance than non-bused students. The U. S. Department of Health (1966) after studying selected elementary schools over a period of 2 years reported that bused students showed significantly more regular attendance in school and classes than did non-bused students. The model indicates that the behavioral variable of class attendance or fatigue and attendance exists.

Attitude toward School

Iwaniciki and Gable (1981) in Hartford found evidence from a 4 year study of students, parents, and teachers attitudes to busing that busing improves the students' general attitude toward school. Fox (1966) in a 2 day observational comparison of bused and non-bused elementary

students in 63 schools, reported that bused students showed a positive attitude towards school, their classes and the social opportunities that the school provided. Dee (1972) found that bused students enjoyed peer acceptance.

Furthermore, her 4 year study of busing core students to suburban schools revealed that there were no difficulties for bused students in developing interpersonal relationships with staff or peers. Walkup (1979), studying parent and bused student responses to a questionnaire on attitudes toward school, found that parents and students felt that the general attitude toward school improved with busing if students were pleased with the supervision of the bus.

The model indicates that the variable of attitude toward school is compared to comfort and fatigue resulting from the bus ride to determine any relationship between these three variables.

Bused and Non-Bused

Iwaniciki and Gable (1981) indicated that busing improves the students' general attitude toward school. Fox (1966) reported that bused students showed a positive attitude toward school, their classes, and the social opportunities of the school. Dee (1972) reported an ease for bused students to establish interpersonal relationships with staff and peers. Mahan (1967) indicated that bused

students participated in extra-curricular activities and Edin (1977) found that bused students participated in the same proportion as non-bused students. Iwaniciki and Gable (1981) reported that bused students had higher career aspirations and were consistent in their career decisions while non-bused students were not. Edin (1977) found that bused students viewed vocational training more positively and recognized the impact of education on life-work goals more than non-bused students. The model indicates a comparison of bused and non-bused students as to their perception of the overall mood of the school as reflected in the policies and regulations of the school, the ease of timetabling of courses, and the perceived attitude of the teachers, the students' perception of the concern of the school for them as individuals as reflected in the instructional quality, peers desire to succeed, perceived school attitude toward them as individuals, the timetabling of extra-curricular activities so they can participate, and the usefulness of the career planning area, the ease of finding their way around the school as reflected in their perception of the complexity of the physical layout of the school, and the general friendliness of peers. Mahan (1967) reported that bused students showed significantly more regular attendance in classes than did non-bused students. The model indicates that this variable of class attendance was tested for bused and non-bused students.

An example of the bused students' perception may be as follows: a bused student may find that the policies of the school easy to conform to if the student wants to attend that school. A bused student may find the time-tabling of courses inconvenient if the student arrives at school at 9:00 A. M. and the student has the first class at 10:00 A. M. The bused student may see the teachers as not willing to help the student as the student does not come from the immediate area. Bused students may be more critical of the quality of the instruction as the student experiences inconvenience to come to school and expects a superior instruction. A bused student may value the career planning area more than a non-bused student as the bused student chose to come to the school for vocational or business education training and would appreciate the career information assisting the student in the students' chosen career. A student who is bused may find that participation in extra-curricular activities is very inconvenient as these activities are scheduled at times when transportation for the bused student is not available. A bused student may find that other bused students are easy to be friends with but non-bused students, who may form social groups after school, are not. The bused student may feel not accepted by peers who are not bused.

Definitions of Terms

- Attitudinal variable: the attitudinal variable refers to the attitude or disposition of the student toward the school in general or toward specific defined variables associated with the school.
- Behavioral variable: the behavioral variable refers to the record of class attendance by that student as recorded on the computer of the school.
- Cognitive variable: the cognitive variable refers to the academic performance of the student as indicated by that students' marks received in courses taken and reported on that students' report cards.
- Comfort of the bus ride: refers to the perceptions of a bused student that the ride on the bus is pleasant or comfortable.
- Fatigue resulting from the bus ride: refers to the perceptions of a bused student that the ride on the bus is frustrating or tiring.

Limitations of the Study

This study operates under restrictions which are accommodated throughout but are acknowledged here.

1- Although persons works in the area of busing were relied upon in the development of the theoretical model of the study, this reliance was constrained somewhat. Works, in the past, in this area were concerned with the transporting of students but from different vantage points. For example, some were interested with the racial or economic background of the bused student while others were interested in how busing was related to social equalization and economic opportunity questions. Despite the above, this writer decided that this indirect source of information on the busing experience and its effects was of value in the development of the theoretical model. The model thus reflects anticipated association of variables that are for the most part untested by other researchers known to this writer.

2- The questionnaire used in the study was author constructed and therefore was subject to possible weaknesses that would normally be diminished or eliminated after much testing. Concerns in this regard however were minimized by the face validity cautions taken and the results of an alpha reliability test of the questionnaire.

CHAPTER 2

Development of the Null Hypotheses

This chapter deals with the development of the null hypotheses from the model (Figures 1.1, 1.2) and the literature review.

Null Hypothesis Formulation and Rationale

The null hypothesis states the hypothesis in a form which enables statistical analysis in a two-tailed or three-tailed test rather than a one-tailed test. The null hypothesis leads to a determination of a positive or negative relationship between variables and to the significance of the relationship.

Cognitive

The cognitive variable is measured by the academic achievement level of the student. The cognitive variable used in the study presumed that the students' perception of comfort or fatigue would influence the cognitive performance of the student who was bused.

H1 - There is no significant relationship between the perception of the bused student that the bus ride was comfortable and the cognitive performance of that student.

- H1 - There is no significant relationship between the perception of the bused student that the bus ride was fatiguing and the cognitive performance of that student.

Comfort

Comfort associated with the bus ride was perceived as the absence of threatening events and the acceptance of the student by their peers. Comfort was seen to develop if the student felt the trip was not long, the time spent on the bus was not long, and the students' peers accepted the student and the student felt that they belonged to the peer group.

- H3 - There is no significant relationship between the degree of perceived comfort felt by the bused student and the length of the trip.
- H4 - There is no significant relationship between the degree of perceived comfort felt by the bused student and the time spent on the bus.
- H5 - There is no significant relationship between the degree of perceived comfort felt by the bused student and the sense of belonging felt on the bus.

Fatigue

Fatigue associated with the bus ride was perceived as the existence of frustrating or tiring events. The student was thought to develop frustration if the student felt they had to rush to catch the bus, if the student rushed to catch the bus and had to wait a long time for the bus to arrive as the bus was often late or the bus

arrival was irregular. Frustration and fatigue were felt to develop if the student had to wait for the bus in an area without protection from the elements.

- H6 - There is no significant relationship between the degree of perceived fatigue felt by the bused student and the perceived degree of rush.
- H7 - There is no significant relationship between the degree of perceived fatigue felt by the bused student and the perceived length of the wait.
- H8 - There is no significant relationship between the degree of perceived fatigue felt by the bused student and the perceived comfort of the waiting area.

