

DR. STIRLING MCDOWELL  
*Foundation*  
FOR  
RESEARCH INTO TEACHING



**TEACHING AND LEARNING  
RESEARCH EXCHANGE**

**The Yellow  
Bus Project**

Diana Clarke

Project #90  
August 2002

This research was partially funded through a grant from the McDowell Foundation. However, the points of view and opinions expressed in project documents are those of the authors and do not necessarily reflect the views of the Foundation.

The purpose of the Dr. Stirling McDowell Foundation for Research into Teaching is to fund research, inquiry and dissemination of information focusing on instruction (both teaching and learning) in the context of the public elementary and secondary education system. Specifically, it will:

- 1) contribute to knowledge about teaching and learning;
- 2) encourage educational inquiry through a wide range of methodologies;
- 3) support the involvement of practising teachers in active research projects;
- 4) encourage organizations as well as individuals to determine and act in areas of research and inquiry; and
- 5) encourage experimentation with innovative ideas and methodologies related to teaching and learning.

The Foundation is an independent charitable organization formed by the Saskatchewan Teachers' Federation in 1991. It is governed by a Board of Directors with the assistance of an Advisory Committee of representatives from the educational and business communities. The selection and evaluation of projects funded by the Foundation is carried out by a teacher-led Project Review Committee. Inquiries concerning research supported by the McDowell Foundation may be directed to the following address:

Research Coordinator  
Dr. Stirling McDowell Foundation  
2317 Arlington Avenue  
Saskatoon SK S7J 2H8  
Telephone: 1-800-667-7762 or (306) 373-1660

# Executive Summary

---

The Yellow Bus Project was an attempt to discover whether the amount of time riding on a school bus was detrimental to a student's academic achievement. The study targeted rural children in grades four to eight, who often travelled over an hour a day to a city school.

Variables addressed in the study included:

1. Whether or not adults were present when the student caught the bus,
2. Whether or not the student had an adequate breakfast,
3. If the student experienced stress on the bus,
4. How long the student spent on the bus,
5. Whether or not there was an acceptable balance in the student's life between school and other activities, and
6. How much time the child spent studying.

Due to the small sample size, few findings from the study may be considered statistically significant. However, it was significant that children who had a balance of curricular and extra-curricular activities in their lives performed better academically. Another notable finding was the amount of stress experienced by the students. This stress was so ubiquitous that further examination of its nature and causes would surely be beneficial. The study led to the conclusion that the amount of time students spent on the bus did not affect their academic marks in a statistically significant way.

# Acknowledgements

---

I wish to acknowledge the invaluable assistance of the following people in the areas indicated: post-graduate student Hilda Chan – statistics; Sarah Castle – data collection; and Susan Gardner – information technology assistance.

# Dedication

---

To all those students who spend so many hours of their young lives on "The Yellow Bus".



# Table of Contents

---

How the Study Came to Be.....	2
Principal Focus of the Study .....	2
Research Methodology.....	3
Difficulties and Limitations .....	4
Survey Data: Analysis and Correlation with Academic Marks .....	5
Conclusions .....	12
Appendices	
A. Survey Form .....	13

# How the Study Came to Be

---

My internship at a small city school, which was attended by rural children, stimulated my curiosity regarding the possible correlation between the time spent travelling on school buses and a student's academic standing. I submitted a research proposal to the McDowell Foundation, and with minor modifications, the Foundation agreed to fund such a study.

# Principal Focus of the Study

---

To examine the impact of school bus travelling time on students' academic standing.

# Research Methodology

---

The first part of the study took the form of a survey of students and parents in grades five to eight in one small city school attended by rural children. The survey sought feedback from them regarding six variables that might affect the impact of school bus travel on their children. There were many variables in a child's daily routine that could have been examined, but the six chosen for inclusion in the survey questionnaire were the presence of an adult when catching the bus, stress on the bus, an adequate breakfast, travel time, acceptable balance between recreational activities and school, and the amount of study time each night. (See Appendix A for the survey questionnaire.)

