

STUDENT PERCEPTIONS OF REPORT CARDS: HOW GENDER AND AGE
INTERACT WITH CURIOSITY

by

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Abstract

This study examined how feelings about report cards, motivation (interest in doing well in school) and depth curiosity (interest in learning beyond what is required to achieve a grade) were affected by achievement and the importance placed on report cards by students. Ninety-seven students (Grade 4 & Grade 7) in a multicultural elementary school in western Canada were surveyed to determine their attitudes towards report cards. Data were examined using descriptive and inferential statistics in SPSS. Assertions were developed using the qualitative data.

High-achieving female students reported being less curious and high-achieving male students more curious than their lower-achieving peers of the same gender. These effects cancelled each other out in the whole population, and were possibly caused by gender-based differences in anxiety about reports, but more likely due to different approaches to learning. A similar, but weaker, gender-based relationship between importance indicators and curiosity indicators was found.

Motivation (wanting to make an effort after seeing report card grades) was uncorrelated with importance and achievement for all groups. Possible causes included differences in expectations, home attitudes, and the circumstances of ESL (English as second language) learners.

The open-ended questions were used to develop three assertions about students' reactions to report cards. Grade 7 students were much more aware of the social context of reports than Grade 4 students. Grade 7 boys were much more likely to report severe parental reactions and to evaluate themselves negatively than Grade 7 girls. Finally, feelings were largely independent of the actual grades obtained.

Suggested directions for future research include a longitudinal study, taking grade-expectations into account. Repeating the current study at schools with different demographics is also suggested. An ethnographic study looking at different social cohorts could also be informative. A large-scale study to confirm the methods used to measure curiosity is also recommended.

Recommendations for teachers, parents, and policy makers were developed. These focus on mitigating the harmful effects of letter grades, and approaching change in a thoughtful way. Suggestions for improving dialogue between parents and teachers on the topics of curiosity, gender, and letter grades were also developed.

Preface

This research involved human subjects and required permission from the Behavioral Research Ethics Board at UBC. The certificate number was H10-00316.

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List of Symbols and Abbreviations

CFA	Confirmatory Factor Analysis - a method of testing the factors identified in Exploratory Factor Analysis by analyzing covariance matrices
CI-4	Curiosity instrument developed by Fulcher, which measures breadth and depth curiosity
EFA	Exploratory Factor Analysis - a method of identifying latent variables, by clustering observed variables with common variance.
ESL	English as a second language - students who have a first language other than English
GPA	Grade Point Average - a calculated quantity which represents a student's academic achievement on a scale from 0-4
LA	Language Arts - a subject consisting of reading, writing, speaking, and listening
MCI	Melbourne Curiosity Index - a curiosity instrument developed by Naylor which uses the state-trait model
NES	Novelty experiencing scale- a simple curiosity index which mainly deals with depth curiosity
OTIM	Ontario Test of Intrinsic Motivation - an early curiosity instrument developed by Day which uses a 90-item matrix
PISA	Program for International Student Assessment – a program run by the Organization for Economic Cooperation and Development, which involves testing students in different countries.
SEM	Structural Equation Modeling - a method of evaluating the fit of a proposed model by using analysis of covariance matrices followed by the application of various fit indices.
SSS	Curiosity index developed by Zuckerman which uses 4 scales, and which mainly measures breadth curiosity
SPSS	Statistical Package for the Social Sciences – a statistics program used for analysis of data in the social sciences and business

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Dedication

To my wife Gretta, and my children, Allison and Julian, who helped with my survey, encouraged me when I felt that another revision might be my last, and who coped admirably with frequent interruptions to our regular activities. To the students whose passion for this topic and whose willingness to honestly share their feelings and opinions made this research possible.

Chapter 1: Introduction

Purpose of Study

I have been an elementary school teacher in Vancouver for twenty years and have taught all grades from Kindergarten to Grade 6. During that time I have experienced a range of reporting styles. As a primary teacher I wrote anecdotal narrative report cards, and as an intermediate teacher I wrote report cards that had standard letter grades (A-F) and a small written comment. In 1992 the provincial government decided to change to purely anecdotal reports for Grade 4-7 students. Due to parental concerns this policy was repealed after a one-year trial and letter grades were reintroduced. However, the lengthy anecdotal report, which had been implemented to replace letter grades, was retained.

At the time this research was done, the format that I was using to assess students in my current grade included an introductory comment, a criteria grid section which indicated whether students were meeting expectations in different areas, and a set of standard letter grades (Appendix 2). My own children received a report card, which had a long set of Prescribed Learning Outcomes with a checklist and letter grades (Appendix 2). The procedure for dealing with students who are not able to cope with work at a particular grade level has changed continuously throughout my career. Initially, students who were not meeting expectations received the letter grade F and could be retained in the same grade. Now, they receive an asterisk if they are on a modified program, or the grade I if they have not completed enough work to pass. The grade F is only for final reports and can be given only if a student has already received an I. In practice, the grade F is rarely used these days. The grade D, which was in use early in my career, has also been eliminated. I believe that these changes to reports are cosmetic. The underlying structure of letter grades hasn't

changed, and most students, in my experience, understand the grades * and I as representing failure. The language and tone of reports is still similar (third person, containing a rather specialized vocabulary, and including information that is meant to indicate that services are being provided in the event of checks or audits).

Over the years I have always felt uneasy, as I have moved from my daily relationship with students as people to writing about them in the third person, or as ‘objects’, on report cards. I have always questioned the effects of the reporting process on students, parents, and teachers. Does the effort spent in compiling large numbers of marks and extensive anecdotal comments lead to improved communication with parents and better outcomes for students? Does the bureaucratic purpose of report cards (e.g. including information in a form intended for auditors) detract from the purpose of reporting to students and parents? How does a student feel about being written about in the third person? Do reports and letter grades cause emotional harm to certain groups of students? Do letter grades stifle curiosity in the sense that students become focused on getting the grade rather than exploring the subject? Are grades necessary to motivate students?

In reading about this subject in scholarly journals, magazines, and newspapers it is clear to me how deeply embedded the idea of report cards, specifically ones with the A-F grading system, is in North American culture. As a shared experience of virtually all of the members of Canadian society the A-F grading system is used pervasively to evaluate a range of abilities and skills outside of school. For example, one might open a daily newspaper and see a report card on members of the local professional hockey team, complete with grades such as B- (Illustration 1). A search for “report cards” on the UBC library database generates over 1,000,000 hits. Only a few of these refer to reports on students by teachers.

There is of course the highly contentious “report card” on schools, produced by the Fraser Institute, which attempts to evaluate schools and teachers on the performance of the Foundation Skills Assessment test (FSA). A quick search reveals a vast panoply of report cards on every topic imaginable: Shapcottmichael (2009) shows a report card on homelessness, infoeast (2007) examines groundfish stocks, cis software (2009) looks at the performance of suppliers, whereas, Bousquet (2010) rates politicians. The concept of the report card is one of the major legacies of schools, one that permeates a wide range of thinking about evaluation.

On thinking about the topic of reports (and about the rejection of ungraded reports by a large number of parents), I realized that the standard report card does provide something that resembles a clear answer to the question that every parent has - “How is my child doing?” The conciseness of grades is their strength inasmuch as their masquerade of objectivity is their weakness. For this reason, parents, and many students, can feel that they have lost their reference point for success or failure without grades, even if parents and students, and a great many teachers, would have a difficult time explaining exactly what these marks indicated with regard to learning. I have also observed that students respond favorably to teachers who are committed and enthusiastic in a way that seems to be independent of the grading process. Rowan-Kenyon, Bell, and Perna (2008) argue that context is highly important in education. On starting this research I had a strong belief that the emotional impact of reporting depended on previous experience in school, how important grades are to the student, the teacher’s attitudes and communication, the relationship with the teacher, socioeconomic class, parental attitudes, home reward and punishment systems, the teacher’s enthusiasm for a subject, and numerous other variables.

There are many questions about the impact of reports on students, some researchable, and some quite difficult to research. It became apparent on reading the literature that there is a staggering volume of research on what adults think about reporting and assessment, but a much more limited amount that deals with what students think. I realized that I would really like to know what students think about report cards and how report cards influence their feelings about learning. I am particularly interested in the effect of report cards on students' motivation and their depth curiosity. I am also interested in finding out the significance report cards have for students and how different groups (boys, girls, older students, younger students, high-achievers achievers) are affected by report cards. Finally, I am interested in whether students pay significant attention to the written part of the report card and whether this influences their motivation and curiosity.

Research Questions

My research questions are:

1. How does membership in a particular group (gender, grade, language, low or high-achiever) influence attitudes and feelings towards report cards?
2. What is the relationship between importance placed on report cards and depth curiosity and motivation in different groups of students?
3. What is the relationship between achievement and depth curiosity and motivation in different groups of students?
4. How do student feelings about report cards relate to the above factors?

Significance of the Study

This study increased my understanding of how report cards affect students and will help me with how I communicate with them about reporting. It has given me an appreciation of the enormous power that report cards and grades have in many students' lives. Some of the findings have also led me to look at my instructional practices. The study's intended audience also includes teachers, administrators, parents, social science academics and professionals, and Ministry of Education policy-makers. I hope that my study will add to the conversation about the purposes of reporting, what constitutes effective reporting, and how to avoid some of the negative effects of reporting. Finally, the study provided a venue for students to express their views and feelings about report cards.

Variables and Interactions for this Study

The variables that are being examined in the study are motivation and depth curiosity (dependent variables), and recent success in school (independent variable). The study also examined the relationship between motivation and depth curiosity (dependent variables) and importance of report cards to the student (independent variable). Moderating variables include gender, age, socio-economic status, and language background. These moderating variables were selected in order to identify and analyze potential group differences. Finally, the study looked at how achievement in school (independent variable) affected feelings about reports (dependent variable).

Chapter 2: Literature Review

This review examined three areas of research – student views of assessment and reporting, the effects of reporting on students, and the construct of *importance* and its relation to memory. The history of grading practices was examined and cross-referenced to the theories of motivation in vogue at different times. Report card images were used to show what *report card* meant in my study in comparison with what it has meant historically.

The topic of effects was further subdivided into literature on *motivation and rewards* and literature on *curiosity*. The literature was examined for what it had to say about the connections between report cards and motivation and curiosity. Since this study is looking for a student perspective, literature on student views of assessment was looked at first followed by the literature on motivation, curiosity, and importance.

Many common themes run through all of this research - the concepts of goal theory, and models (behavioural, cognitive, and sociocultural) of learning are used to explain student attitudes and behaviour around assessment and learning. The theme of assessment as a public performance, and as somewhat of a “black box” from a student point of view, recurred in a number of these papers. The fierce debate between those who think rewards are a positive strategy, and those who see them as destroyers of intrinsic motivation and curiosity became very clear when doing this review. The more muted, and in many ways more convincing, voices of those who view the effects of rewards as being contextual were also present. The ideas of grades as a commodity and playing the assessment “game” were also covered by some of the authors. Literature on curiosity was viewed with the goal of finding a clear limited definition and of picking suitable questions for measuring this

quality. Empirical relationships from research on curiosity were also considered. Finally, the topic of importance and its connection to memory was examined to support the concept and methods used in my study.

A Brief History of Grading Practices and Reports

The Chinese Imperial exams for the civil service were likely the first graded exams in the world, starting during the Han Dynasty (206 BC-220 AD) and being consolidated under the Sui Dynasty (581-618 AD) (Crozier, 2002). Many researchers believe that grading in North America in its present form started in the late 18th century at Yale University in the US. In 1785, the President of the university, Ezra Stiles, divided students into four categories (best –*optimi*, second best – *second optimi*, poor- *inferiori*, and worst – *peiores*; Durm, 1993). The first letter grade in North America is believed to be a ‘B’ given to a student at Harvard in 1883 (Durm, 1993). At the same time, in the UK, the British Society of Apothecaries introduced the first professional qualifying examination system in the Western world (Moll, 1998). By the late 19th century Ivy League colleges were experimenting with different marking schemes, ranging from a four-point scale to a 100-point scale.

As people moved into the cities and schooling became institutionalized in the late 19th century schools began producing written narrative reports for students to create a record of which skills they had mastered. Shortly thereafter, secondary schools began to introduce percentage grades to rate students (Illustration 3). A study by Starch and Elliot (1912) showed that percentages given for a specific piece of work varied greatly from school to school and teacher to teacher. In 1897 Mount Holyoke College had introduced letter grades from A-E. After Starch and Elliot’s study was published, high schools began introducing

the new letter grades which, having fewer categories, seemed to deal with some of the extreme subjectivity problems of percentages. During the 1930's and 1940's most elementary schools also switched to letter grades (Illustrations 4 and 5).