Rush

The model indicates an intention to investigate the relationship between the perceived degree of rush felt and the bused students' perception of the length of the wait and the comfort of the area where the student waited for the bus. If the student rushed to catch the bus and then found the area where the waiting took place to be cold or windswept then the student would likely find the wait long and the area uncomfortable.

- H9 - There is no significant relationship between the perceived degree of rush to catch the bus and the students' perception of the length of the wait.
- H10 - There is no significant relationship between the perceived degree of rush to catch the bus and the students' perception of the comfort of the waiting area.

Attention Span

The model indicates an intention to investigate the relationship between the perceived degree of fatigue felt associated with the bus ride and the attention span of the student. If the student felt tired or frustrated after the student arrived at school the student would be less likely to be able to concentrate on the information given in the classroom. If the student arrived for classes feeling happy and alert the student would be able to concentrate on the information given in the classroom. The model also indicates an intention to investigate the relationship between the length of time the student is able to concentrate in class and the students' ability to study.

- H11 - There is no significant relationship between the bused students' perception of fatigue felt associated with the bus ride and the students' attention span.
- H12 - There is no significant relationship between the bused students' perception of fatigue felt associated with the bus ride and the students' ability to study.
- H13 - There is no significant relationship between the bused students' perception of comfort felt associated with the bus ride and the students' attention span.

Grade Level

The model indicates the intention to investigate the relationship between the degree of fatigue felt and

the grade level of the student. An older student who has been bused for several years or who feels more independent would be expected to perceive the fatigue less than a younger student.

- H14 - There is no significant relationship between the grade level of the bused student and the students' perception of the fatigue associated with the bus ride.

Behavioral

The behavioral variable was seen as the class attendance the student exhibits. The model indicates the intention to investigate the relationship between the class attendance of a student and that students' perception of the comfort of the bus ride, and the students' perception of the fatigue of the bus ride.

- H15 - There is no significant relationship between the perception of comfort associated with the bus ride and the students' class attendance.

- H16 - There is no significant relationship between the perception of fatigue associated with the bus ride and the students' class attendance.

Attitude toward School

The model indicates an intention to investigate the relationship between the students' general attitude toward the school and the degree of comfort or fatigue the student perceives associated with the bus ride.

Attitude toward the school is presumed to be negative

if the student finds the ride to school fatiguing and to be positive if the student finds the ride to school comfortable.

H17 - There is no significant relationship between the perception of the bused student of the fatigue of the bus ride and the students' general attitude toward the school.

H18 - There is no significant relationship between the perception of the bused student of the comfort of the bus ride and the students' general attitude toward the school.

Bused and Non-Bused

The model indicates a desire to examine the influences that being bused may have on the students' attitude toward the school. Attitudes of bused students were compared to attitudes of non-bused students as indicated in Figures 1.1 and 1.2.

Perceived school attitude toward students.

The model indicates a grouping of the attitudinal variables which reflect a general attitude of the school toward the student. If the bused student felt that the policies of the school were restrictive, the timetabling of courses awkward or inconvenient, and the attitude of the teachers was uncooperative or unfriendly then there may exist a difference between the attitudes of the bused and non-bused student.

- H19 _ There is no significant difference between the bused and non_bused student in their perception that the policies of the school are fair and understandable.
- H20 _ There is no significant difference between bused and non-bused students in their perception of the ease of timetabling of their courses.
- H21 _ There is no significant difference between the bused and non-bused students in their perception of teachers' attitudes toward them.

Perceived school attitudes toward individuals.

The model indicates a grouping of the attitudinal variables which the student may feel affects them as individuals such as the instructional quality of the teachers, the desire of the other students to succeed, the general attitude in the school toward individuals and their unique differences, the timetabling of extracurricular activities, and the facilities of the school to assist students to plan a career. The differences between bused and non-bused students on these variables were investigated.

- H22 _ There is no significant difference between bused and non-bused students in their perception of the instructional quality of the school.
- H23 _ There is no significant difference between bused and non_bused students in their perception of their peers to succeed in school.
- H24 - There is no significant difference between bused and non-bused students in their perception of the general attitude of the school toward them as individuals.

- H25 - There is no significant difference between bused and non-bused students in their perception of the feasibility of timetabling extra-curricular activities.
- H26 - There is no significant difference between bused and non-bused students in their perception of the use of the career planning area.

Physical layout and peer friendliness.

The physical layout of the school could be confusing to a bused student. The school would be foreign to the bused student and the student would feel insecure and would be more confused about the building than the non-bused student. The non-bused peers of the bused students may be seen to be less friendly, as they would not be able to continue friendships after school hours, and would feel that non-bused students would rather not have them as friends. The relationships between the variables of understanding the physical layout of the school and peer friendliness perceptions were examined.

- H27 - There is no significant difference between bused and non-bused students in their perception of the ease of understanding the physical layout of the school.
- H28 - There is no significant difference between bused and non-bused students in their perception of the friendliness of their peers.

Class attendance.

The model indicates that the relationship between bused and non-bused students and their class attendance

will be investigated.

H29 - There is no significant difference between
bused and non-bused students in their
attendance of their scheduled classes.

CHAPTER 3

Design of the Study

This chapter deals with the construction of the questions of the questionnaire. The chapter also indicates the processes used to obtain needed information, the mathematical use of the data obtained, and how the results of the statistical analysis relate to the hypotheses formulated.

Data Collection Procedure

The school selected for this study was the Crocus Plains Regional Secondary School in Brandon, Manitoba. This school was selected as almost half of the students are bused to school. Students came from as far as 50 miles from Brandon and from four different school divisions. Bused students are enrolled in the Academic, Business Education, and Vocational programs.

After discussions with Mr. L. Milne, Superintendent of Brandon School Division No. 40, who was concerned about confidentiality of information and who suggested that first slot students be chosen for administration of the questionnaire, permission to conduct this study was obtained on March 2, 1983. The questionnaire was administered to all first slot students on March 24, 1983 (Appendix A). The questionnaires were given to each of

the teachers who taught first slot classes along with the administration instructions (Appendix B). Distributed questionnaires were checked off for each teacher upon return to ensure that all completed and blank questionnaires were returned.

Data Collection

Three sources were used to collect data about each of the students who completed the questionnaire.

Behavioral data.

Behavioral data on each student was obtained from the school computer on class attendance.

Cognitive data.

Cognitive data was obtained by averaging the academic grades received by each student as reported on their report cards.

Attitudinal data.

Attitudinal data regarding the students' perception of the students' attitude to the school was obtained from the responses given to the questionnaire. Attitudinal data used to compare bused to non-bused responses were obtained from the responses given to questions designed to measure each variable in the questionnaire.

Comfort and fatigue data.

Data assessing the degree of comfort or fatigue perceived by the student, the attention span of the student, the students' ability to study, the grade level of the student, the length of the trip, the time spent on the bus, the sense of belonging felt by the student, the perceived degree of rush to catch the bus, the length of the wait for the bus, and the condition of the area where the student waited for the bus, were obtained from the responses given by the students to questions which were designed to measure those variables in the questionnaire.