The director of education and the principal in charge of the school were both supportive and made helpful suggestions regarding the survey. Those teachers whose classrooms were involved in the study were also positive in their reception of the project, and assisted by encouraging the return of the survey questionnaires. In the lower grades, students were provided with the questionnaire and asked to bring it home for their parents to complete. Completed questionnaires were to be brought back to the classroom teacher within two days. In grades seven and eight, students themselves were asked to complete the questionnaires and return them to their teacher.

The response to the survey is indicated below:

**TABLE 1: SURVEY RESPONSE RATE**

GRADE LEVEL	No. OF RESPONSES
GRADE 4	6
GRADE 5	20
GRADE 6	13
GRADE 7	2
GRADE 8	5
TOTAL NO. OF RESPONSES:	46

The second part of the study involved comparing the survey responses to the marks received by the students for whom survey responses were received. Permission to access the students' marks to carry out this comparison was provided by both the director of education, the students, and the students' parents or guardians.

Statistical analysis was carried out to determine whether there was statistical significance to the responses to each question in the survey. For each variable explored by a question, the null hypothesis was that the marks of the students were the same regardless of the variable, e.g., whether or not they ate a satisfactory breakfast. The alternative hypothesis was that the marks of the groups responding differently with respect to the variable were not the same. The ANOVA Procedure and the Wilcoxon 2-Sample Test were used to determine whether the null hypothesis was accepted and no significant differences existed between groups. Using the same null hypothesis to see if the result was the same using different grades, the GLM procedure was used.

# Difficulties and Limitations

---

The study looked at the experiences of rural students in grades five to eight. Initially, I intended to examine the experiences of rural students up to grade 12, and I still believe this would be a worthwhile endeavour. However, this option was not pursued, primarily because obtaining the necessary permissions for the research from two more directors of education and several more principals was logistically difficult.

Although the percentage of questionnaires returned was acceptable in the younger grades, a disappointing number of questionnaires were returned by students in grades seven and eight. In retrospect, it should have been expected that middle years students would be less compliant in carrying out instructions regarding the survey. Incentives such as pencils or erasers were not enough to motivate this age group. Coupons to a local fast food establishment might have worked better. Unfortunately, the low number of returns from this age group caused the sample size to be smaller than desired and made it difficult to extrapolate meaningful statistical information. Any conclusions reached apply primarily to grades five and six.

Information regarding the students' academic standing was difficult to obtain until at least after the first semester. Students in grades four and five did not have percentage marks assigned to their work, so their teachers allocated letter marks (A, B, C, D, E, F) and translated them into percentage marks.

It is possible that some questionnaires were not returned because parents were not comfortable with the questions being asked. It was believed that two questions in particular might elicit some anxiety in the respondents: "Are adults able to be present when the student catches the bus?" and "Are you happy with the breakfast the student eats?" Some parents may have felt guilty if they were not present in the morning, or felt responsible if their child did not eat properly. As I was teaching in one grade during my internship, I know that the parent of one student in that grade was not present when her child caught the bus and she did not return her questionnaire, no reason given.

## **A PERSONAL NOTE:**

I submitted the research proposal to the McDowell Foundation during my internship and a period as a substitute teacher. My new position in the fall when the study began was not at the same school or even in the same city. This change made it difficult for me to get to the research school during school time. Although I had not budgeted for substitute teaching costs, I was able, with permission from the McDowell Foundation, to move the allocation of monies within my project to take advantage of a half-day release time.

# Survey Data: Analysis and Correlation with Academic Marks

---

## QUESTION 1:

Are adult/s able to be present when the student catches the bus?