The era of behaviourism and mathematical theories of psychology coincided with an attempt to standardize grading practices by marking on a bell curve (normal distribution). The most extreme version of this was the 6-22-44-22-6 system (6% A's, 22% B's etc.). This was criticized as allowing grades to be almost completely divorced from criteria for learning. This system also discouraged cooperation among students, or conversely, increased competition between students (Guskey and Pollio, 2010). The onset of cognitive theories in the 1960's and the rise of critical ideas about rewards coincided with experimentation with grading systems. Many schools eliminated letter grades or reconfigured them (Illustration 8). More complex systems that attempted to assess cognitive skills in detail were also developed. These methods typically met with a lot of criticism from parents because they seemed unclear and hard to interpret. This often led to a return to letter grades (Illustration 9). At this point in time almost all Canadian jurisdictions use some variant of the A-F letter grading system.

Student Views on Assessment and Reporting

The literature on student perceptions of assessment reflects a number of themes. Students have a variety of views of the purposes of assessment and its fairness. Most students see assessment as a public performance and how they react to it depends on their goal-orientation (performance, mastery, or performance-avoidance). Many students become more pragmatic and more grade-oriented as they get older (Evans and Engelberg, 1985; Brookhart and Bronowicz, 2003). Grades in this sense are viewed as a type of commodity

which students compete for. Finally, the public nature of assessment causes students a great deal of stress, depending on frequency of the assessment and the extent to which this assessment is made public (Cullingford, 2006). Report cards, as a final summative assessment, frequently lead to depressive feelings among children (Bell, 2001; Hilsman and Garber, 1995). It is important to note that report cards are different from other forms of assessment. Since report cards are going to parents the relationship between the student and parent is clearly a very important part of the dynamic of report cards. Also, a student is a passive recipient when receiving a report card. When writing a test they are under pressure to do something. It is hoped that the present study will help to shed more light on the specific effects of report cards.

How assessment is practiced: fairness and purposes as viewed by students.

Many authors have studied students' feelings about assessment and reporting. In her doctoral dissertation Tuten (2005) looked at the responses of Grade 4 students, parents, and teachers to report cards from the viewpoint of critical discourse analysis. For the most part the students in this group looked at grades as simple objects without any social references (good grades – good, bad grades – bad). One student did talk about the response of his father and how he would be punished if he got a bad report. The students were not clear about where their grades came from and one even believed that the principal assigned the grades. It is interesting to note that while these students were graded on a 4-3-2-1 system they had a very clear idea about what was a high grade and what was a low grade. Klassen (1998), in her doctoral thesis on the responses of Grade 8 students to reporting in Mathematics found that most students like letter grades because they are simple, and most students attributed their success or lack of success to the teacher rather than their own

abilities. Given the age of the students and the curt responses to questions described by the researcher it is difficult to tell if this was a defensive response to a painful subject. Some students in this study were aware of how their final grade was determined and some weren't aware. Cullingford (2006) found in his extensive interviews with British schoolchildren that children "do not understand the terms on which they are being tested. They attempt to detect what they are supposed to be doing" (p. 216). For this reason, Cullingford concluded that many students find grading unfair, resulting in "a huge clash between children's desire to learn and the heavy hand of being taught" (p. 216).

In contrast, Brookhart and Bronowicz (2003) have a more nuanced view of assessment. They studied two fifth-grade and two third-grade classes, as well as classes taught by one urban and two suburban high-school teachers in the United States. They contend that the assessment environment has a great deal to do with how students experience assessment. They cite eight factors that constitute the assessment environment:

1. purposes for which the teacher assesses.
2. methods used to assess achievement.
3. criteria used in selecting the assessment method.
4. quality of assessments.
5. nature of the feedback the teacher gives students on their work.
6. teacher preparation for and attitudes towards assessment.
7. teacher's perceptions of students.
8. assessment policy environment.

This eight-factor model does suggest that the effect of reporting is likely to be mediated by other aspects of the assessment environment. In other words, the reaction of students to

report cards is likely to vary depending on the emphasis put on grades by teachers and on whether the students understand what they need to do to get a given grade. Looking at the assessment environment is beyond the scope of the current study, but it is important to keep it in mind when looking at the significance of any study in this field. In contrast to Cullingford (2006), Brookhart and Bronowicz (2003) found that a large number of the students did find their work interesting and important (i.e. the motivation of the students they observed was higher).

In their study on student conceptions of assessment conducted on a sample of 3469 secondary students in New Zealand, Brown and Hirschfield (2008) looked at four different student attitudes about the purposes and effects of assessment: students' accountability, school accountability, fairness and unfairness (and therefore irrelevance), and enjoyment. The study is informative, but the categories cover several different domains: understanding of the purposes of assessment, feelings about how it is actually carried out, and feelings about assessment in general. This muddies the waters somewhat. Students who believed most strongly that the purpose of student assessment was student achievement and accountability had higher scores on a reading assessment. Since report cards are the main vehicle of student accountability, this would seem to imply that a belief in the importance of report cards would likely be connected with higher achievement. The authors used self-regulation theory to interpret these results. Students who took more responsibility were more successful.

Cullingford (2006) might well argue that those students know how to play the assessment game. It would be interesting to see how many students regard assessment as a game and how that group of students performs academically. One would suspect that

students who are good at the assessment game may not necessarily be self-directed learners, and probably wouldn't think of assessment as unfair.

Moni, van Kraayenoord, and Baker (2002) examined student perceptions of literacy assessment in two Grade 8 classrooms in a large urban centre in Queensland, Australia. The study was a yearlong case study with a large number of interviews. This was the students' first year of high school. The study reported on students' previous encounters with assessment, their present experiences, and their future expectations. Since the study used peer groups it was very effective in delineating the subsets of students who react to schooling in different ways (groups were given names such as Rebels, Pragmatists, and Quiet Achievers based on the general tone of their responses).

The study uncovered a large number of different student interpretations of the mechanics and purposes of assessment. Some students thought that being liked by the teacher was more important; others thought that neatness or effort was more important in obtaining good grades. Knowledge or interest in the subject was not on the students' radar when thinking about assessment. Reynolds and Dwyer (2003) in a study of student responses to report cards also found that students had a variety of ideas about where grades came from, "[if] the teacher likes the student then the student's going to get better marks" (p. 49). This attitude would likely cause a student to view learning as being irrelevant to grading. It would indicate a cynical attitude towards grading. Finally, Evans and Engelberg (1985) found that males were more likely to attribute their grades to external factors than females. Interestingly, in this study low-achievers liked grades almost as much as high-achievers. Perhaps even low-achievers like the sense of order that grades apparently confer.

Assessment as public performance and goal theory.

Many researchers have commented on the public aspect of assessment and grades. Alkharusi (2008) used goal theory to examine students' reactions to assessment. Goal orientation theory posits three types of goal orientation: (a) *performance* - the goal is external rewards and/or public recognition, (b) *mastery* - the goal is to achieve the highest level of skill and knowledge possible, learning from one's own work or that of others, and (c) *performance avoidance* - the goal is to avoid public humiliation. Ames and Archer (1987, 1988) introduced the first two categories. Elliot and Harackiewicz (1994) added the performance-avoidance goal as an important subdivision. The final category is now widely used. Alkharusi (2008) found that more public and harsher assessment environments were correlated with a higher proportion of students with performance and performance-avoidance goals. This agrees with Cullingford's (2006) assertion that avoiding humiliation is a major goal of students. The question is what form performance-avoidance takes with report cards. Does it mean avoiding thinking about them or does it mean keeping them as secret as possible? One Grade 11 student (Daniels, 1994) indicated that he had not shown his parents his report card since Grade 6. However, in most families this kind of avoidance wouldn't be possible.

Brookhart and Bronowicz (2003) also used goal theory to analyze their results. Those who were more interested in mastery cared less about grades. Many of the high school students stated that they didn't care about how they compared with others on assessment tasks and that they didn't communicate their results to other students (i.e. this was part of the culture). The authors interpreted this response to indicate that students really did care and they were just protecting their interests by being secretive about their grades (p. 240).

This conclusion seems debatable — how do you differentiate between those who really don't care and those who are putting on a show of not caring? Also, a façade of not caring is probably common among students who have a performance-avoidance goal (i.e. you can't humiliate me because I don't care). A defensive response of this type is one of the significant issues in conducting research about student attitudes towards report cards.

Changes in attitude with age.

Evans and Engelberg (1985) surveyed Canadian students in Grades 4-11 to determine their attitudes about grading. The study is a bit older, but is one of the few that specifically address the topic of perceptions of assessment over time. The authors concluded that older and higher-achieving students understood grading constructs better than younger and lower-achieving students, and were more likely to regard them as being under their control. Brookhart and Bronowicz (2003) also found that students become more oriented to working for the grade as they get older, and suggested that perhaps a change in grading practices is required to remedy this. They also found that older students understood assessment environments in more sophisticated ways than younger students.

Brookhart and Bronowicz's (2003) conclusions about how attitudes about assessment change with age may be correct, but given the structure of their study, they are debatable. It appeared from their description that the average socio-economic status in the high schools was much higher than that of the elementary schools. One could argue that this is the reason for the more sophisticated attitude towards assessment seen among the older students. Evans and Engelberg (1985) and Moni et al. (2002) both found that dissatisfaction and cynicism towards grades increased with age.

Grades as a commodity.

Reynolds and Dwyer (2003) did an ethnographic study of twenty-four Grade 5/6 students in an urban setting in Canada. The authors referred to grades as "cultural capital", but this is not an accurate use of this term, which is intended to refer to what someone brings to a situation rather than something they are trying to get. It would be more appropriate to refer to grades as a commodity in this sense. Bourdieu's concepts of *academic or educational capital*, which refer to the value of grades and qualifications in advancing one's social and economic status, would fit the conclusions of this research better. In Bourdieu's words "Academic capital is in fact the guaranteed product of the combined effects of cultural transmission by the family and cultural transmission by the school" (Bourdieu, 1984, p. 17). In terms of report cards school and parental attitudes and expectations combine to produce different attitudes and levels of sophistication about assessment among students. The students interviewed by Reynolds and Dwyer explained that high marks and grades could be exchanged for money, food, and clothing, increased self-esteem, positive relationships with teachers and parents, membership in the peer group, and access to higher education. Some students really liked report cards and letter grades and some did not. Some students accepted the statements in report cards as being accurate and some disputed them. The study did not connect these findings to the background or academic achievement of the student. The students in this study were also very interested in having some control over criteria. The authors interpreted this interest, as showing that students wanted more access to higher grades and that controlling the criteria used to determine grades was a route to attaining this goal.

Reynolds and Dwyer (2003) concluded that their interviews showed that children had been taught to exchange learning for grades and in many instances equated learning with grades. They also raised a question that was beyond the scope of their study: “Do children feel that report cards fairly represent their ability?” The authors thought that children felt they were being unfairly judged.

If one substitutes the idea of academic capital the underlying idea of grades as a form of commodity is quite convincing and provides a useful perspective. One does wonder, given the strength of the authors’ conviction that grades are a commodity, if they would have been likely to find any evidence contradicting their view. Could students have a positive attitude about participating in setting criteria simply because they like to be involved in their own learning or because they had a better sense of what they were expected to do? There may have been some blend of these two attitudes (students recognizing the commodity aspect, but also valuing the self-determination aspect). Moni et al. (2002), Cullingford (2006), and even Brookhart and Bronowicz (2003) all agree that students, particularly older ones, view grades as a commodity, so this concept of grades seems to have strength and validity.

Grading and stress.