Construction of the Questionnaire

All respondents were asked to complete the questions which indicate their name, major area of study, and the grade level of the student (Appendix C).

The first section of the questionnaire was to measure the perceptions of the bused students to the conditions connected with their busing experiences. To answer the question the student was asked to indicate a "yes" or "no", place a check mark beside one of three available options, or to rate feelings about given statements on a 5-point Likert scale ranging from "strongly agree" to "strongly disagree". Check mark questions were constructed to measure the model variables

"length of trip" and "time on bus". Questions constructed to measure the student perceptions of the busing experience, on the other hand, required the respondent to provide a rating of his/her perception. Directions as to how each question was to be answered was given in bold type before the questions and at the top of the second page of the questionnaire.

Relationship of the Questions on the Questionnaire to
the Null Hypotheses

Questions 6 and 7 were constructed to measure the model variable "comfort". A measurement of the variable "comfort" was necessary to compare to other variables in order to prove or disprove the null hypotheses H1, H3, H4, H5, H13, H15, and H18. Questions 6 and 7 ask the student to indicate their perception of enjoyment of being with friends on the school bus and enjoyment of the ride in general. "Comfort" is compared to cognitive performance (obtained from school records), the length of the trip (question 4), time spent on the bus (question 5), perception of belonging on the bus (question 6), the students' attention span (question 12), class attendance (obtained from school records), and the students' general attitude toward school (question 16).

Question 10 and 14 were constructed to measure the model variable "fatigue". Question 10 asks the student to indicate the degree to which the student finds the bus ride fatiguing and question 14 asks the student to indicate the degree to which the student finds the bus ride tiring. A measurement of the variable "fatigue" was necessary to compare to other variables in order to prove or disprove null hypotheses H2, H6, H7, H8, H11, H12, H14, H16, and H17. Fatigue is compared to cognitive performance (obtained from school records), rush to catch the bus (question 8), length of wait (question 9), condition of the area where the wait takes place (question 11), the students' attention span (question 12), the students' ability to study (question 13), grade level (initial question), behavioral performance of class attendance (obtained from school records), and general attitude toward school (question 16).

Bused and non-bused.

The attitudinal variables of bused and non-bused students' perception were tested in questions 16 to 26. Measurements of the perceptions of bused and non-bused students were necessary to prove or disprove the null hypotheses H19 - H29. A comparison of the bused and non-bused students' perceptions satisfied the model variable comparison of "school policies" (question 19), "time-

tabling of courses" (question 17), "perceived teachers' attitude" (question 21), "instructional quality" (question 25), the "desire to succeed" (question 26), the "perceived school attitude toward individuals" (question 18), the perception of ease of "extra-curricular timetabling" (question 23), "career planning" (question 20), "physical environment" (question 24), "friendliness of peers" (question 22), and "class attendance" (obtained from school records).

Six of the questions were constructed in the negative. This was done to cross reference answers and to encourage students to consider each question before answering. The questions were questions 10, 12, 13, 18, 22, and 24.

Analysis of Obtained Data

From the raw data all responses were assigned a score, all respondents a number, and all negatively asked questions were scored in the positive.

Analysis of covariance was used as a method for analysing differences between responses on the variables. This method has proven to be especially useful for research done in a school setting where intact classes were used, and subjects could not be assigned to groups at random. Analysis of covariance makes it possible to partially control extraneous variables through the mathematical

process of analysis. Where two variables were compared, two-way ANOVA was used and where three variables were compared, three-way ANOVA was used. An example of the use of ANOVA (two-way) was the students' perception of the fatigue of the bus ride (question 10 and 14) and the students' perception of their rush to catch the bus (question 8).

Pearson Product Moment Correlation was used to compare two variables when both variables were internal in nature and only a gross relationship was desired. An example of the use of Pearson Product Moment Correlation was the students' perception of the fatigue of the bus ride (questions 10 and 14) and the cognitive performance of the student (obtained from school records).

Chi Square analysis was used for relationships involving the behavioral variable of attendance as class attendance is in the frequency scale. An example of the Chi Square analysis was the students' perception of the fatigue of the bus ride (questions 10 and 14) and the behavioral variable of class attendance (obtained from school records).

Sample Size

Six hundred thirty two students completed the questionnaire, 605 were usable. This represented 62% of the total population of the school. Table 3.1 indicates

Table 3.1

Number of Respondents from each Grade Level and
Major Area of Study

Major Study Area	Number of Respondents			
	Gr. 10	Gr. 11	Gr. 12	Total
Vocational - Bused	49	28	20	97
Non-Bused	42	45	36	123
Business Ed.-Bused	20	16	7	43
Non-Bused	9	18	12	39
Academic - Bused	75	44	39	158
Non-Bused	<u>39</u>	<u>55</u>	<u>51</u>	<u>145</u>
Totals	234	206	165	605

the number of respondents from each of vocational, business education, and academic sections of the school and the number from each grade level. Unusable questionnaires were those which had less than half the questions answered or all the questions answered "strongly agree" or "strongly disagree." The 605 respondents answered all of the questions in the sections they were asked to answer thereby producing a 100% response rate to all of the applicative questions in the bused and non-bused sections of the questionnaire.

Statistical Analysis

The first step taken was to determine the validity of the instrument used to measure the students' responses. Validity was tested as to face validity and construct validity. The second step was to determine the reliability of the questionnaire. This would establish the consistency of the students' responses and would indicate the degree of significance the rest of the evaluation would hold. Once the validity and the reliability of the responses were known, further analysis of the effects of busing on the cognitive, behavioral, and attitudinal variables could be made.

Validity

Face validity.

Face validity was achieved by administering the questionnaire to four students and discussing with them their interpretation of the meaning of the questions. Subsequently three questions were altered (6, 9, and 18). The alterations were made to ensure that students' understanding of the question is identical to the intended meaning of the question. The revised questionnaire was administered to the selected sample of students.

Construct validity.

To measure the construct validity of the questionnaire, a varimax rotated factor analysis was utilized. Factor loadings greater than or equal to .30 were considered significant; a conventional value of acceptance by researchers.

In considering the acceptability of factors Kaiser's criterion (eigen values greater than one) and the Scree test were utilized. The Scree test allows the eigenvalues to be plotted on a graph with the eigenvalues on the vertical axis and the factor number on the horizontal axis. If the eigenvalues form a straight line the factor may be used in further analysis. A straight line would indicate a progression of factors which are related in diminishing values.

Results of the analysis (Table 3.2 and 3.3) indicated that the items loaded onto six factors; three with eigenvalues greater than or equal to one. Factors 1, 2, and 4 had eigenvalues of 2.473, 1.212, and 2.093 respectively. Application of the Scree test (Figure 3.1) did not permit the extraction of the other factors for further analysis. In applying the criterion that only factor loadings of .30 or greater were acceptable as long as the item did not load significantly on more than one factor, the purity of the factor was strengthened. Questions 13 and 23 violated this criterion and were therefore eliminated. Question 13 related to extra-curricular timetabling.