**TABLE 2: RESPONSES TO QUESTION 1**

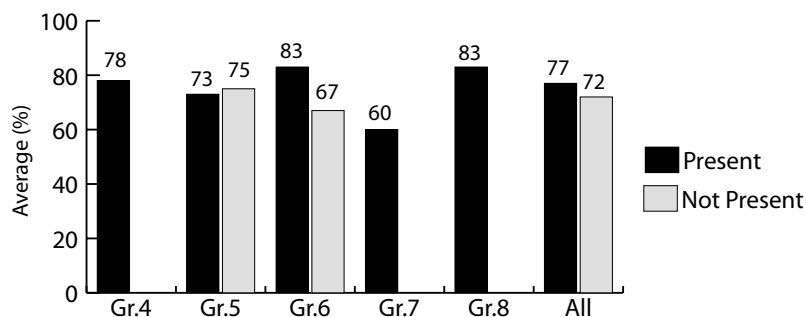
Grade Level	Adult Present	Adult Not Present	Total
4	6	0	6
5	18	2	20
6	12	1	13
7	2	0	2
8	5	0	2
TOTAL	43	3	46

The response to this question overwhelmingly indicated that most children were not alone at home before they went to school. Forty-three of 46 students had an adult present before they left. This finding may reflect a rural lifestyle since agricultural work would not necessitate the parents leaving the farm.

It is generally assumed that more city children would be left alone in the mornings before school. Although this assumption was not tested through this research, it would be interesting to examine it as well as compare the marks of these pupils to the marks of rural students.

## GRAPH 1:

The Academic Average of Students in Each Grade According to Whether or Not an Adult Is Present at Home When They Leave on the Bus



Some conflicting results were seen. In grade five, the academic average for students who had no adults present in the morning was 75%, which was 2% higher than the academic average for students who had adults present in the morning. In contrast, in grade six, the academic average for students who had no adults present in the morning was 67%, which was 16% lower than the academic average for students who had adults present in the morning. The slightly higher average for the total number of supervised children compared to the total number of unsupervised children (77% to 72%) is not statistically significant.

A larger sample of students might possibly affect the results. Also, as noted above, some parents may not have admitted to leaving their children without adult supervision when they catch the bus.

## QUESTION 2:

Are you happy with the breakfast the student eats?

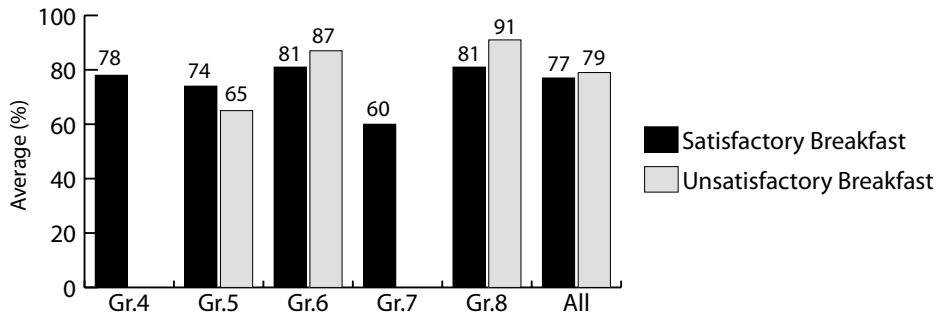
**TABLE 3: RESPONSES TO QUESTION 2**

Grade Level	Happy with Breakfast	Not Happy with Breakfast	Total
4	6	0	6
5	18	2	20
6	11	2	13
7	2	0	2
8	4	1	2
TOTAL	43	3	46

Again, an overwhelming number of responses indicated that parents are generally happy with the breakfast that their children eat. Forty-one of 46 students eat a breakfast that is satisfactory to their parents.

## GRAPH 2:

The Academic Average of Students in Each Grade According to Whether or Not Their Parents Think They Eat a Good Breakfast



In grade five, the academic average of students whose parents think they eat a good breakfast is nearly 10% higher than the academic average of those whose parents think they do not. However, the average of all the students who eat a breakfast satisfactory to their parents is two points lower than the average of those who do not. With the small sample size in this study, the differences are not significant.

Again, a larger sample size would be desirable. The lack of a large data pool, and the fact that question 2 may be a sensitive one for some respondents, may have influenced the results.

### QUESTION 3:

Are you aware of any stress on the bus ride, e.g., is there any "bullying" or travel sickness?