The stress of being graded, particularly when tests are used, is a common theme throughout the literature. In his doctoral thesis Bell (2001) dealt with the connection between report card grades and depressive symptoms in children from Grade 3 to Grade 5. He found that grade stress (the difference between minimally acceptable grades and the actual grades achieved) was correlated with an increase in depressive symptoms among all students immediately after reports, but only in the older students (≥ 11 years old) one week after reports. He noted that the younger students had an immediate reaction, but that the

older students made cognitive connections that produced a more long-lasting effect. Fear of severe parental consequences was connected with depressive symptoms. Hilsman and Garber (1995) used the same measure of grade stress in examining depressive symptoms in Grade 5 and 6 students. They found that students who had negative beliefs about their competence and control in academic settings experienced more long-lasting depressive symptoms, whereas those who had positive beliefs were buffered against such effects. Dwyer and Corbin (2003) describe the anxiety that students feel about taking tests. One student described tests as “a big nerve-wracking thing” (p. 45). Other students talked about increased heart rate, shaking, and memory loss when completing tests. Moni et al. (2002) described how students found the frequency of assessment stressful. They found that students entering high school were confident if given easy and familiar tasks, but became anxious if given unfamiliar or challenging tasks. Cullingford (2006) described the stress of assessment as being continuous, since even being asked a question in class involves being put on the spot. Brookhart and Bronowicz’s (2003) eight-factor model of the assessment environment suggests that stress can be reduced if the students are given clear feedback and understand how and why assessment is being conducted. This agrees with the sentiments expressed by students in Reynolds and Dwyers’ (2003) study. Students found tests much less stressful if they were given pretests in advance and knew what they had to work on to improve. All this evidence suggests that most students find report cards less stressful if they know what they have to do to achieve a grade.

The research on student responses to assessment leads to a number of predictions for the current research. The research of Reynolds and Dwyer (2003), Tuten (2005), Brookhart and Bronowicz (2003), and Evans and Engelberg (1985) suggest that the Grade 7 students

in this study should be more strategic and pragmatic about grading and will likely have an understanding of its social implications, whereas the Grade 4 students may very well view letter grades as simple objects. Alkharusi's (2008) research on assessment environments suggests that looking at grades should increase motivation among performance-oriented students, and decrease motivation among those with a performance-avoidance orientation. Based on the research of Brookhart and Bronowicz (2003) one would expect the effect of looking at grades on the motivation of those with a mastery orientation to be weak and variable. Overall, the effect of looking at report card grades on motivation is likely mixed, with the overall effect depending on the proportion of performance-approachers and performance-avoiders in the group. The research of Bell (2001) suggests that severe negative effects of grading are more likely to occur among older students.

Effects of Assessment on Students

Motivation.

The term motivation has a long and complex history in psychology and education. Most of this pertains to the causes of the motivation, rather than its basic definition. For instance, motivation has been considered:

- an internal state or condition that activates behavior and gives it direction (Huitt, 2001, para. 1);
- a desire or want that energizes and directs goal-oriented behavior (Huitt, 2001, para. 1);
- an influence of needs and desires on the intensity and direction of behavior; (Huitt, 2001, para. 1).
- the arousal, direction, and persistence of behavior. (Franken, 1994)

For the purposes of this study, motivation is defined as the condition of wanting to make an effort at school based on what students see on their report cards. As such it deals with the arousal and direction of behavior, but not with its persistence.

The history of research on motivation shows a successive introduction of new models. In chronological order they are the behavioral, cognitive, and sociocultural theories of learning. While there have been overall trends and shifts in the dominant theory, it is fair to say that each of these models still has staunch adherents. Basically the behavioral model says that we are motivated by external rewards, the cognitive model says that we are motivated by discovery and the acquisition of knowledge, and the sociocultural model says that we are motivated by being part of a community. Some researchers have worked on integrating these models, with some success. The behavioral model of learning is analogous

to the performance goal orientation and the cognitive model of learning to the mastery goal orientation.

A major area of contention in educational motivation research concerns rewards. This topic arouses a great deal of passion on both sides. Many researchers have found that rewards have negative consequences for motivation, while others dispute this research and contend rewards can and do have a positive effect on motivation. Finally, some research shows that the relationship between students, grades, and motivation is complex, as students can become confused if grades are not used. Also the idea that performance and mastery goal orientations are mutually exclusive is questioned.

Behavioral, cognitive, and sociocultural models of learning.

Early research in motivation (1930-1950) focused on basic drives at a physiological level (instinct, drive, arousal, need, and energization). Most studies were done on animals and educational psychologists were divorced from the mainstream as humans were regarded as too complex to study directly. The perspective was highly behaviorist. Educational applications included behavioral results of praise and reproof, rewards and punishment, and success and failure (Weiner, 1990). In the 1960s there was a strong shift towards cognitive theories and away from drive theory. This was at least partly driven by research that showed that the response to a reward among people depended on cognitive elements (whether the reward was perceived as controlling or useful feedback). In this sense students could see assessment from either perspective (e.g. praise for doing an easy task could be seen as a lack of faith in a student's ability and reduce motivation).

At this point, reward was seen as having a number of contextualized meanings. The definition of reward is still a contested area today. In the 1960s the focus changed to human

behavior with applications to animals rather than vice versa (we are all thinkers, rather than we are all stimulus-response machines). However, a preoccupation with a mathematically demonstrable theory of motivation (one that would show the weight of each element) continued. The focus was on achievement and differing individual responses - differences in need for achievement, anxiety about failure, and locus of control (internal or external). People's differences in these areas explained differences in motivation. In the 1970s and 1980s cognitive concepts increased, although a focus on achievement striving remained. Ideas such as self-efficacy, self-esteem, and curiosity started to play a larger role in research.

Self-efficacy, an elaboration of cognitive theory, postulates that one's belief in one's ability to overcome difficulties plays a major role in learning (Bandura, 1993). Grand theories (drive, cognitive, and psychoanalytic) had faded from the scene, and smaller concepts abounded. There was, however, a dominance of self-concepts. In the 1980's goal theory (performance and mastery) was introduced and studies of heretofore-ignored emotional reactions became more important (Weiner, 1990). As a reaction to the focus on the individual and how they construct meaning or react to rewards sociocultural models of learning emerged in the 1990s (O'Laughlin, 1992). These models were based on the idea that learning takes place in a social context, and that particular disciplines have specific bodies of knowledge, language, and traditions.

Report card grades seem to have more in common with a behavioural model of learning (reward and punishment), than with the other two models. Report card comments could support a mastery approach if they are written in a way that gives clear guidelines on how to attain mastery. In line with Alkharusi (2005) one would expect that the more report cards,

and particularly grades, are emphasized the more students would tend to take on a performance-approach or performance-avoidance goal orientation. However, it seems likely that the dialogue between teachers and students on this topic is very important in forming attitudes and influencing motivation.

Integration of models.

Hickey and Zuiker (2005) combined a scholarly analysis of motivation theory with an empirical research project based on the developed theory. They delineated the clash between cognitive (constructivist) theories of motivation and the behaviorist realm of accountability and testing. The authors see the sociocultural model as a Hegelian synthesis of the two antithetical positions. This sociocultural model is not new, but the authors interpreted it in a very active way - rather than just saying that knowledge is a socially constructed phenomenon, they contend that we need to construct social environments that will lead to deeper knowledge and understanding. The article asserts that the internalization of knowledge by an individual results in a transformation of that knowledge, based on that person's unique perspectives. That person then communicates using that transformed knowledge.

Hickey and Zuiker (2005) conducted a large study on a Grade 9 genetics project (Genscope), which had been created to motivate lower-achieving students. The intent was to see if designing an instructional process based on sociocultural theory would create a better understanding and more engaged participation. Baseline information using cognitively based instruction techniques had already been obtained. The students had been very interested and excited by the way the problems were presented, but failed to transfer this knowledge to similar problems given after instruction. The instruction focused on using

the real language and concepts of geneticists, along with formative assessments where the student was responsible to the group. The students who were given the sociocultural-based instruction had longer conversations and used more scientifically accurate language. They also had better results on summative assessments and high-stakes tests. This study gave an elegant picture of a more balanced method of instructing students, which seemed to meet the multiple goals of interest, deep understanding, and good achievement on assessment instruments. This study promoted the idea of evaluation and reporting as being highly contextual (i.e. the reaction of students to reporting and formal assessment is dependent on the rest of their learning environment). It also suggested that formal evaluation is necessary as a way of ensuring that students consolidate their learning (i.e. students can be interested and engaged in activities without necessarily gaining much knowledge). This study suggested that being curious and interested is possible within a grading system.

Rewards and motivation.

The area of rewards and motivation is a highly contentious one. Studies in this area are often directed at destroying an opponent's argument and many of the articles are in fact titled as rebuttals. Deci (1971) completed a foundational study that provided evidence to the claim that rewards decrease motivation. Cameron and Pierce (1994) contended that this original work was flawed because it used a 90% confidence interval. Cameron and Pierce (1994) conducted a meta-analysis of 96 studies and concluded that while tangible rewards did decrease intrinsic motivation slightly, verbal rewards actually produced a slight positive effect. Cameron distinguished between reinforcement (action which increases a behaviour) and rewards (action which has an indeterminate effect on behaviour).

This definition seems problematic, as it appears to predetermine the results (i.e. if I am doing a study to see if reinforcement increases a behaviour and I define reinforcement as that which increases the behaviour it is hard to see how I could reach any other conclusion). The author acknowledges this, but maintained that researchers in the cognitive evaluation camp use similar circular definitions (e.g. defining a reward as informational when it appears to increase motivation and controlling when it does not). Cameron and Pierce (1994), in their meta-analysis, suggested that the prejudice against rewards is unmerited.

Deci, Ryan, and Koestner (2001) in a later chapter in the ongoing debate between these researchers contend that Cameron and Pierce's (1994) meta-analysis is full of flaws. They point out that it is important to exclude boring tasks from this type of analysis, as students will have little motivation to do these types of tasks. They contend that these were included in Cameron's analyses. One might contend, as Cameron and Pierce (1994) do, that a lot of tasks in school are boring to a lot of students, and that this information is applicable for that reason. Deci et al. (2001), however, say that it violated the definition of the field as the analysis of the effects of rewards on interesting activities, a definition, which has been accepted by researchers for over 30 years. They accuse Cameron and Pierce (1994) of changing theories to meet challenges to their results.

The authors stated that Cameron's most recent paper was unclear about which studies had actually been used and they state that if Cameron was consistent in choosing her studies the results could only be as a result of "using inappropriate control groups, misclassifying studies, and using improper means of measuring intrinsic motivation" (Deci et al. 2001, p. 44). The authors use cognitive evaluation theory as the basis for their analyses. As a final argument they cite information showing that performance contingent rewards were likely to

be very harmful in practical classroom situations where some students will get the reward and some won't. Deci et al. (2001) are somewhat more convincing than Cameron, but the contention of Hickey and Zuiker (2005), that some reward structures built into a cognitively and socially rich educational background do not cause harm, is not seriously challenged by these studies, in my opinion. Deci might ask why any reward structures should be used at all in this case, though.

Kohn (1993) viewed rewards as undermining learning because they lead to a sense of being controlled, which undermines motivation. He also contends that reward systems lead to a concern about how to motivate than about whether what is being taught is worthwhile. Hickey and Zuiker (2005) would agree with the latter point, but would suggest that the real problem is rewards as part of an impoverished educational environment and that in a cognitively and socially rich environment these results do not occur. Paul Chance (1993) in a rebuttal to Kohn (1993) distinguishes between contractual rewards (do this and you will get that) and informational rewards. While the standard view of grades is closer to a contractual reward (do this and you will get an A) one could argue that they can be informational rewards (this is how you are doing). Chance (1993) agrees with Kohn (1993) that contractual rewards usually have a negative effect on motivation. He does raise the significant question - what is a reward? Chance, an avowed behaviorist, states that behaviorists can be opposed to letter grades, which they regard as a form of punishment. This raises the interesting question — are letter grades rewards? If a student sees the letter grade he attains as being a result of his own actions, is the letter grade a reward?

Neither Kohn (1993) nor Chance (1993) seem particularly open to the idea that different points of view might have validity, and they are both prone to generalizing. They

do raise interesting questions, however. Overall, the evidence indicates that a classroom that depends heavily on external rewards is likely to reduce motivation. The effect of report cards on motivation is not made by clear by these studies perhaps, in part because report cards can be a reward or a punishment. However, Hickey and Zuiker's (2005) and Brookhart and Bronowicz's (2003) contentions about the importance of the instructional and assessment environment carry some weight (i.e. the context is very important in determining whether assessment or rewards are helpful, neutral, or harmful).

Relationship between students, grades, and motivation.

A number of studies about the relationships between students, grades, and motivation show that these relationships are complex, and require careful analysis. Harackiewicz, Pintrich, Barron, Elliot, and Thrash (2002) looked at revisions to goal theory to capture some of the subtleties of actual reactions seen in students. Their proposals included:

1. viewing performance-approach and performance-avoidance as separate constructs (some studies include both and some only include performance-approach goals making comparison difficult). Also performance is defined in different ways in different studies.
2. the positive potential of performance-approach goals. When performance-approach is isolated and defined consistently studies demonstrate positive outcomes (positive effect on performance without negative effect on interest).
3. the possibility of blending performance and mastery goals.