The factors extracted appeared to measure

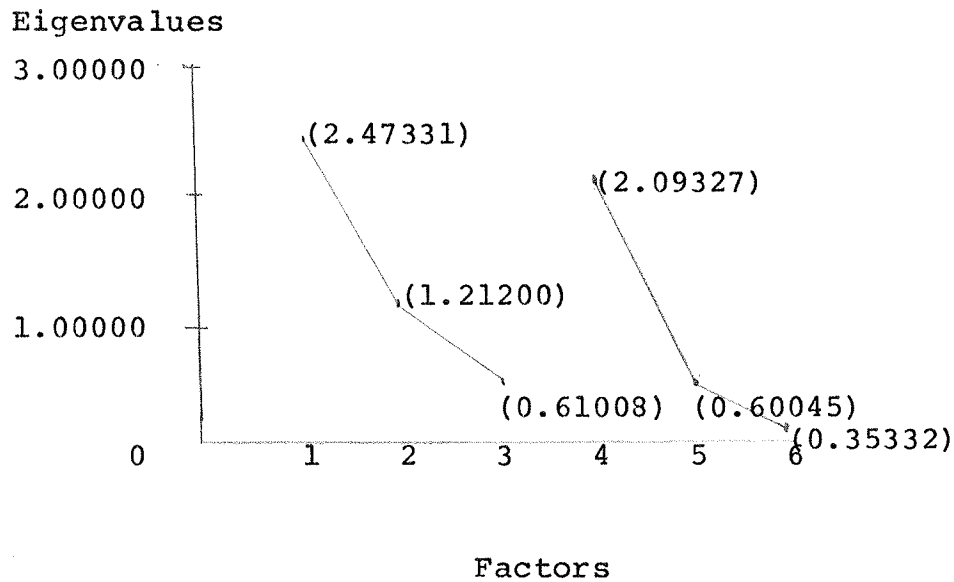
- 1- fatigue associated with the bus ride
- 2- comfort associated with the bus ride, and
- 3- general school attitude.

Reliability

The reliability of the total questionnaire calculated to an alpha score of .766 using the Reliability Subprogram in the SPSS package. This would indicate that for the overall questionnaire the items were reliable and the student responses were consistent. Such a reliability was deemed high enough for subsequent analysis to be taken.

Figure 3.1

Scree Test to Determine the Ability to Include
Eigenvalues in Further Analysis



- Note: 1- Measure of Fatigue associated with the bus ride
2- Measure of Comfort associated with the bus ride
3- Measure of Conditions of Waiting area and bus arrival
4- Measure of general school Attitude
5- Measure of school concern for individuals
6- Measure of physical environment

Table 3.2

Varimax Rotated Factors of Student Attitudes toward
the Busing Experience (N= 605)

Question No.	Factor 1 ^a	Factor 2 ^b	Factor 3 ^c
6	0.16173	<u>0.92282</u>	0.11821
7	0.03606	<u>0.34447</u>	0.08678
8	0.06538	0.08697	<u>0.52310</u>
9	0.11109	0.26799	0.28704
10	<u>0.77877</u>	0.12085	0.02984
11	0.03231	0.17395	<u>0.78077</u>
12	<u>0.85175</u>	0.06781	0.01372
13	<u>-0.31857</u>	<u>-0.31189</u>	-0.14303
14	<u>-0.69017</u>	-0.19025	-0.06611
Eigenvalue	2.47331	1.21200	0.61008
Percentage of Variance	57.6	28.2	14.2

Note. _____ indicates the major factor for that question

a Measure of Fatigue associated with the bus ride

b Measure of Comfort associated with the bus ride

c Measure of conditions of the waiting area and bus arrival

Table 3.3

Varimax Rotated Factors of Student Perceptions
of School (N= 605)

Question No.	Factor 4 ^a	Factor 5 ^b	Factor 6 ^c
15	0.18547	<u>0.39611</u>	0.23546
16	<u>0.40670</u>	0.19647	0.17861
17	<u>0.44228</u>	0.18236	0.23376
18	0.07392	<u>0.47910</u>	0.10814
19	0.16287	<u>0.41017</u>	0.07681
20	0.18533	<u>0.39987</u>	0.01048
21	0.27342	<u>0.36215</u>	0.04831
22	0.12012	0.15611	0.27823
23	<u>0.47461</u>	<u>0.30657</u>	-0.03212
24	0.01283	-0.00341	<u>0.71136</u>
25	0.23775	<u>0.47980</u>	0.06881
26	0.26107	<u>0.35079</u>	0.07776
Eigenvalue	2.09327	0.60045	0.35332
Percentage of Variance	68.7	19.7	11.6

Note. _____ Indicates the major factor for that question

a Measure of general school attitude

b Measure of school concern for individuals

c Measure of physical environment

Modification of the Study as a Result of the Factor Analysis

The factor analysis results indicate that the questionnaire measured three dimensions with regards to busing - fatigue, comfort, and attitude toward school. The study's theoretical model and hypotheses to be tested were revised to reflect this result.

Revised Theoretical Model

Figure 3.2 indicates the relationships to be examined for bused students only. Here, the perception of bused students on the three identified dimensions of the questionnaire are related to various independent variables - academic achievement as reflected by school records, grade level, attendance of classes, length of the bus trip, and time spent riding the bus from their pick-up point to the school.