**TABLE 4:**

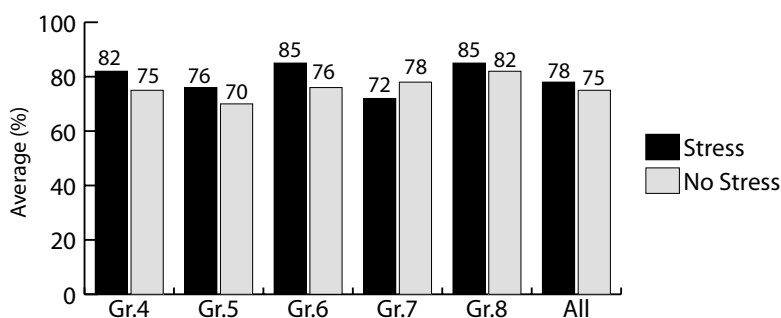
Responses to Question 3

Grade Level	Stress on the Ride	No Stress on the Ride	Total
4	3	2	5
5	13	8	21
6	4	6	10
7	1	4	5
8	1	4	5
TOTAL	24	22	46

The number of students whose parents were aware of some form of stress on the bus ride is approximately half the total number. Twenty-four of 46 respondents said that stress occurs or sometimes occurs during the ride. In grade four, three out of five students experience stress. In grade five, the parents of 13 out of 21 students answered in the affirmative. Many parents felt compelled to explain what happened to cause this distress. Usually, bullying in some form was involved. One parent left a phone number with an invitation to phone and discuss the problem, even though she should have been aware that I had no authority in this area.

**GRAPH 3:**

The Academic Average of Students in Each Grade According to Whether or Not the Parent is Aware of Stress on the Student's Bus Ride



Overall, taking into account all pupils in the grades examined, those who experience stress have an academic average three percentage points higher than those who do not. This finding is not statistically significant, however.

The responses to this question were surprising. The amount of stress on the school bus, as noted by parents/guardians/student, is disturbingly high. Usually the stress was related to interpersonal relationships, but travel sickness was also cited several times. Even if the children experiencing this stress perform well academically, the possibility exists that their self-esteem, self-image, or general well-being may be adversely affected.

## QUESTION 4:

How many minutes does the student spend on the bus?

**TABLE 5:**

Responses to Question 4

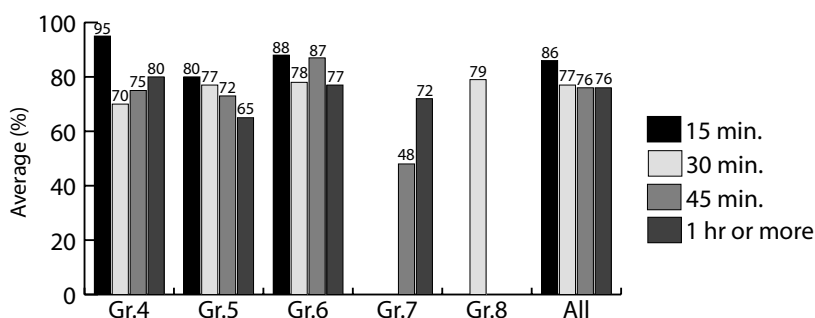
Grade Level	15 min.	30 min.	45 min.	1 hr. or more	Total
4	1	2	1	2	6
5	2	6	9	3	20
6	1	5	4	3	13
7	0	0	1	1	2
8	0	2	1	2	2
TOTAL	6	7	14	18	46

For this question, the time was recorded in minutes, and then for convenience, allocated to quarter hour time categories.

The majority of students (27 out of 46) traveled on the bus for less than an hour each day. Of this majority, 21 out of 46 students spent between half an hour and three quarters of an hour on the bus. However, a large proportion of students (18 out of 46) spend over an hour getting to and from school.

**GRAPH 4:**

The Academic Average of Students in Each Grade According to the Time Students Spend on the Bus



Graph 4 indicates fluctuations in the students' marks, from a high of 95% for a grade four pupil who spends approximately 15 minutes on the bus to a low of 48% for a grade seven student who spends about half an hour travelling. In this study, the time spent on the bus had no statistically significant effect on the students' marks.