The authors cited a number of studies that show that mastery and performance orientations are unrelated or positively correlated, rather than the negative correlation one would expect if they were mutually exclusive.

The studies the authors reviewed showed consistent, but weak positive correlations between performance-approach goals and academic performance. They showed stronger correlations between mastery goals and interest, and no significant correlation between performance-approach goals and interest, mastery goals and achievement, and between mastery and performance approach goals. This study in some ways contradicts the ideas of Hickey and Zuiker (2005) who view performance and mastery as antithetical, however the construct of the student as having both types of goals fits in quite well with Hickey and Zuiker's (2005) synthesis and instructional methods (they did use some rewards and cognitive techniques in their study).

Smith and Gorard (2005) in their study of year 7 students in the UK tested the consequences of giving detailed formative feedback in place of grades. The study used a control group model where some students received grades with minimal comments and some received detailed formative feedback, but no grades. Students who did not receive grades generally performed more poorly (the result was most strongly negative in English and less pronounced in other subjects; p. 26-27). The data did show a small group of very high performing students in the test (no grades) group in Science and Math, but not in the control group. The research used a model in which students were given no information about the purposes for the experiment. Not surprisingly, the students seemed somewhat bewildered by this sudden shift in assessment methods. It could also be that students would need time to adjust to a different system. Also students from the group not receiving grades hadn't done any formal tests for a year, but their achievement was evaluated using formal tests. One wonders what would have happened if all students were given a performance assessment rather than a test.

Finally, Stefanou and Parkes (2003) studied student evaluation preferences among fifth grade students in the northeastern US. Students strongly preferred paper and pencil tests to lab evaluations and performance evaluations. The authors concluded that this was mainly due to familiarity. Performance assessments caused anxiety when they were connected with grades. However, if they were detached from grades many students found them more interesting and challenging. Students enjoyed some chance to explore a subject without the restrictions of grading, but most did not want to get rid of letter grades. This study illustrates the issues that are involved in researching, piloting, or changing report card and evaluation systems. Students are likely to find the changes difficult just because the form of evaluation and reporting in schools is such a societal norm. Also, doing away with letter grades, as Ontario has recently done, and as BC tried to do, requires very clear communication in the place of the grades. This seems to be extremely difficult to achieve.

Deci (1971), Deci et al. (2001), and Kohn (1993) argue forcefully that rewards, including grades, decrease motivation. Cameron (1994) and Chance (1993) argue that rewards do not necessarily decrease motivation. Chance (1993) raises that idea that grades are more complex, and can't really be viewed as rewards in the sense that a prize or a sticker might be. Overall, there is some evidence that grades reduce motivation more than they increase it. However, the studies of Hickey and Zuiker (2005) and Brookhart and Bronowicz (2003) suggest that this is likely to vary significantly from class to class depending on the overall instructional and assessment environment. Alkharusi's (2005) study suggests that in an environment where grades are more strongly emphasized there is likely to be a split into two groups — one with increased motivation and one with decreased motivation. Looking at different groups as well as the whole population is therefore very

important. The analysis of Harackiewicz et al. (2002) leads to some predictions for the present study. Mastery orientation is associated with interest (which is analogous with curiosity in the present study). Since those with mastery orientation are less interested in grades (Brookhart and Bronowicz, 2003) one might expect that importance of grades would be negatively correlated with curiosity.

Curiosity.

Curiosity is a construct that has been defined and measured in a number of ways. The further ideas of *depth* and *breadth* curiosity however have persisted although the labels have changed. The importance of curiosity to educators is that it implies a willingness to explore. It is a quality that, in theory at least, should make deeper learning and independent learning more likely. It is also a quality that might be lost by having too much focus on grades or rote learning. Exploring the relationship between curiosity and report cards is one of the goals of this study.

Fulcher (2004) in his PhD dissertation refined and validated a new version of the curiosity index developed by Erwin, Coleman, and Orlando (1998). This index looks at depth and breadth of curiosity. Fulcher indicates that curiosity is difficult to define, and has been measured in many ways.

The original researcher on the topic of curiosity, Berlyne (1950, 1960) modeled curiosity as a state that helps an organism to maintain an optimal state of arousal during inactive periods. This concept was developed during the heyday of behaviorism in the 1950's. Berlyne, viewing curiosity in terms of motivation, classified curiosity as perceptual and epistemic, and said that each of these types of curiosity could be divided into diversive and specific curiosity. Loewenstein (1994) summed this up in a 2X2 matrix.

At the same time a state-trait model of curiosity was being developed. In this theory of curiosity (Day, 1971), a person who is more curious is brought into that state by a greater variety of conditions, becomes curious more easily (reactivity), and remains in that state for longer periods of time (chronicity). Spielberger and Starr (1994) built on Berlyne's model by postulating antagonistic anxiety and curiosity drives. In this model the one drive inhibits the other. Under this model one would postulate that students who are more anxious about grades would have less curiosity. Fulcher (2004) indicated that three types of measures have been used for curiosity: performance, behavioral, and self-report. He contends that the behavioral (looking at observable behavior to assess curiosity) and performance (giving specific novel tasks and observing reactions) are highly subject to interpretation. This study will be depending on self-reporting through a survey instrument.

In his review Fulcher (2004) also analyzed a series of instruments that have been used to measure curiosity. The OTIM (Ontario Test of Intrinsic Motivation) was developed by Day. It measures ten areas of interest, three qualities of stimuli (novelty, ambiguity, and complexity) and three types of responses (consultation, observation, and thinking) making a three-dimensional 90-item matrix. The instrument has produced good correlations with measures of initiative, achievement, mental health, and other factors. However, it has not correlated well with other measures of curiosity and it has been criticized for being too complex and virtually impossible to analyze for validity.

The NES (Novelty Experiencing Scale) is a much simpler instrument that uses five scales: a novelty scale, source of experience (internal or external), and quality of the experience (internal or external). It is limited in that it treats curiosity in the specific rather than the diversive sense, but it has good internal consistency.

Naylor developed the MCI (Melbourne Curiosity Index) in 1981. It uses the state-trait model. The respondent is asked a number of questions about their present feelings and attitudes. A frequency scale is then used with the same questions to determine the state of the respondent. Respondents who have careers that require high levels of investigation or research tend to score well on the MCI, whereas those who have more conventional jobs tend to score lower. Also internal consistency is good. The criticism that the current state affects one's perception of the trait seems a valid one, however. If one were to ask someone "are you happy?" and "how often do you experience happiness?" it seems likely that the answer to the former might colour the response to the latter.

Zuckerman's (1979) SSS measure used four scales - thrill and adventure seeking, experience seeking, disinhibition, and boredom resistance. This scale deals specifically with the perceptual-diversive part of curiosity. The factors in this study are less consistent than those in the MCI, particularly the boredom susceptibility factor. Fulcher (2004) looked at the statistical analyses involved in studies based on these instruments and concluded that the vast majority of studies involved assumptions about the lack of correlation among factors.

This issue seems like a hangover from the days of grand mathematical theories. It seems unlikely that one could define a human state, and find a number of completely independent factors that sum up to create the state. Fulcher (2004) also quotes Boyle (1983) as stating that the studies that purported to validate the research using factor-analysis suffered from "sloppy factor-analytic methodology" (p. 28). Fulcher and Boyle cite unjustified use of orthogonal rotations (which assume that factors are uncorrelated), small sample sizes, and failure to use Confirmatory Factor Analysis (which tests proposed factors rigorously).

Studies have indicated that depth curiosity tends to stay constant during adulthood, whereas breadth curiosity decreases. Also, curiosity is more connected with mastery than performance goals. There is little correlation between tested measures of intelligence and curiosity in the studies looked at by Fulcher (2004). There is a good correlation with divergent thinking, however.

For his study Fulcher (2004) refined and validated the design of the new curiosity index developed by Erwin, Coleman, and Orlando (1998). This scale assessed behavior and attitudes in two domains of curiosity: depth and breadth. He then used the new index (the CI-4) to compare groups. He was able to use fairly large sample sizes (e.g. $n=1002$ for the comparative study) and to obtain comparative data by using a freshman-testing day at a university in the Southeastern US.

In his comparison study he found that achievement scores and curiosity were essentially uncorrelated (-0.04 and 0.05), performance motivation and curiosity had a slight positive correlation (0.15). Mastery approach had a moderately positive correlation with curiosity (0.42), and work avoidance had a moderately negative correlation (-0.36). Intrinsic motivation was quite strongly correlated (0.66), while extrinsic motivation was uncorrelated (0.00). Finally there was a correlation between confidence and curiosity, which was stronger for breadth than depth (0.42 vs. 0.28). These results suggest that the effect of report cards and marks would be dependent on the makeup of the group. If mastery orientation outweighs performance-avoidance orientation it would be positive, otherwise it would be negative. The modest correlations suggest that this result may be far from universal. Of interest to my study (which will focus on depth curiosity) are the relationships with depth curiosity, which were very similar to those for total curiosity, except for the fairly strong

divergence in the confidence measures. This is not entirely unexpected, as the definition of breadth curiosity seems to include the sensation-seeking risk-taker type. Fulcher's CI-4 is likely to be a useful tool for my study in that it gives a useful guideline for survey questions on this topic. The need to reword the questions for a younger audience means that the instrument being used cannot claim to have been independently validated. Finally, Fulcher's audience, first-year college students, is an older and on average significantly higher achieving group (essentially the group that has been successful in school) than the group involved in this study. Some of the relationships listed above could very well be quite different in a group that includes those who are struggling in the education system. For the purposes of my study curiosity is defined as an eager desire to explore a particular subject beyond what is necessary to achieve a grade. The operational definition posits curiosity as a positive quality.

For the purposes of the present study, which uses the term *depth curiosity* (Fulcher, 2004, p. 44), *depth* is used as an adjective and is thus shorthand for "in-depth" which has the meaning "comprehensive, thorough". Depth curiosity is a construct defined by Fulcher (2004) and the following definition was used for this study:

Behaviour: A person will spend time thoroughly investigating information and will often exhibit sustained inquiry about a certain topic, idea, thing, other person, or him or herself by following up on previous investigations.

Attitude: The person will have a desire to learn more about and to search deeper on a specific area or topic in order to gain a fuller understanding about it.

Carr and Claxton (2002) looked at curiosity as part of a larger complex of learning dispositions. Goleman (1996) lists curiosity as a key-learning disposition. The idea of

dispositions is somewhat contested as part of the trait debate (i.e. do generalized traits exist independent of circumstances). Carr and Claxton's (2002) paper identified three traits: resilience, playfulness, and reciprocity. In their schema curiosity fits into the domain of playfulness, which includes mindfulness, imagination, and experimentation. Their paper does position curiosity as only one of a large number of factors in learning.

The research on curiosity suggests that curiosity is not strongly connected with achievement among higher achievers. It suggests that there are positive correlations between confidence, mastery orientation, intrinsic motivation and curiosity. There doesn't appear to be a strong relationship between achievement and curiosity, but the studies quoted were biased towards high-achievers (i.e. college entrants). It was expected that these relationships might be stronger in younger students with a broad range of ability.

My study also investigated whether there is a negative relationship between report cards (performance and probably some performance-avoidance orientation) and curiosity. The research does suggest that there are probably some identifiable subgroups with stronger correlations between these factors and curiosity.

Claxton and Carr's (2002) study views curiosity as being part of a large complex of learning dispositions. In their scheme curiosity therefore has limited importance. Their study does illustrate the fundamental difficulty of defining human qualities and doing research based on those definitions.

The overall results from Fulcher (2004) suggest that achievement does not affect curiosity. The present study differs significantly from Fulcher's (2004) in that it surveys a wider range of achievement. A survey of first-year college students does not include a significant number of students who have done very poorly in school. If students with low

achievement have less curiosity it is possible that there will be a correlation between curiosity and achievement in the present study. The relationship between mastery goal-orientation and curiosity in Fulcher's (2004) study mirrors that between mastery-orientation and interest in Brookhart and Bronowicz (2003). If one accepts Brookhart and Bronowicz's (2003) contention that mastery orientation is connected with a decreased interest in grades then one would expect importance to have a negative correlation with curiosity. Spielburger and Starr's (1994) idea that anxiety and curiosity are antagonistic would lead one to believe that students who are anxious about report cards are also likely to be less curious.