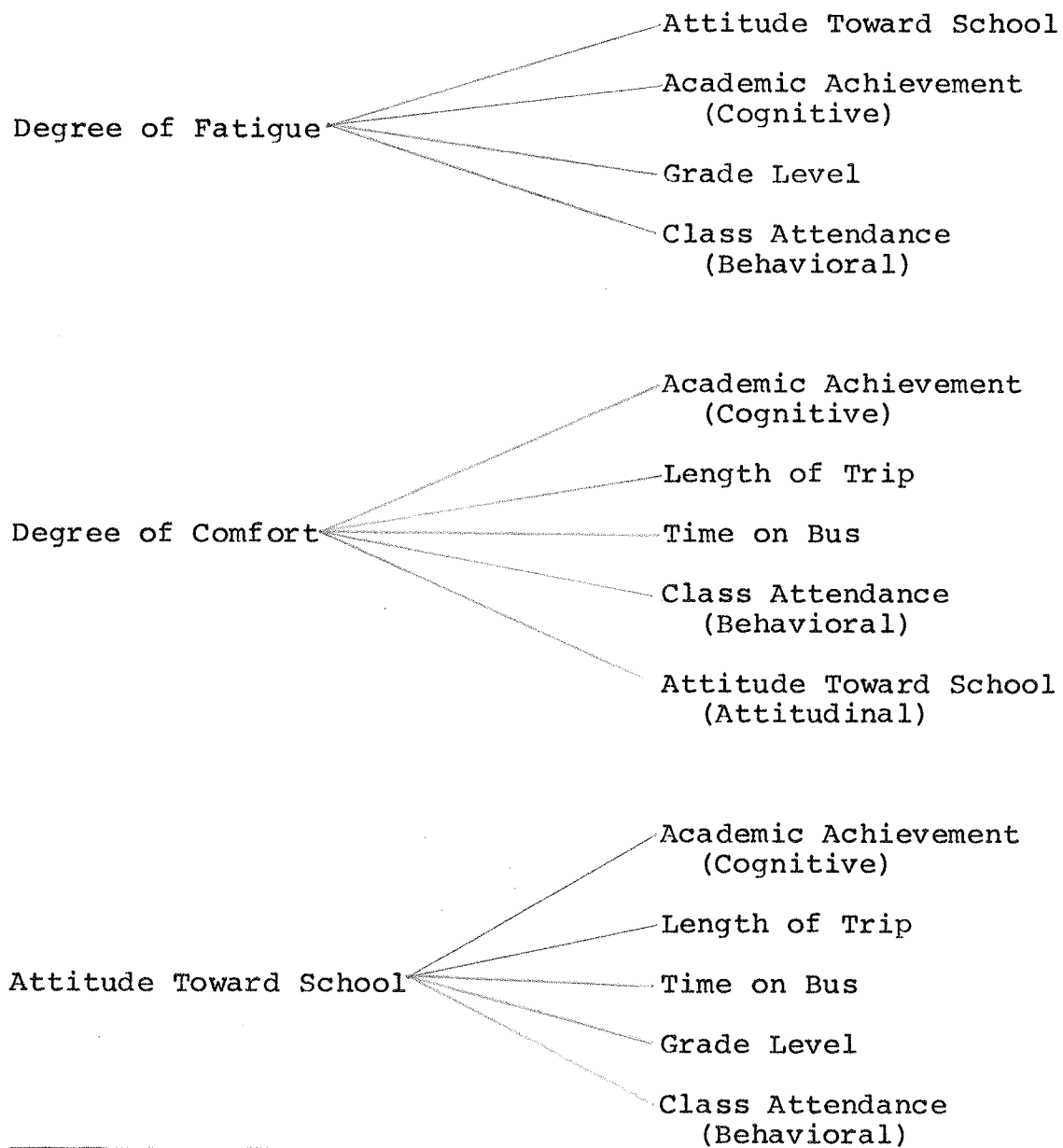
Figure 3.3 indicates the relationships to be examined for comparisons between bused and non-bused students. Variables identified were academic achievement as reflected by school records, attendance of classes, and the students' attitude toward school.

Revised Null Hypotheses Formulation

Given the results of the factor analysis the earlier hypotheses were delimited to explore the relationship between each dimension of busing and the above noted

Figure 3.2

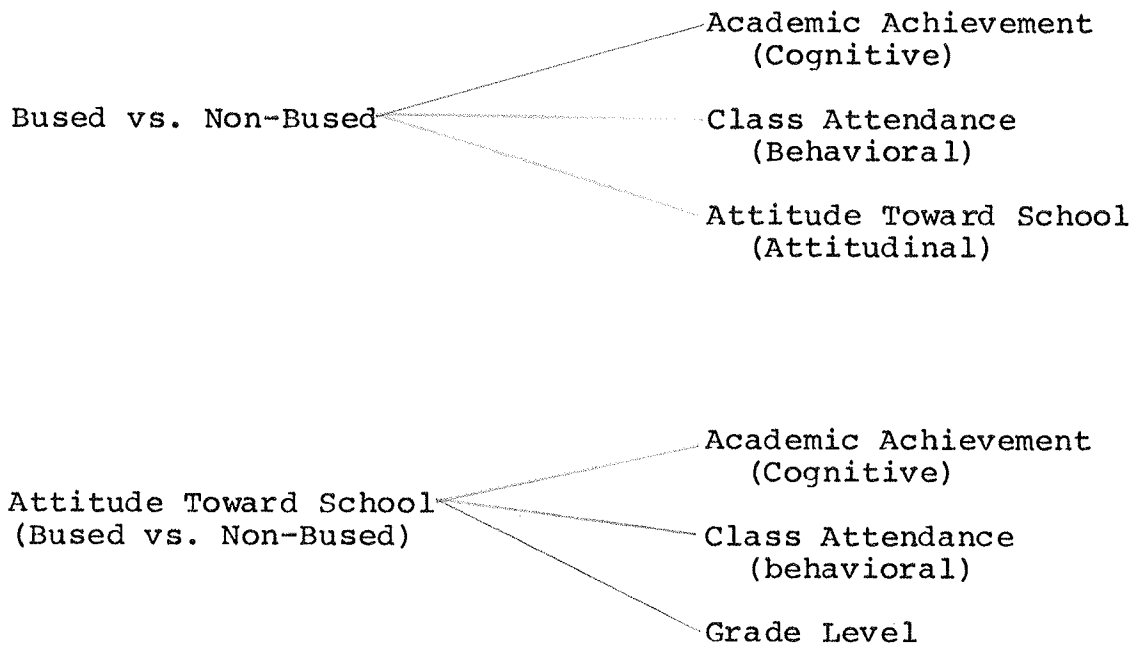
Some Fatigue, Comfort, and Attitudinal Effects of Busing on
Bused Students in Manitoba (Revised Theoretical Model)



Note: _____ Presumed Relationship

Figure 3.3

Some Cognitive, Behavioral, and Attitudinal Comparisons of
Bused to Non-Bused Students (Revised Theoretical Model)



Note: _____ Presumed Relationship

variables.

Bused Students

Fatigue.

- H1f - There is no significant relationship between the degree of perceived fatigue felt by the bused student and the academic achievement of that student.
- H2f - There is no significant relationship between the degree of perceived fatigue felt by the bused student and the grade level of that student.
- H3f - There is no significant relationship between the degree of perceived fatigue felt by the bused student and the students' class attendance.
- H4f - There is no significant relationship between the degree of perceived fatigue felt by the bused student and that students' general attitude toward the school.

Comfort.

- H1c - There is no significant relationship between the degree of comfort felt by the bused student and the academic achievement of that student.
- H2c - There is no significant relationship between the degree of perceived comfort felt by the bused student and the length of the bus trip.
- H3c - There is no significant relationship between the degree of comfort felt by the bused student and the time spent on the bus.
- H4c - There is no significant relationship between the degree of comfort felt by the bused student and the students' class attendance.
- H5c - There is no significant relationship between the degree of comfort felt by the bused student and the students' general attitude toward the school.

Attitude Toward School.

- H1a - There is no significant relationship between the bused students' general attitude towards the school and that student's level of academic achievement.
- H2a - There is no significant relationship between the bused student's general attitude towards the school and the length of the bus trip.
- H3a - There is no significant relationship between the bused student's general attitude towards the school and the time spent on the bus.
- H4a - There is no significant relationship between the bused student's general attitude towards the school and the student's grade level.
- H5a - There is no significant relationship between the bused student's general attitude towards the school and the student's attendance of classes.

Bused vs Non-bused Students.