Because of the small sample size in the study, it proved difficult to extrapolate meaningful results. As the effect of time on the bus on academic marks was to be the main focus of the study, it was disappointing that any inferences with respect to this issue are, of necessity, inconclusive.

## QUESTION 5:

Do you think the student has an acceptable balance between recreational activities and school?

**TABLE 6:**

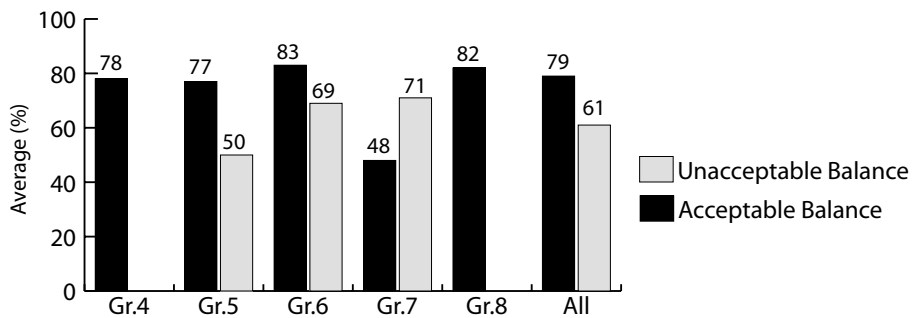
Responses to Question 5

Grade Level	Balance Acceptable	Balance Not Acceptable	Total
4	6	0	6
5	17	2	19
6	11	2	13
7	1	1	2
8	5	0	5
TOTAL	40	5	45

It is pleasing to discover that 40 of 45 students and/or their parents believe they have an acceptable balance between school life and extra-curricular activities. Only 11% of children were deemed not have an acceptable balance. Grades four and eight, there were no students dissatisfied with their balance in life.

**GRAPH 5:**

The Academic Average of Students in Each Grade According to Whether or Not Their Parents Perceive an Acceptable Balance between Recreation and School



Those students who were satisfied with the harmony in their lives had an academic average 18% higher than those who did not (79% in comparison to 61%). Despite the small sample size, these findings show that there is a statistically significant difference between the academic marks of children who have a satisfactory balance between school and other activities. It would be interesting to attempt to duplicate these findings in another study.

## QUESTION 6:

Per night, on average, does your child study over 1 hour or under 1 hour?

**TABLE 7:**

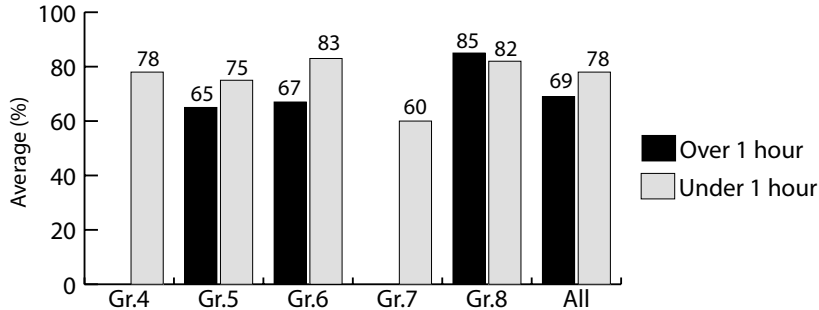
Responses to Question 6

Grade Level	Over 1 Hour	Under 1 Hour	Total
4	0	6	6
5	3	17	20
6	1	12	13
7	0	2	2
8	1	4	5
TOTAL	5	41	46

Eighty-nine percent of the children in the study spent less than one hour per night studying. Of 46 replies, only five students or parents stated that the student studied more than one hour.

**GRAPH 6:**

The Academic Average of Students in Each Grade According to Whether or Not the Students Studied More or Less Than One Hour Per Night



The average mark for all students who studied less than one hour was 78% compared to 69% for those who studied more than one hour. The highest discrepancy in academic marks was in the grade six class, where those who studied over one hour averaged 83% and those who studied under one hour averaged 67%, but there was only one pupil in this grade who studied longer than one hour. The findings on this variable are statistically insignificant.