Curiosity, Cultural, and Academic Capital

Bourdieu (1986) referred to the conversion of cultural capital into academic capital. Certain attitudes, habits, and understandings which have been cultivated at home and in the families' social circle (cultural capital) are likely to lead to success in school and the accumulation of academic capital. My study posited curiosity as a positive quality, but this is a philosophical position. In a highly regimented educational system it is clear that curiosity could, in fact, be an impediment and might actually represent a deficiency in cultural capital. This would likely depend on the overall cultural capital that the student brings to the educational setting. A student who has a good overall understanding of how schooling works is probably more likely to regulate their curiosity so that it works to their advantage. That is, a student who is highly curious about Ancient Rome would realize that reading books about this topic during Math is inappropriate, and that there is a way of communicating this interest to the teacher that will improve his/her relationship with the teacher.

Importance.

The construct of *importance* was thoroughly reviewed by Cragin (1980). In his doctoral thesis he examines the three approaches that had been taken with respect to this construct:

- Demand-based – importance is determined by preferences for one thing over another.
- Needs based – importance is the effort made to correct a deficiency or excess of something (to restore balance). Needs are an innate quality.
- Values based – importance is based on conscious and unconscious wants and desires. Values are considered to be an acquired quality.

Cragin (1980) found all three of these approaches wanting. The demand-based was hampered by its absolutism. Cragin gives the example of an employee who is asked whether job security or pay is more important. He points out that we can't determine "that all levels of job security would be preferred to all levels of pay" (p. 25) because the respondent has indicated a general preference for job security over pay. The terms "needs" and "values" are used in so many different ways that it makes it difficult to use them as a basis for another construct. Definitions for values include "attitudes, motivations, objects, measureable and unmeasurable quantities, and customs or traditions to name a few" (p. 45).

Cragin (1980) advocates for a cognitive structure approach to importance, as opposed to an emotional (affective) approach because one may have a wide range of feelings about an important thing. That is to say while strong feelings may be a hallmark of importance, the type of feeling and how frequent it is varies to such a degree as to make it an unreliable signpost. He argues that the cognitive approach allows for a more valid measurement of this construct. He refers to the importance of a factor as "the psychological centrality of the

factor and its associated outcomes” (p. 76), which is closely related to the “frequency with which the outcome and related factors occur to a person.”(p. 77). That is to say frequency of thought is a measure of importance. Since “a durable and generalized prominence” (p. 78) is a feature of centrality, memory would be another measure of importance.

It is important to note that more recent research on attitude importance has modified the definition of this construct somewhat. Eaton and Visser (2008) cite Boninger et al. (1995) as defining importance as the “subjective sense of psychological significance that one attaches to his or her attitude” (p. 1720). They state that importance doesn’t necessarily demand centrality (i.e. something can be important even without a large network of cognitive connections or frequent rehearsal). The newer research positions Cragin’s concept as a subset of attitude importance. The question then becomes: Does thinking about something frequently and remembering it well indicate importance? One might argue that it depends on the object. Everyday tasks that are thought about frequently might not have high importance (e.g. brushing your teeth). However, thinking about and remembering clearly an intermittent high-significance event like a report card probably does indicate importance. The next question is how does memory connect to importance?

Importance and memory.

A number of studies have dealt with the connection between importance and memory. (Holbrook et al. 2004) did a number of studies on reaction to political statements that indicated that “People who attach personal importance to an attitude object are especially knowledgeable about that object.” (p. 2). Some of their controlled studies showed that “importance motivated selective exposure and selective elaboration.” If the object was important the subjects thought more frequently and more deeply about it. Further studies

showed that when the ability to elaborate was removed (by imposing a time constraint) the connection between importance and memory was removed. In this case previous thought about the topic is likely to be a factor, though. Guy and Cahill (1999) studied the relationships between long-term memory, rehearsal (i.e. selective elaboration), and emotion. They showed participants “emotional” and “non-emotional” movies and tested their recall under conditions where rehearsal was permitted and where it wasn’t. They found that while rehearsal is sufficient to explain short-term retention, longer-term retention does not occur without a significant emotional component, and that the emotional component is in fact the crucial one. However, the category of “emotional” and “non-emotional” movies seems rather vague. Perhaps, the non-emotional movies were just boring. The overall conclusion that emotion plays a significant part in long-term memory makes sense, though. The complexity of a memory object likely plays a role here as well. People don’t seem to attach a lot of emotion to their multiplication tables, yet they remember them well once they have learned them. The study suggests that students who remember their grades better are more likely to have strong feelings about them, although, because letter grades are such a simple object, rehearsal might be sufficient for memory even in the absence of strong emotion. Ley (1972) studied memory of medical statements among outpatients. He found that the patients remembered the statements that were most important to them.

Memory of grades.

In a study of memory of college grades Bahrnick, Hall, and Da Costa (2008) found that better students tended to remember their grades better, and that distortions in memory were strongly biased towards the positive end (that is, students who did not remember their grades accurately tended to report them as higher than they actually were). However,

respondents with very low grades (D or F) tended to remember them better. Bahrck et al., (2008) postulated that the distortion of memory among these students involved filling in a more positive memory for material that had been forgotten. They did not interpret their results as indicating that “screen memories” had been created to block unpleasant content.

In an earlier study of memory of high school grades Bahrck, Hall, and Berger (1996) found the same relationship between the grade attained and accuracy of memory. They interpreted their results as showing that pleasantness and unpleasantness, rather than importance, dictated memory of grades. This study found that otherwise high-achieving students were more likely to have distortions of memory when it came to reporting a lower grade. The researchers interpreted the greater distortions among higher-achieving students as indicating that “screen-memories” had not been created to block out unpleasant experiences, rather forgetting was followed by the creation of “fill-in memories”. A more economical explanation would be that students who generally had very good grades found a lower grade more embarrassing than those who generally had lower grades, and were more likely to misreport the lower grade. Experience suggests that a C is more embarrassing to a student who normally gets an A than one who normally gets a C+.

The authors’ interpretation that fill-in memories were created after forgetting grades suggests that lower achieving students reduce the attitude importance of grades by removing them to the periphery and forgetting about them. Guskey (2002) stated, “For those who are successful in acquiring a high-level product the grade takes on great value. These students work hard to obtain their grade and take pride in what they attain. Those who are less successful protect their self-images from guilt by attaching less importance to the product. Some may even consider it insignificant or irrelevant (p.20-21).” For the purposes of the

present study, though, importance is considered to be an intense focus on grades. Czaja and Blair (2005) in their book on survey design note that it is easier to remember grades if they are all very similar than if they vary a lot. It is clear, then, that the use of memory as one of the constituents of importance will need to be examined carefully in light of the other survey data. Since the intention of the present study is to find out how an intense focus on grades affects students' motivation and curiosity other questions that speak to this attitude will be asked. For example, how much do students worry about report cards, how often do they think about them, how important are they to their parents, and whether they read their report card comments.

Bahrnick, Hall and Berger's (1996) and Bahrnick et al.'s (2008) research on memory and grades leads one to expect that students with higher grades will remember them more accurately. Once again, the students in my study are much younger and have much less experience with grades, so it is possible that the results may be different. Guskey's (2002) contention that successful students give grades a high level of importance and that unsuccessful students do the opposite suggests that poor achievement and low importance may be correlated with decreased motivation when viewing grades. This prediction is tenuous, however.

Overall Predictions from the Research

The research surveyed predicted the following results for the current study:

1. Grade 7 students are likely to be more pragmatic (possibly less curious), and more sophisticated in their understanding of grades than Grade 4 students (Brookhart and Bronowicz , 2003; Evans and Engelberg, 1985; Reynolds and Dwyer, 2003; Tuten ,

- 2005). Those that are affected negatively are likely to suffer more severely (Bell, 2001).
2. Effects of achievement on motivation are likely to be mixed and it is important to look at different groups to determine what is happening with this relationship (Alkharusi, 2005; Brookhart and Bronowicz , 2003; Cameron and Pierce, 1994; Chance, 1993; Deci, 1971; Deci et al., 2001; Kohn, 1993).
 3. Students who think that grades are more important may be more motivated. (Guskey, 2002).
 4. Student achievement is expected to be uncorrelated with curiosity (Fulcher, 2004). The wider range of achievement in the current study may lead to a different result, however.
 5. Students who place more importance on grades may be less curious. (Harackiewicz et al., 2002).
 6. Different groups within the population are likely to respond quite differently to reporting and assessment (Moni et al., 2002). An overall low correlation does not necessarily mean that the relationship between the two items is insignificant. It could consist of two diametrically opposed responses, or even several offsetting ones.
 7. Students who have higher grades are likely to remember them better (Bahrack, et al., 1996; Bahrack et al., 2008).

Research Hypotheses

1. Grade 7 students will be more sophisticated in their understanding of grades and reports than Grade 4 students. Effects of reports on Grade 7 students will be more severe.
2. There will be no correlation between curiosity and achievement.
3. Students who place more importance on grades will be more motivated.
4. High achievers will feel more positive about grades.
5. High achievers will be more motivated.
6. Grade 7 students will be less curious than Grade 4 students.

Chapter 3: Research Design

Choice of Method

My study of student attitudes towards report cards was exploratory in the sense that research in this area is quite limited. Two possible approaches were ethnographic research pursued through interviews, or survey research. Interviewing participants offers the possibility of observing subtle responses and of asking follow-up questions. However, using interviews would have limited the number of participants. Given the lack of knowledge on this topic I wanted the responses of as many students as possible, rather than selecting a few for more in-depth coverage. The concern was the possibility of missing important information by limiting the number of cases. Also, I felt that the confidentiality offered by the survey might allow students to be more candid. Survey research also allowed for a combination of qualitative and quantitative analysis.

Population and Survey Design

This study of students' attitudes towards report cards was designed to provide information about a particular urban multicultural elementary school in British Columbia, Canada. It assessed student feelings and attitudes about report cards. The study examined how important different aspects of report cards are to students and how they are connected with their motivation (willingness to make an effort in school) and their depth curiosity as defined by Fulcher (2004). It also looked at the connection between achievement in school and motivation and curiosity. Only one aspect of curiosity was dealt with to limit the number of questions and the statistical complexity of the study.

Since the study involved students from a single school, it was possible to survey the entire population in Grade 4 and 7 at the school (approximately 150 students). Of these 99

were granted permission to complete the survey and 97 were actually present to complete it giving a response rate of 98%. Information on population demographics (grade level, gender, and letter grades) was available from class enrolment lists and school goal data collection. This was used to determine if the group of students responded to the survey was representative of the whole population. In the sample, Grade 7s, girls, and lower achievers were slightly underrepresented (Appendix 7).

The survey was written in simple language so that both Grade 4 and Grade 7 students could understand it. Questions were developed so that demographic features could be cross-referenced with other variables. The survey commenced with questions about grade and gender. Questions about cultural background used home language as a marker, rather than asking the direct, and often confusing, question “What is your cultural or ethnic background?” Two questions were asked to clarify responses on this topic. First students were asked what language other than English they spoke at home. Choices were categorized to match the demographics of the school. Secondly, students were asked how often they spoke English at home. The rationale for this approach was to distinguish recent immigrants and those who were less fluent in English from those whose families had been in the country for a long time or who arrived with a strong English background. It was not possible to ask elementary students directly about their socio-economic status. Responses to the question “How many books do you own?” were used as an indicator of socio-economic status. The intention was also to ask a question that would give some indication of the cultural and academic capital that a student brings to their school life.

To ascertain whether students had read the written part of their report card, a forced-choice question about this was included. A question about whether students received

rewards followed. Both of these questions used a four-point frequency scale. In contrast, the question about how much students usually think about their report cards used a three-point scale. I thought that it would be difficult for respondents to differentiate between four points. For this question, a definition of each of the frequency terms was provided to attempt to standardize the responses. For the same reasons, the question “How well do you remember your grades from the last report card?” used a forced-choice three-point quantity scale with definitions beside each quantity point. To evaluate perceived academic achievement, and memory of grades, students were asked about their letter grades in Language Arts and Math. These two subjects were used as a proxy for academic achievement in general. While research on this is very limited, Language Arts achievement appears to correlate highly with academic achievement overall, whereas Math achievement can differ (particularly in ESL students) and gives a different perspective. These are also the two subjects that students are most likely to remember. For this forced-choice question students were given a choice of each of the letter grades except that the grades C-, I, and * were grouped as a single response. I and * indicate that the student is not meeting expectations, and the grade C- is often assigned to a student who is not meeting expectations because documentation is required to give the other two grades.