- H1b - There is no significant relationship between bused and non-bused students and their academic achievement.
- H2b - There is no significant relationship between bused and non-bused students and their attendance of classes.
- H3b - There is no significant relationship between bused and non-bused students and their attitude toward school.
- H4b - There is no significant relationship between bused and non-bused students in their general attitude toward school and their level of cognitive performance.
- H5b - There is no significant relationship between bused and non-bused students in their general attitude toward school and their grade level.
- H6b - There is no significant relationship between bused and non-bused students in their general

attitude toward the school and their attendance
of classes.

CHAPTER 4

Analysis of Data

This chapter reports the resulting relationships between busing variables and independent cognitive, behavioral, and other variables. The findings and the significance of the relationships confirm or reject the null hypothesis formed. With a large sample the significance of the findings are often higher than if the sample were smaller therefore the predictive value of the findings may be less than what appears evident by the level of the significance obtained. With this realization considered the study chose $p \leq .001$ as the acceptable level of significance.

Findings

Bused Students

Table 4.1, indicating the ANOVA analysis of variables, reveals that the perceived degree of fatigue associated with the bus ride was not significantly related to the grade level of the student ($f=1.090$, $p=.014$). Table 4.2, indicating the correlation analysis of variables, indicates that the perceived degree of fatigue felt by the students to be associated with the bus ride was significantly and negatively related to the students' academic achievement

Table 4.1

Summary of ANOVA Analysis Involving Hypothesized Relationships for Bused Students (N= 298)

Variable #1	Variable #2	S. of S.	Mean SS	df	f	p
Fatigue	Grade Level	380.634	380.634	1	1.090	.014
Comfort	Length of trip	0.428	0.428	1	.721	.396
	Time on bus	0.089	0.089	1	.643	.699
Attitude toward School	Achievement	2.511	2.511	1	3.448	.064
	Length of trip	0.083	0.042	2	.052	.949
	Time on bus	1.354	0.677	2	.853	.427
	Grade Level	3.634	1.817	2	2.318	.100
	Class Attendance	5.172	5.172	1	7.103	.008

Table 4.2

Summary of Correlation Analysis of Fatigue and Comfort
for Bused Students (N= 298)

Variable 1	Variable 2		<u>r</u>	<u>p</u>
Fatigue	Achievement	(a)	-.745	.000
	Attitude toward School	(c)	-.284	.000
Comfort	Achievement	(a)	.073	.036
	Attitude toward School	(c)	.270	.000

Note. (a) Cognitive variable

(c) Attitudinal variable

($r = -.745$, $p = .000$) and the students' general attitude toward the school ($r = -.284$, $p = .000$). Table 4.3, indicating the Chi Square analysis of variables, indicates that the perceived degree of fatigue associated with the bus ride was not significantly related to the students' attendance of classes ($\chi^2 = .277$, $p = .697$).

The above results provides evidence for the confirmation or rejection of the following hypothesized relationships:

- H1f - rejected. There is a significant and negative relationship between the perceived degree of fatigue felt by bused students and their academic achievement.
- H2f - confirmed. There is no significant relationship between the degree of perceived fatigue felt by bused students and their grade level.
- H3f - confirmed. There is no significant relationship between the degree of perceived fatigue associated with the bus ride and the students' class attendance.
- H4f - rejected. There is a significant and negative relationship between the degree of perceived fatigue felt by bused students and the students' general attitude toward the school.

Comfort.

Table 4.1 indicates that the perceived degree of comfort associated with the bus ride was not significantly related to the length of the bus trip ($f = .721$, $p = .396$) or the time the student spent on the bus ($f = .643$, $p = .699$).

Table 4.2 indicates that the perceived degree of comfort associated with the bus ride was not significantly related

Table 4.3

Chi Square Analysis of Class Attendance and Achievement
for Bused and Non-Bused Students

Variable 1	Variable 2	<u>N</u>	<u>x</u> ²	<u>p</u>
Class Attendance	Fatigue	298	.277	.697
	Comfort	298	.274	.683
	Bused/Non-Bused	605	69.072	.000
Achievement	Bused/Non-Bused	605	.923	.265

to the students' academic achievement ($r=.073$, $p=.036$). On the other hand, comfort was significantly and positively related to the students' general attitude toward the school, ($r=.270$, $p=.000$). Table 4.3 reveals that the perceived degree of comfort associated with the bus ride was not significantly related to the students' attendance of classes ($\chi^2=.274$, $p=.683$).

The above results provide evidence for the confirmation or rejection of the following hypothesized relationships:

- H1c - confirmed. There is no significant relationship between the degree of comfort felt by bused students and their academic achievement.
- H2c - confirmed. There is no significant relationship between the degree of perceived comfort felt by bused students and the length of the bus trip.
- H3c - confirmed. There is no significant relationship between the degree of comfort felt by bused students and the time spent on the bus.
- H4c - confirmed. There is no significant relationship between the degree of comfort felt by bused students and their attendance of classes.
- H5c - rejected. There is a significant and positive relationship between the degree of comfort felt by bused students and the students' general attitude toward the school.

Attitude toward school.

Table 4.1 indicates that the bused students' general attitude toward the school was not significantly related to the students' academic achievement ($f=3.448$, $p=.064$),

length of the bus trip ($\underline{f}=.052$, $\underline{p}=.949$), time the student spent on the bus ($\underline{f}=.853$, $\underline{p}=.427$), grade level ($\underline{f}=2.118$, $\underline{p}=.1003$), students' attendance of classes ($\underline{f}=7.103$, $\underline{p}=.008$).

The above results provide evidence for the confirmation or rejection of the following hypothesized relationships:

- H1a - confirmed. There is no significant relationship between the bused students' general attitude toward the school and their academic achievement.
- H2a - confirmed. There is no significant relationship between the bused students' general attitude toward the school and the length of the bus ride.
- H3a - confirmed. There is no significant relationship between the bused students' general attitude toward the school and the time the students spent riding the bus to school.
- H4a - confirmed. There is no significant relationship between the bused students' general attitude toward the school and their grade level.
- H5a - confirmed. There is no significant relationship between the bused students' general attitude toward the school and their attendance of classes.

Bused vs. Non-Bused Students

Bused vs. Non-bused.

Table 4.4 indicates that there is no significant difference between bused and non-bused students in their attitude toward school ($\underline{f}=3.860$, $\underline{p}=.050$). Table 4.3 indicates that there is no significant difference in the academic achievement of bused and non-bused students ($\underline{x}^2=.923$, $\underline{p}=.265$). There is, however, a significant difference between the class attendance of bused and non-

Table 4.4

Summary of ANOVA Analysis Involving Hypothesized Relationships for Bused
and Non-Bused Students (N= 605)

Variable #1	Variable #2	S. of S.	Mean SS	<u>df</u>	<u>f</u>	<u>p</u>
Bused vs. Non-Bused	Attitude toward	2.810	2.810	1	3.860	.050
Attitude toward School (Bused vs. Non-Bused)	Achievement	6.198	1.550	4	1.985	.097
	Grade Level	6.204	3.102	2	4.260	.015
	Class Attendance	5.102	0.850	6	1.077	.376

bused students ($\chi^2=69.072$, $p=.000$).