With this sample size, with so few children spending over one hour studying, it was difficult to draw conclusions. If another study is to be done, perhaps the time spent studying could be broken down more finely, as was done in this study with time travelling on the bus.

# Conclusions

---

In summary, it appears that time spent on school buses does not significantly influence students' academic standing. However, a larger sample size may have an impact on the findings. Also, the other variables examined in the study did not have a significant impact on students' marks.

A disturbing finding, and perhaps a topic for further examination, is the reality that many children and their parents believe that life is affected in a stressful way during the time students spend travelling on the bus. It is particularly disconcerting, in an age in which we pay more than lip service to the elimination of bullying in our schools, to see that we may not be doing well with respect to the elimination of bullying for some of our students in the hour or so before and after school. Despite the fact that the stress appears to have little bearing on academic performance, it is well known that the effects of stress may manifest themselves in various ways many years after the stressful events occurred. This concern is one that should be explored further.

# Appendices

---

February 2002

## THE YELLOW BUS PROJECT

Dear Lindale Students and families.

With the funding assistance of the Dr. Stirling McDowell Foundation for Research into Teaching, I am examining how select events in a student's daily routine can impact his or her academic performance. Of special interest in this project is the amount of time spent on school buses. The teaching profession is constantly expanding their knowledge of the teaching and learning processes. Any insights regarding the variables that affect these processes are valuable. I am a teacher with research experience, and have the pleasure of knowing many of your children.

To complete this project, no time will be taken out of your child's instructional day, and no extra work or assignments will be given. Only the researcher and a research assistant will have access to the data as it is being collected. Individual schools or districts will not be identified. When completed, the data will form the basis of a report to the McDowell Foundation that will be published as a printed document and as an electronic document available to the general public.

Participation is voluntary, and there are no negative consequences to nonparticipation. If you are willing to take part, please take a few moments to complete the attached form, and read and sign the permission slip. There will be ***no names or identifying characteristics*** attached to the research results. The collection forms will be destroyed when the report is completed.

Thank you. Diana Clarke.

I would be happy to answer any questions or concerns. Phone (306) 692-2485.

The research will be carried out during the next five weeks.

# YELLOW BUS PROJECT SURVEY

Name of child *(for researcher use only, will not be used in report)*

---

• M or F *(circle)*      • Date of Birth \_\_\_\_\_ • Grade \_\_\_\_\_

Question	Almost always	Occasionally	Almost never
• Are adult/s able to be present when the student catches the bus?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Are you happy with the breakfast the student eats?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Are you aware of any stress on the bus ride, e.g. is there any "bullying" or travel sickness? Please explain on back of sheet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• How many minutes does the student spend on the bus?	AM. - _____ minutes PM. - _____ minutes		
• Do you think the student has an acceptable balance between recreational activities and school?	<input type="checkbox"/> YES <input type="checkbox"/> NO		
• Per night, on average, does your child study:	<input type="checkbox"/> over 1 hour <input type="checkbox"/> under one hour		

I have been informed and understand the purposes of this research, and I give permission for the researchers of "The Yellow Bus Project" to have access to my child's school records for the sole purpose of completing said research. All information will be held in the strictest confidence, and identifying data removed before the report is submitted.

Name of child: \_\_\_\_\_

Signature of parent or guardian: \_\_\_\_\_ (relationship: \_\_\_\_\_)

Date: \_\_\_\_\_

***Please return within two days. Thank you.***



**2317 Arlington Avenue  
Saskatoon SK Canada S7J 2H8  
Phone: 306-373-1660  
Toll Free: 1-800-667-7762  
Fax: 306-374-1122  
E-mail: [mcdowell@stf.sk.ca](mailto:mcdowell@stf.sk.ca)**

**[www.mcdowellfoundation.ca](http://www.mcdowellfoundation.ca)**