The second part of the survey consisted of forced-choice four-point scale questions. Students indicated strong or slight agreement or disagreement. In the Grade 4 survey a graphic showing different facial expressions was placed above each scale category for these questions. All other aspects of the survey were identical for Grade 4 and Grade 7 students. These survey included sets of questions that were intended to look at the constructs of curiosity and motivation, as well as some other aspects of reactions to report cards. The

questions about motivation asked students whether seeing their Math and Language Arts marks made them want to work as hard as they could, and whether thinking about marks made them want to work hard. These questions were discussed extensively with other students and the committee to try and develop a wording that would apply to high and low-achieving students. Questions about curiosity were developed using Fulcher's CI-4, but with simplified wording and fewer questions to make them suitable for younger students. The questions about depth curiosity asked if students wanted to learn more the more they learned about something, if they tried to find out everything they could when learning about a new topic, if they spent a lot of time reading, thinking, or talking to others about topics of interest, and finally if they did extra reading or research about things they had learned in school. A related question asked students if learning a lot was more important than getting an A. Some reverse questions to identify disinterest or lack of curiosity were included ("very few things interest me" and "I am only interested in grades, not what I am learning"). Questions about importance to parents and worrying about getting a bad report were asked. Finally, some questions were asked to gauge whether students understood their report cards and how to get good grades.

To provide students with the opportunity to respond in their own words three open-ended questions were included at the end of the survey. The first two questions focused on the good things and bad things about report cards. Finally, students were asked how report cards made them feel. These questions were left purposefully broad to elicit a wide variety of answers.

Graphics for the survey cover were chosen with a view to making the survey attractive and interesting, but with care to avoid portraying a particular attitude towards report cards. The survey was printed in colour to make it more attractive and interesting to respondents.

The final version of the survey used input from a variety of sources. Students in a graduate survey research class reviewed the survey and provided feedback. A focus group of Grade 5 and 6 students also reviewed the survey. Finally, members of the thesis committee made suggestions at the proposal stage. Modifications to the survey were made at each stage in the process.

Recruitment of Teachers and Subjects

Teachers of Grade 4 and 7 students were approached personally to ask for their assistance with doing the survey. At this time a letter of initial contact was provided explaining the research project. All eight teachers agreed to be part of the research project. The research was introduced to Grade 4 and Grade 7 students at meetings for each group. At that point letters of initial contact, and parental consent forms were handed out. Grade 7 students were given assent forms, to sign on the spot or later. It was made clear to both groups that participation was completely voluntary. Punjabi translations were sent out to a number of parents. Other translations were offered, but were not requested by parents.

Reminders were given to students who had not returned consent forms. Rates of return varied significantly from one Grade 7 class to another, but were fairly consistent for Grade 4 classes.

Teacher Data Collection

Permission was granted to obtain actual grades from the teachers involved. Numbered manila envelopes were distributed to teachers. The numbers were mixed before handing

them to the teachers so that students could not be identified. The teacher recorded the numbers and wrote down the marks in Language Arts and Math beside them on a list. The surveys were then handed to the students along with the numbered envelopes. The completed surveys were placed in the numbered envelopes.

Survey Procedure

The survey was conducted in two groups – Grade 4 and Grade 7- in the school lunchroom. Students had about 30 minutes to complete the survey, but most were finished well before this time. Their teacher gave students a numbered manila envelope. This envelope was placed face down on the table when the student sat down to do the survey. After the survey was complete, the surveys were placed in the envelopes and handed in. At this point students were given the compensation (polished rock or sharpie) that they had selected on the consent form.

Data entry and Calculated Variables

Data were entered into a data file in SPSS. Ordinal questions from the second part of the survey were then reverse coded so that “Agree Strongly” would have the highest value in the results. The exceptions were questions with a negative statement (e.g. “I have few interests”). Some questions from the first part of the survey were also reverse coded so that high frequency or quantity would have a high value in the results.

Actual memory of grades was a calculated value. It was calculated by taking the absolute value of the difference between the remembered grade and the actual grade, using the coded values [e.g. if the student remembered their grade as C+, but actually got A the grade memory variable was calculated as the absolute value (the difference between two numbers expressed as a positive number) of $(2-4) = +2$]. These results were then reverse

coded to give values between 5 (remembered perfectly) and 0 (couldn't remember grades). The decision to assign students who couldn't remember their grades the lowest value was based on the research (Bahrick et al., 1996; Bahrick et al., 2008) that suggests that students who remember incorrectly forget and then create fill-in memories. This research suggests that a student who fails to create some type of fill-in memory likely places less importance on them. It is important to note that this coding decision is based on a number of assumptions, and other methods of looking at this data could have equal or greater validity.

Quantitative Data Analysis

Quantitative data were analyzed using SPSS. Frequencies for all variables were examined for the following groups – Grade 4 students, Grade 7 students, girls, boys, high achievers (A or B), low achievers (C or lower), and for different language groups. Distributions were compared using Fisher's exact test. Fisher's exact test is used instead of the χ^2 test when at least one of the cells has a frequency less than 5. Since many of the cells in this study have a frequency less than 5 this is the appropriate test to use (Glantz, 2005). This test is a test for independence. It looks at the two groups as if they were independent, that is, the results do not differ by group. It is an exact probability calculation that sums all of the possible matrices of results that have a smaller probability than the one obtained assuming a random probability distribution (i.e. no group dependence of the results). This gives a cumulative probability of getting the result obtained, assuming independence. For example, if boys' answers to a question are 12 strongly agree, 10 slightly agree, 15 slightly disagree, and 2 strongly disagree, and the corresponding distribution for girls is 24, 8, 3, 1 $p=0.003$. This value is the probability of getting this result if the results are independent of membership in the group. Note that all p values reported are for a 2-tailed test. Correlations

between ordinal variables were examined for the different groups using Spearman correlations, which are non-parametric and thus suitable for scaled items, which do not have a normal distribution. Correlations by grade, gender, and achievement level were looked at using the research questions.

Qualitative Data Analysis

Answers to the three open-ended questions were summarized in SPSS. Qualitative data were presented in the form of Wordles (wordle.net, 2011). These are word graphics that display words by font size depending on their frequency. The “Advanced” feature was used and responses were scaled to the square root of the frequency. It was observed that using the raw frequencies seemed to overstate the differences (e.g. an item with a frequency of 5 might have a font size of 8 (e.g. *happy*), whereas an item with frequency of 10 would have a font size of 16 (e.g. *unhappy*). Readability of low-frequency items was another issue.

Using the square root was a compromise that allowed differences to be viewed while preserving readability. Colour was used to illustrate the response being analyzed (brighter colours for positive things about reports and more somber colours for negative things about reports). Specific colours were used to delineate particular feelings for reports (yellow for positive, green for neutral or mixed, and blue for negative) so that these could be compared across the groups. The Wordles were presented in “Vertical” format to make reading them easier and the setting “Prefer Alphabetical Order” was used to facilitate comparisons between groups. Detailed information about settings is found in Appendix 6.

The Wordles were used to develop assertions about the qualitative data. These assertions were presented above the Wordles and supporting analysis followed the Wordles.

Delimitations of this Study

This study was based on a survey of 97 students in Grades 4 and 7 at a single school in the lower mainland of British Columbia. This school has a multicultural population with a particular mix of first languages and cultural backgrounds. A large number of students entering the school have low school readiness as measured by the Early Development Instrument (The Human Early Learning Partnership, 2011). Students from schools with different demographics might respond differently to the same survey. The small sample size meant that factor analysis and structural equation modeling could not be used to assess the constructs and relationships in the research questions. This meant that questions were looked at individually when assessing the results. References to the underlying concepts need to be looked at in this light. Conversely, the approach in my study meant that data were looked at very concretely, and statistical inferences and assumptions were kept to a minimum. The small sample size also allowed for an in-depth look at the responses to the open-ended questions.

Since this study dealt with only a single school where all students receive grades it could not assess the absolute effects of grading on curiosity or motivation. A similar comparative study at a school where students do not receive grades would be required to start investigating this question. This study solicited student views and beliefs at a given moment in time using some indicators for motivation and curiosity. How well these connect with actual student behaviour and attitudes over time would require a longitudinal study. The study used a very limited definition of motivation, one that assesses intent. It did not investigate the persistence aspect of motivation. Only one aspect of curiosity (depth curiosity) was investigated. Depth curiosity was chosen because it represents the quality of

looking at a subject in-depth, and the research question was whether reports have an effect on students' interest in exploring a topic beyond what is required for marks.

Language Arts and Math grades were used as a proxy for overall achievement. The use of Language Arts grades as a proxy was based on the experience of the researcher, from many years of teaching and looking at report cards, that Language Arts achievement tends to be representative of overall academic achievement. Research on this topic is very limited. One study from Germany found fairly strong correlations between grades in different high-school subjects (Möller, Streblow, Pohlmann, and Köller, 2006). However, the subjects involved were Math, English, German, and Physics, so the study's applicability to research involving Canadian elementary school students is limited.

Using Language Arts grades as a proxy simplified the analysis and made it easier for students to complete the survey. It is clear, however, that the group of students designated as low achieving in the study was comprised of those who are more or less successful in non-academic subjects such as art and physical education. Success or lack of success in these subjects might have affected student responses.

Survey items requiring an opinion used a four-point Likert scale (agree strongly, agree slightly, disagree slightly, disagree strongly). There was no allowance for a neutral response. Neutral responses are difficult to analyze when comparing responses between groups.

Limitations of this Study

Since an entire population was being sampled, there was no sampling method or protocol being used. Grade 4 and Grade 7 students were picked so that a comparison could be made between students with limited experience of letter grades, and those who had been

receiving them for a long time. Even though the whole population was surveyed, there were some factors that skewed the survey. Different classes had different rates of permission given to complete the survey. Students who were absent or who did not return forms might represent a distinct sub-population. However, accurate data for gender, grade level, and achievement were available for the entire population. This showed a slightly lower participation rate among Grade 7 students, girls, and low-achievers (Appendix 7). Because the survey dealt with students at a particular school the results cannot be generalized to all schools. However, the results of the research may be transferable to other urban, multicultural schools with similar demographics. It is possible that some attitudes towards reports and grading are more universal, and that even schools with different demographics might produce similar responses.

Getting an honest response is an issue with a topic like grades. Since the survey used memory of grades as a way of assessing importance to the student, it was important to have an honest response. Based on previous experience, I was confident that a large majority of students would respond honestly if confidentiality was assured. It was therefore extremely important to give students confidence about this in my presentation of the project. If students gave inaccurate responses because they were embarrassed about their grades, it could have led to the inaccurate conclusion that they do not care about them. Looking at the responses to questions about how much students care about report cards helped to deal with this (i.e. memory of grades is just one of several factors that determine importance to the student).

The questions used to evaluate curiosity are another possible source of error. The Curiosity Index used by Fulcher (2004) on first-year college students has been tested for

consistency and validity, and revised extensively. However, some of the questions used in the original instrument had to be modified for elementary students, which meant that this revised set of questions may be measuring a somewhat different construct or may have consistency problems. Using focus groups and reverse questions helped with consistency, while a careful matching of the plain language versions of questions in this survey with those in Fulcher's (2004) instrument helped to ensure that the same construct was being measured. Also, looking at "failed" questions in Fulcher's (2004) research helped to avoid some of the pitfalls in question wording.

Looking at the correlation between depth curiosity and importance of report cards was difficult. There are two possible reasons for lower curiosity: (a) an exclusive focus on grades, and (b) a lack of interest due to repeated failure. The research question was intended to include both groups, since the importance of grades (whether connected with failure or success) was posited as a negative influence on curiosity. The survey used a number of questions to evaluate importance. The wording of questions was very important.

Cultural factors have a big impact on attitudes towards grades and report cards. To avoid the complex problems of identifying cultural background, second language spoken in the home and the amount of English spoken were used measure this factor. This also allowed the study to differentiate between recent immigrants who spoke little English, and second or third-generation students who are fluent English speakers, and who, on average, tend to have a weaker affiliation with their original culture. Choices for language groups were important, too many choices over-fragment the sample, but too few may result in important connections being missed. The choices were based on my experience in this community. For example, the South Asian group was divided into Punjabi (primarily rural

and less educated) and other South Asian (primarily urban and more educated). Even so, the size of the population resulted in most groups being too small to draw conclusions.