The above results provide evidence for the confirmation or rejection of the following hypothesized relationships:

H1b - confirmed. There is no significant relationship between bused and non-bused students and their academic achievement.

H2b - rejected. There is a significant relationship between bused and non-bused students and their class attendance.

H3b - confirmed. There is no significant relationship between bused and non-bused students and their attitude toward school.

Attitude toward school.

Table 4.4 indicating the ANOVA analysis of variables, indicates no significant relationship between bused and non-bused students in their attitude toward school in relation to their academic achievement ($f=1.985$, $p=.097$), the students' grade level ($f=4.260$, $p=.015$), and the students' class attendance ($f=1.077$, $p=.376$).

The above results provide evidence for the confirmation or rejection of the following hypothesized relationships:

H4b - confirmed. There is no significant relationship between bused and non-bused students in their general attitude toward school and their level of academic achievement.

H5b - confirmed. There is no significant relationship between bused and non-bused students in their general attitude toward the school and their grade level.

H6b - confirmed. There is no significant relationship between bused and non-bused students in their

general attitude toward the school and their attendance of classes.

CHAPTER 5

Summary, Conclusions, and Implications

This chapter presents a summary of the major findings of the study, pertinent conclusions that one could draw, and implications of findings for administrative practice and research

Summary

The results of the study indicate that there are cognitive, behavioral, attitudinal effects of busing on High school students.

A large sample assures a greater likelihood that findings actually represent the characteristics of a population. A large sample can produce findings which are more significant than may be found, given the same relationship, in smaller samples of responses. The sample of this study although not large is sizable enough to encourage caution when interpreting results at the $.001 \leq p < .05$ level of significance. In the interest of academic rigour, only a significance of less than or equal to .001 was considered significant enough for consideration in determining whether the relationship confirmed or rejected the null hypothesis.

Cognitive Relationships

The cognitive effects of busing appears to depend on the feelings of the student in regard to the bus ride itself. If the student finds the trip to school fatiguing then s/he will more likely develop a negative attitude toward the school, and receive lower academic grades in school.

A comparison of the cognitive performances of bused students to the cognitive performances of non-bused students revealed that neither the students' general attitude toward the school nor the condition of being bused or non-bused were significant.

Behavioral Relationships

The Behavioral effects of busing appear to depend on whether the student is bused to school or not. Bused students are much more likely to attend classes than non-bused students. The finding is in agreement with other research. Mahan (1967) and the evaluation of the community zoning project of New York City (1966), for example, reported that bused students showed significantly higher attendance in classes than did non-bused students. Attitude of the student, whether bused or not, toward the school significantly related to that student's attendance of classes. The study did however indicate that the

condition of being bused or not bused to school was significant in relation to class attendance. Bused students attended classes significantly more than non-bused students.

Attitudinal Relationships

The attitudinal effects of busing appear to depend on the students' perceptions of the bus ride itself. If the student finds the ride comfortable then that student tends to develop a more positive attitude toward the school. If the student found the bus ride fatiguing a more negative attitude toward the school developed. Again, such findings provide further support of other research findings.

Edin (1977) reported that for 70% of the bused students the ride to school was the most negative part of the busing experience and that the more negative the students' attitude was toward the bus ride the more negative was their attitude toward the school in general.

Mahan (1967) reported that the degree of fatigue felt by the student affected the cognitive performance negatively. The current study agreed in finding that fatigue of the bus ride had a significant and negative relationship with cognitive performance.

No significant relationship was established between the general attitude of bused students toward the school and their level of performance, the length of time the

student was on the bus, the distance travelled by the student on the bus, the grade level of the student, or the class attendance of the student.

In a comparison between bused and non-bused students that the general attitude toward the school produced no significant relationships with cognitive performance, grade level, class attendance, or the condition of being bused or not bused.

It is important to note that the length of the trip to school and the time spent on the bus by a bused student is not significantly related to the students' perception of the comfort associated with the bus ride. Furthermore, the comfort or fatigue of the bus ride was not significantly related to the students' attendance in classes; but the condition of being bused to school was significant in attendance of classes.

Conclusions

The results of this study and the findings of others reported in the literature review, on the topic of cognitive, behavioral, and attitudinal effects of busing on high school students, would suggest that efforts to reduce the fatigue of the bus ride would lead to higher academic grades. This conclusion however cannot be carried across grade levels but must remain within the

level of examination. Investigations of the association between grade level and fatigue revealed an association more by chance than otherwise.

Using the .05 level of Significance

This study adopted the .001 level of significance as the determining level to designate a finding as being significant but other studies have successfully defended using .05 as the determining significance level. If this study were to adopt .05 as the determining significance level then the following relationships regarding the students' perception of fatigue and comfort would be significant. The grade level of the student and the perception of fatigue felt by the student would be significant and positive. This is to say, the higher the grade level of the bused student the more fatigue felt by the student. The relationship between the comfort of the bus ride and the students' cognitive performance would also be significant and positive. One could justifiably conclude then that there is need to reduce perceptions of fatigue associated with busing and increase perceptions of comfort associated with busing.

Perceptions of comfort associated with the bus ride are not significantly related to the length of time the student spends on the bus or the distance travelled. This relationship would remain not significant if the .05

significance level were adopted. Studies should be undertaken to determine the variables which support the perception of comfort on the bus since the significance of fostering the perception of comfort in bused students is important to the students' cognitive, behavioral, and attitudinal success in school.

Bused vs. Non-Bused

None of the variables tested in a comparison of bused to non-bused students proved significant with the exception of class attendance. There appears to be no significant differences between the cognitive or attitudinal variables and being bused or not. On the behavioral variable of attendance in classes, however, busing has a very direct association with whether the students attend classes. Further study should be taken to determine why this variable is significant when the other variables examined in the study proved otherwise.

Implications for Practice

The findings of this study and the significances of those findings should clarify perceptions of the busing experience for several groups.

School Boards

The strong linkage between the perceptions of comfort and fatigue of the busing experience and the cognitive performance and the students' attitude toward the school would indicate that efforts to reduce the fatigue of the bus ride and increase the comfort of the bus ride should be undertaken. Time on the bus and the distance travelled appear to have no significant effect on comfort or fatigue, so concern in these areas is unfounded.

School boards should initiate further studies toward discovery of the variables responsible for the perceptions of fatigue and comfort associated with the bus ride. These discoveries should be incorporated into policy. Studies need to be undertaken to determine the effects of busing on elementary and junior high school students, and to determine if the same variables that affects high school students also affect those in lower grades.

As busing becomes more of a part of the life of the average student due to specialization of education in career training or French immersion the need to understand the educational implications and to take steps to facilitate the most positive learning environment becomes more acute.