A major source of error for all survey research is respondents who do not care or who are overwhelmed by the survey and therefore start to answer questions mechanically. Keeping the survey short, clear, simple, and visually appealing was especially important with elementary students. I believe the topic was important enough to most students that they were interested in giving their opinion. However, creating interest without bias was a challenge. Asking questions about curiosity and motivation to elementary students was difficult. If a significant number of students did not understand the questions clearly it would be difficult to get valid results. Using a focus group of students of different ages and abilities to give feedback on the survey questions was very important. Making sure that the survey was accessible to ESL learners without warping the meaning of questions was another challenge that required assistance from students. Translation of some questions was considered, but turned out not to be necessary. However, lack of comprehension among some students, particularly low-achieving Grade 4 students, was likely a factor.

Fisher's exact test was used to compare responses to scaled questions from different groups. Significance with this test shows the likelihood that the results obtained from two groups (e.g. boys and girls) are independent of the grouping criteria. The direction of the difference or whether the difference is directional is a matter of interpretation, however. For example, 28 (strongly agree), 0 (slightly agree), 0 (slightly disagree), and 28 (strongly disagree) is a significantly different response from 14, 14, 14, and 14 ($p=0.0000000014$) using the Fisher Exact Test. It shows a more extreme set of preferences, but not one that is

different in terms of direction. Also, one cannot draw a definitive conclusion that membership in the groups being compared is the reason for the difference.

Finally, it is important to remember that much of this information consists of a particular group of students from a particular school on a particular day ticking a set of boxes on a paper. All one can really say for certain is that so many students chose a certain response for a particular question. Anything beyond this is inference, and is subject to error. For this reason, the language used to describe the findings is restrained.

Chapter 4: Results and Findings

Engagement and honesty are two critical factors in survey research. It is critically important that responses are not being given mechanically and that respondents are not telling you what they think you want to hear. Ninety-six out of 97 respondents answered at least some of the written questions in this survey. Many of the written responses were comprehensive and candid. Response to the scaled questions was very close to 100%. This seemed to indicate that the students were for the most part engaged and honest when answering the survey questions. It certainly appeared that report cards were an important topic for these students. Furthermore, adults who were asked for permission to use report card images responded with a great deal of feeling about this topic. In many cases they replied with long personal stories. A few of them requested copies of the thesis on completion.

Frequency tables were prepared by gender, grade, and achievement level. The frequency results include a Fisher's exact test calculation using the two groups (e.g. Grade 4 boys, Grade 4 girls).

Responses for most items were skewed towards the positive end. However, strong negative responses on a few items (e.g. I only care about my grades, not what I am learning) suggested that students were not just filling the survey out mechanically. Frequency results are discussed after each set of tables with an overall summary at the end. Correlation tables and a discussion of these are then presented. Finally, answers to the open-ended questions led to a number of assertions being developed. These are discussed at the end of the chapter.

Frequency Data for Different Groups and Analysis

This data was used to explore the following research question:

How does membership in a particular group (gender, grade, language, low or high-achiever) influence attitudes and feelings towards report cards?

The frequency tables for each category are followed by an analysis.

Table 1: Frequencies by grade for opinion items

Variable	Agree strongly		Agree slightly		Disagree slightly		Disagree strongly		Probability
	%		%		%		%		
	Gr.4	Gr.7	Gr.4	Gr.7	Gr.4	Gr.7	Gr.4	Gr.7	
Reports are important to parents	81	74	17	24	2	2	0	0	0.73
Worry about a bad report	60	60	38	24	2	12	0	4	0.04
Report tells how to improve	72	46	26	50	2	4	0	0	0.02
LA grade motivates	64	48	23	36	6	14	4	2	0.24
Math grade motivates	57	62	32	22	7	8	4	8	0.64
Thinking about grades motivates	64	68	32	22	2	6	2	2	0.61
Marks for effort are more important than grades	21	8	53	32	17	48	9	12	<0.01
Know how to get good marks	75	66	26	30	0	2	0	2	0.61
The more I learn about a topic the more I want to learn	63	48	33	42	2	8	2	2	0.37
Try to find out as much as I can about a new topic	47	28	38	56	13	10	2	6	0.17
Learning a lot is more important than getting an A	51	40	32	36	11	24	6	0	0.09
Read, think, or talk to others about topics of interest	28	26	51	48	17	22	4	4	0.94
Have few interests	26	2	36	10	17	38	21	50	<0.01
Only interested in grades not what I am learning	19	0	27	20	38	26	14	54	<0.01
Often do extra reading or research about things learned in school	23	14	43	42	23	28	11	16	0.15

Table 2: Frequencies by grade for event and educational capital items

Variable	Always %		Usually %		Sometimes %		Never %		Probability
	Gr. 4	Gr. 7	Gr. 4	Gr. 7	Gr. 4	Gr. 7	Gr. 4	Gr. 7	
	Read report card comments	64	64	15	28	11	6	11	
Speak English at home	24	22	48	40	26	38	2	0	0.50
Receive rewards for a good report	15	14	19	30	43	44	23	12	0.41

Variable	Frequently %		Sometimes %		Rarely %		Probability
	Gr. 4	Gr. 7	Gr. 4	Gr. 7	Gr. 4	Gr. 7	
	How often think about report	40	20	45	51	15	

Variable	>100 %		50-100 %		20-49 %		<20 %		Probability
	Gr. 4	Gr. 7	Gr. 4	Gr. 7	Gr. 4	Gr. 7	Gr. 4	Gr. 7	
	Number of books owned	21	46	43	28	19	20	17	

Table 3: Frequencies by grade for letter grades and memory

Variable	Exactly %		Off by one grade %		Off by two grades %		Off by three or more grades %		Couldn't remember %		Probability
	Gr.4	Gr.7	Gr.4	Gr.7	Gr.4	Gr.7	Gr.4	Gr.7	Gr.4	Gr.7	
How well LA grade remembered	23	52	13	21	13	0	2	2	49	25	<0.01
How well Math grade remembered	51	54	11	21	6	6	4	2	28	17	0.55

Variable	A %		B %		C+ %		C %		C-, I, or * %		Probability
	Gr.4	Gr.7	Gr.4	Gr.7	Gr.4	Gr.7	Gr.4	Gr.7	Gr.4	Gr.7	
Actual LA grade	0	17	21	31	19	21	21	15	38	17	0.01
Actual Math grade	30	27	30	23	6	21	19	13	15	17	0.32

Variable	All/ almost all %		Some (3-6) %		Few or none (0-%		Probability
	Gr.4	Gr.7	Gr.4	Gr.7	Gr.4	Gr.7	
How many grades remembered from last report	30	46	49	48	21	6	0.06

Comparison between Grade 4 and Grade 7 Students

There were a number of significant differences in the responses of Grade 4 and Grade 7 students. Grade 7 students were less likely to agree that their report told them how to improve or that marks for effort were more important than letter grades (Table 1). They disagreed much more strongly than Grade 4s with the statements “I have few interests” and “I only care about my grades, not what I am learning” (Table 1). Finally, Grade 4 students were more likely to worry about getting a bad report and Grade 7 students claimed that they owned more books (Table 2).

The responses of Grade 7 students suggest an increasing level of sophistication about reporting. They have likely realized that while adults may say that effort is more important, the real social weight of reports is contained in the letter grades. They also appeared to have less faith in the informational aspect of report cards. This doubt, however, did not extend to learning in general and their disagreement with the idea that grades were more important than learning was categorical (over 80% disagreed). The different responses for these two questions may be partly due to the tendency of younger students to give more positive answers to survey questions as delineated by Spinath & Steinmayr (2007). Thus, the Grade 4 students may have been more likely to answer, “Strongly agree” to the statement “Very few things interest me.” To test this possibility average scores for scaled questions for the Grade 4 and 7 students were compared. A t-test was then conducted (Appendix 5). While the average value of responses for the Grade 4 students was higher it wasn’t significantly higher.

Grade 7 students said that they remembered more of their grades, and they remembered their Language Arts, but not their Math grades, more accurately (Table 3). They had

significantly higher marks in Language Arts than the Grade 4s. The results for grade memory strongly supported the prediction that those with higher grades remember them better. There was no corresponding difference for Math, where the grades were similar. The higher Language Arts grades for Grade 7 students are typical for this school, which has a high proportion of ESL (English as Second Language) students. It is interesting to note, however, that this group of Grade 7 students was regarded by their teachers as being a very positive group. Cohorts of students seem to have their own culture, and group attitudes can differ significantly, even with similar demographics.

Table 4: Frequencies by gender for Grade 4 students – opinion items

Variable	Agree strongly %		Agree slightly %		Disagree slightly %		Disagree strongly %		Probability
	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	
Reports are important to parents	81	81	19	15	0	4	0	0	0.92
Worry about a bad report	62	58	38	39	0	4	0	0	0.93
Report tells how to improve	67	77	29	23	5	0	0	0	0.61
LA grade motivates	76	56	19	28	5	8	0	8	0.52
Math grade motivates	52	60	43	24	5	8	0	8	0.44
Thinking about grades motivates	76	54	24	39	0	4	0	4	0.31
Marks for effort are more important than grades	10	31	62	46	19	15	10	8	0.40
Know how to get good marks	81	69	19	31	0	0	0	0	0.50
The more I learn about a topic the more I want to learn	70	56	30	36	0	4	0	4	0.92
Try to find out as much as I can about a new topic	45	46	40	39	15	12	0	4	1.00
Learning a lot is more important than getting an A	57	46	33	31	5	15	5	8	0.76
Read, think, or talk to others about topics of interest	30	22	60	46	10	23	0	8	0.45
Have few interests	29	23	38	35	19	15	14	27	0.82
Only interested in grades not what I am learning	14	23	38	19	24	50	24	8	0.12
Often do extra reading or research about things learned in school	29	19	38	46	24	23	10	11	0.93

Table 5: Frequencies by gender for Grade 4 students – event and educational capital items

Variable	Always		Usually		Sometimes		Never		Probability
	%		%		%		%		
	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	
Read report card comments	86	46	10	19	5	19	0	15	0.03
Speak English at home	14	31	52	42	33	19	0	4	0.35
Receive rewards for a good report	19	10	23	14	31	57	27	19	0.37

Variable	Frequently		Sometimes		Rarely		Probability
	%		%		%		
	Girls	Boys	Girls	Boys	Girls	Boys	
How often think about report	33	46	43	46	24	8	0.33

Variable	>100		50-100		20-49		<20		Probability
	%		%		%		%		
	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	
Number of books owned	23	19	57	31	4	31	14	19	0.09

Table 6: Frequencies by gender for Grade 4 students – grades and memory

Variable	A %		B %		C+ %		C %		C-, I, or * %		Probability
	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	
Actual LA grade	0	0	24	19	24	15	24	19	29	46	0.66
Actual Math grade	29	31	33	27	10	10	19	36	10	14	0.86

Variable	Exactly %		Off by one grade %		Off by two grades %		Off by three or more grades %		Couldn't remember %		Probability
	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	
How well LA grade remembered	33	15	14	12	3	3	0	24	52	46	0.08
How well Math grade remembered	52	50	10	12	7	4	0	8	29	27	0.82

Variable	All/ almost all (7-8) %		Some (3-6) %		Few or none (0-2) %		Probability
	Girls	Boys	Girls	Boys	Girls	Boys	
How many grades remembered from last report	33	27	43	54	24	19	0.80

Table 7: Frequencies for Grade 7 students by gender – opinion items

Variable	Agree strongly %		Agree slightly %		Disagree slightly %		Disagree strongly %		Probability
	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	
Reports are important to parents	79	70	21	27	0	3	0	0	0.84
Worry about a bad report	84	43	16	30	0	20	0	7	0.02
Report tells how to improve	53	43	47	50	0	7	0	0	0.61
LA grade motivates	63	40	21	43	16	13	0	3	0.29
Math grade motivates	74	53	16	27	5	10	5	10	0.64
Thinking about grades motivates	78	63	22	23	0	10	0	3	0.63
Marks for effort are more important than grades	10	7	52	33	33	43	5	17	0.66
Know how to get good marks	74	63	21	33	5	0	0	3	0.47
The more I learn about a topic the more I want to learn	37	53	53	37	11	7	0	3	0.53
Try to find out as much as I can about a new topic	11	37	74	47	5	13	11	3	0.08
Learning a lot is more important than getting an A	42	40	42	30	16	30	0	0	0.46
Read, think, or talk to others about topics of interest	32	23	47	47	21	23	0	7	0.77
Have few interests	0	3	5	10	32	43	63	43	0.59
Only interested in grades not what I am learning	0	0	16	23	21	30	63	47	0.58
Often do extra reading or research about things learned in school	5	20	37	43	32	27	26	10	0.24