Parents and Students

The media report that the prime concern of parents regarding busing is that their children will be on the bus for a long time, that they must travel long distances, and that the condition of being on a bus is not positive. This study indicates that the time on the bus and the distance travelled has no significant effect of the cognitive, behavioral, or attitudinal responses of the student. The study does indicate that bused students are likely to attend classes more regularly than non-bused students and if the student finds the experience positive and comfortable there are very positive ramifications. Parents and their interest groups should be concerned not with the time and distance of the busing experience but with encouraging studies to determine the variables which affect the student's perception of comfort or fatigue associated with the bus ride.

Provincial Transportation Supervisors

Provincial transportation supervisors of the prairie provinces have indicated that they have no studies which relate to the effects of busing on students' performance in school. The concern of their departments has been to reduce the cost per student and to make the busing system as efficient as possible. Policy from these departments has been concerned with the cost and safety of the bused

students from a financial and political perspective as opposed to the improvement of learning opportunities for the bused student. When the findings are as significant as they have been in reference to comfort and fatigue, educational variables must be considered when forming transportation policy.

Implications for Research

As indicated earlier, to the best of this writer's knowledge there has been no study whose major thrust of examination was the effects of busing on the cognitive, behavioral, and attitudinal variables of students. If and when such variables did emerge for discussion they did so within the context of economic equalization concerns. For this reason the subject area needs further research and replication to enlighten administrators involved in the developing policy in this area.

There is also a need to determine why busing appears to be significantly related to class attendance but not to perceptions of comfort or fatigue. Prior to addressing this point of inquiry however the researcher is advised to investigate the association between the variables of comfort and fatigue. Is the perception of comfort a separate variable or just a lesser degree of fatigue? Are these additional variables which further define comfort

or fatigue which, when introduced would make the relationship between class attendance and the busing more understandable?

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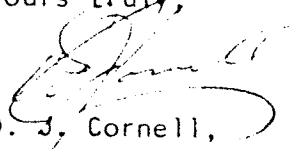
March 02, 1983

Mr. Myron French,
c/o Crocus Plains Regional Secondary
School,
1930 First Street,
Brandon, Manitoba
R7A 1A8

Dear Mr. French:

Your letter of February 22, 1983, requesting permission to conduct a survey at Crocus Plains Regional Secondary School on the effects of busing students in relation to academic achievement, attendance in classes, and attitude toward school, was considered by the Board of Trustees at its regular meeting held February 28, 1983. This will advise that permission was granted to you to conduct this survey, subject to the confidentiality of all students surveyed being maintained. I believe Mr. Milne will also be discussing your survey with you prior to its implementation with regards to a couple of points raised at the Board Meeting. Please contact Mr. Milne, if he has not already contacted you, prior to commencement of your project.

Yours truly,



D. J. Cornell,
Secretary-Treasurer

DJC/ms

c.c. Mr. Les Milne, Superintendent
Mr. Harold Grundy, Principal, Crocus Plains

TO TEACHERS ADMINSTRATING THIS STUDENT QUESTIONNAIRE

To help keep the results as free from outside influences as possible please distribute the papers to all the students in your class and only give the following instructions to your classes:

" EACH STUDENT IS ASKED TO COMPLETE THE QUESTIONS IN THE QUESTIONNAIRE WHICH APPLY TO THEM. IF YOU ARE BUSED TO SCHOOL YOU SHOULD COMPLETE ALL THE QUESTIONS. IF YOU DO NOT TAKE A BUS TO SCHOOL YOU ARE ASKED TO COMPLETE ONLY QUESTIONS 16 TO 26. PLEASE THINK ABOUT EACH QUESTION CAREFULLY BEFORE ANSWERING AS YOUR ANSWERS ARE IMPORTANT TO THE VALUE OF THE WHOLE STUDY"

When the questionnaires are completed, please put them in my mailbox as soon as you are able. Thank you for your help.

Myron French

STUDENT QUESTIONNAIRE

Name of Student _____ Grade Level _____

Type of Student: (Academic, Business Ed., Vocational) _____

PLEASE TAKE YOUR TIME AND ANSWER ALL OF THE FOLLOWING
QUESTIONS AS CAREFULLY AND CORRECTLY AS YOU CAN.

THANK YOU FOR YOUR HELP.

*** STUDENTS WHO ARE BUSED TO SCHOOL SHOULD COMPLETE
ALL THE QUESTIONS

*** STUDENTS WHO ARE NOT BUSED TO SCHOOL SHOULD BEGIN
ON QUESTION 16

A. DIRECTIONS : Please put an "X" in the correct space

Eg. X YES X NO

1. Did you choose to attend Crocus Plains School ?

_____ YES _____ NO

2. Does Crocus Plains School offer courses you want that
are not offered at a school closer to where you live?

_____ YES _____ NO

3. Do you attend Crocus Plains School for reasons other
than a choice of courses ?

_____ YES _____ NO

If "YES" please explain _____

4. How many miles do you travel by bus to school ?

___(0-10)___(10-20)___(over 20)

5. How long are you on the bus to school ?

___(0-15 min)___(15-30)___(30+)

B. DIRECTIONS: Place a CIRCLE AROUND THE LINE which best expresses your feelings about the following statements. The scale goes from " Strongly agree " on the left hand side to " Strongly disagree " on the right hand side. (Strongly agree I I I I I Strongly disagree)

6. I enjoy meeting and talking with my friends on the bus S.A.
I I I I I S.D.
I I I I I
7. In general I enjoy the bus ride to school I I I I I
8. I usually have plenty of time to catch the bus in the mornings I I I I I
9. The bus almost always arrives at the same time in the morning to pick me up I I I I I
10. It is frustrating to travel to school by bus I I I I I
11. Where I wait for the bus is comfortable I I I I I
12. It is hard to stay interested in class because I am too tired from the bus ride I I I I I
13. In my free time I am too tired from the bus ride to study I I I I I
14. I find the overall bus ride very tiring I I I I I
15. Bused students have the same opportunity to get involved in extra-curricular activities as anyone else I I I I I

*** IF YOU ARE A NON-BUSED STUDENT PLEASE READ THE DIRECTIONS LOCATED BETWEEN QUESTION 5 AND QUESTION 6, THEN RETURN TO DO QUESTIONS 16 TO 26

- | | <u>S.A.</u> | | | | <u>S.D.</u> |
|---|-------------|----------|----------|----------|-------------|
| 16. This school makes me eager to learn | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> |
| 17. In most cases timetabling of
courses is reasonable | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> |
| 18. I feel the school does not care
whether I am here or not | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> |
| 19. The school regulations are clear
and reasonable | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> |
| 20. The information in the "Career Center"
helped me to decide on a career | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> |
| 21. My teachers seem pleased to have me
in their class | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> |
| 22. Bused students find it hard to make
good friends with non-bused students | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> |
| 23. Extra-curricular activities are
planned so everyone can be involved | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> |
| 24. I feel it is hard to find my way
around the school | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> |
| 25. The teachers in this school try hard
to have us understand the subject
material | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> |
| 26. Most students in this school are
serious about their studies | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> | <u>I</u> |

THANK YOU FOR YOUR TIME TO ANSWER THIS
QUESTIONNAIRE CAREFULLY