Table 8: frequencies by gender for Grade 7 students – event and educational capital items

Variable	Always		Usually		Sometimes		Never		Probability
	%		%		%		%		
	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	
Read report card comments	84	53	16	33	0	10	0	3	0.15
Speak English at home	26	20	47	37	26	43	0	0	0.56
Receive rewards for a good report	16	13	37	27	47	40	0	20	0.20

Variable	Frequently		Sometimes		Rarely		Probability
	%		%		%		
	Girls	Boys	Girls	Boys	Girls	Boys	
How often think about report	6	30	67	40	27	30	0.10

Variable	>100		50-100		20-49		<20		Probability
	%		%		%		%		
	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	
Number of books owned	42	47	26	30	26	17	5	7	0.91

Table 9: frequencies by gender for Grade 7 students – grades and memory

	A %		B %		C+ %		C %		C-, I, or * %		
Variable	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Probability
Actual LA grade	22	13	44	23	17	13	17	23	0	23	0.14
Actual Math grade	21	39	28	17	17	28	14	11	21	6	0.41

	Exactly %		Off by one grade %		Off by two grades %		Off by three or more grades %		Couldn't remember %		
Variable	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Probability
How well LA grade remembered	56	48	17	24	0	3	0	0	28	24	0.91
How well Math grade remembered	83	38	0	35	6	7	0	3	11	17	<0.01

	All/ almost all (7-8) %		Some (3-6) %		Few or none (0-2) %		
Variable	Girls	Boys	Girls	Boys	Girls	Boys	Probability
How many grades remembered from last report	53	43	47	47	0	10	0.43

Comparison between Boys and Girls

Grade 4 girls were more likely than Grade 4 boys to read their report (Table 5). Grade 7 girls worried more about their report cards (Table 7), and were significantly more likely to remember their Math grades than Grade 7 boys (Table 9). It is notable that there is no significant gender-based difference in Math grades, and if anything, Grade 7 boys had higher math grades. The small sizes of the gender/grade groups meant that differences had to be dramatic to give a significant result using the Fisher Exact test. For example, 86% of the Grade 7 girls strongly agreed to the statement “I worry about getting a bad report”, but only 43% of the boys did (Table 7). However, there is still a 3% chance that this result is independent of gender. This means that the chance of a Type 2 error (false negative) in these results is quite high. In view of this it is worth mentioning some other results that came close to the $p=.05$ cutoff for significance using the Fisher Exact Test. Among Grade 7 boys 37% strongly agreed with the statement “try to find out as much as I can about a new topic” whereas 11% of girls did (Table 7). There was a general tendency for more boys to agree more strongly with the curiosity statements. There was also a larger group of girls who strongly disagreed with these statements. Finally, Grade 4 girls remembered their Language Arts grades somewhat better (Table 6), and claimed that they owned more books (Table 5).

The results by gender gave some evidence that girls worry more about reports and that they are better at remembering grades. There is also evidence that there is a larger group of boys with high curiosity, particularly among the Grade 7s.

Table 10: Frequencies by achievement level in Language Arts – opinion items

Variable	Agree strongly %		Agree slightly %		Disagree slightly %		Disagree strongly %		Probability
	High	Low	High	Low	High	Low	High	Low	
Reports are important to parents	79	78	18	22	3	0	0	0	0.56
Worry about a bad report	64	57	24	37	6	4	6	2	0.55
Report tells how to improve	61	61	36	37	3	2	0	0	1.00
LA grade motivates	55	59	25	30	16	9	3	2	0.82
Math grade motivates	61	53	21	36	9	9	9	2	0.36
Thinking about grades motivates	75	59	22	33	3	4	0	4	0.49
Marks for effort are more important than grades	9	13	36	50	52	22	3	15	0.04
Know how to get good marks	85	61	15	37	0	0	0	2	0.04
The more I learn about a topic the more I want to learn	63	53	38	36	0	7	0	4	0.40
Try to find out as much as I can about a new topic	28	41	63	41	9	17	0	4	0.27
Learning a lot is more important than getting an A	52	41	30	35	18	20	0	4	0.68
Read, think, or talk to others about topics of interest	31	20	47	52	22	20	0	9	0.29
Have few interests	3	20	9	30	33	26	55	24	<0.01
Only interested in grades not what I am learning	0	17	18	26	33	30	48	26	0.02
often do extra reading or research about things learned in school	21	17	30	52	33	22	15	9	0.26

Table 11: Frequencies by achievement in Language Arts – event and educational capital items

	Always		Usually		Sometimes		Never		
	%		%		%		%		
Variable	High	Low	High	Low	High	Low	High	Low	Probability
Read report card comments	91	43	9	30	0	15	0	11	<0.01
Speak English at home	6	27	73	33	21	38	0	2	<0.01
Receive rewards for a good report	12	17	36	13	45	41	6	28	0.02

	Frequently		Sometimes		Rarely		
	%		%		%		
Variable	High	Low	High	Low	High	Low	Probability
How often think about report	25	33	47	54	28	17	0.67

	>100		50-100		20-49		<20		
	%		%		%		%		
Variable	High	Low	High	Low	High	Low	High	Low	Probability
Number of books owned	30	37	36	37	24	17	9	9	0.89

Table 12: Frequencies by achievement level in Language Arts – grades and memory

Variable	All/ almost all (7-8)		Some (3-6)		Few or none (0-2)		Probability
	%		%		%		
	High	Low	High	Low	High	Low	
How many grades remembered from last report	70	20	24	61	6	20	<0.01

Variable	Exactly		Off by one grade		Off by two grades		Off by three or more grades		Couldn't remember		Probability
	%		%		%		%		%		
	High	Low	High	Low	High	Low	High	Low	High	Low	
How well LA grade remembered	58	22	18	15	0	13	0	2	24	48	<0.01
How well Math grade remembered	79	35	12	17	3	9	0	7	6	33	<0.01

Comparison between High and Low Achievers in Language Arts

Differences between students who got a B or A (high-achievers) in Language Arts on their last report card, and those who got C or less (low-achievers) were dramatic. High-achievers were much better at remembering their grades, and also said that they could remember more of their grades (Table 12). High-achievers were much more likely to have read their report card comments, to always or usually speak English at home, and more likely to receive rewards for a good report (Table 11). A larger percentage of low-achievers said that they always spoke English at home, however. Low-achievers were also much more likely to agree with the statement “I have few interests”, and more likely to agree with the statement “I only care about my grades not what I am learning.” They also were more likely to agree that marks for effort were more important than letter grades (Table 10). There were no significant differences between the two groups for the positive curiosity or the motivation items (Table 10).

The responses of high and low-achievers in Language Arts extend the findings of Bahrack et al. (1996) to younger students. Those with higher grades remembered them much more accurately. The results also profile the lower-achievers as being more focused on grades. Even though low-achievers are not significantly less likely to be curious, they are much more likely than high-achievers to say that have few interests.

Table 13: Significant frequencies by home language

Variable	Agree strongly %		Agree slightly %		Disagree slightly %		Disagree strongly %		Probability
	Punjabi	English	Punjabi	English	Punjabi	English	Punjabi	English	
Thinking about grades motivates	72	14	20	72	6	14	2	0	0.01

Variable	Agree strongly %		Agree slightly %		Disagree slightly %		Disagree strongly %		Probability
	Punjabi	Tagalong	Punjabi	Tagalong	Punjabi	Tagalong	Punjabi	Tagalong	
Want to learn more	66	18	28	73	2	9	4	0	0.03

Variable	Exactly %		Off by one grade %		Off by two grades %		Off by three or more grades %		Can't remember %		Probability
	Punjabi	Other South Asian	Punjabi	Other South Asian	Punjabi	Other South Asian	Punjabi	Other South Asian	Punjabi	Other South Asian	
How well LA grade remembered	34	64	18	0	4	14	0	0	44	21	0.03

Comparison by Home Language

Due to the very small sizes of most language groups few of the comparisons were statistically significant. This does not mean that differences do not exist. The differences that were significant all involved the group that spoke Punjabi at home, which was by far the dominant language group in the sample. Students who spoke Punjabi at home were more likely to agree strongly that thinking about grades motivated than students who only spoke English (Table 13). Punjabi speakers were also more likely to agree strongly with the statement “The more I learn about something the more I want to learn.” than Tagalong speakers (Table 13). Finally, speakers of other South Asian languages were more likely to remember their Language Arts grades accurately than Punjabi speakers.

Correlation Data and Analysis

This data was used to explore the following research questions:

1. What is the relationship between importance placed on report cards and depth curiosity and motivation in different groups of students?
2. What is the relationship between achievement and depth curiosity and motivation in different groups of students?

Correlations by group were done and an analysis follows each category.

Table 14: Spearman correlations for grade 4 girls

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1		.504*	-.070	-.133	-.376	-.064	-.164	-.163	-.347	-.189	-.332	-.654**	-.414	-.385	-.402	-.748**	.175	-.063	-.014	.615**	.434*	.030	.055	-.436*	-.538*	.274	.207
2	.504*		-.193	.000	-.190	.120	-.218	.086	.124	-.085	.190	-.188	-.149	-.516*	-.344	-.331	.084	.190	-.253	.240	.214	.046	.086	-.147	-.184	.074	.013
3	-.070	-.193		.510*	.519*	-.026	-.226	-.139	-.228	.379	.132	.015	-.222	-.113	.381	-.070	.256	.049	.232	.209	.289	.088	.153	-.003	-.223	-.026	.098
4	-.133	.000	.510*		.618**	.230	.067	.227	.014	.472*	.382	.491*	.083	-.193	.374	.084	.223	-.257	.214	-.104	.083	.177	.022	.210	.084	-.178	.184
5	-.376	-.190	.519*	.618**		.304	.490*	.275	.022	.391	.369	.579**	.241	-.064	.427	.255	-.054	.104	.364	-.193	-.125	.161	.106	.339	.127	-.034	.018
6	-.064	.120	-.026	.230	.304		.603**	.566**	.358	.303	.388	.249	.095	.159	-.241	.299	.073	-.210	.266	-.458*	-.549**	-.109	-.418	.603**	.317	-.445*	-.234
7	-.164	-.218	-.226	.067	.490*	.603**		.421	.249	.173	.000	.401	.263	.176	-.010	.339	-.085	-.108	.393	-.342	-.487*	.140	-.024	.389	.347	-.052	-.024
8	-.163	.086	-.139	.227	.275	.566**	.421		.105	.127	.454*	.171	.054	.313	-.198	.004	.103	.008	.118	-.263	-.114	-.138	-.040	.681**	.430	-.088	-.175
9	-.347	.124	-.228	.014	.022	.358	.249	.105		.053	.298	.378	.142	.010	.023	.397	-.103	-.059	-.079	-.258	-.381	-.020	-.243	.348	.357	-.386	-.200
10	-.189	-.085	.379	.472*	.391	.303	.173	.127	.053		.276	.167	.037	.275	.330	.199	.320	-.164	.340	-.476*	-.261	.088	-.194	.366	.443*	-.252	-.044
11	-.332	.190	.132	.382	.369	.388	.000	.454*	.298	.276		.491*	.083	.329	-.025	.231	-.123	-.086	.064	-.259	-.134	-.244	-.165	.409	.084	-.178	-.380
12	-.654**	-.188	.015	.491*	.579**	.249	.401	.171	.378	.167	.491*		.484*	.141	.413	.710**	-.193	-.102	.183	-.441	-.381	.064	.000	.276	.297	-.198	-.156
13	-.414	-.149	-.222	.083	.241	.095	.263	.054	.142	.037	.083	.484*		-.010	.454*	.572**	.086	.137	.374	-.302	-.481*	.363	-.018	.157	.399	-.035	.164
14	-.385	-.516*	-.113	-.193	-.064	.159	.176	.313	.010	.275	.329	.141	-.010		.121	.339	-.073	-.121	.041	-.412	-.302	-.147	-.188	.389	.274	-.058	-.277
15	-.402	-.344	.381	.374	.427	-.241	-.010	-.198	.023	.330	-.025	.413	.454*	.121		.339	.142	.429	.054	-.043	.044	.611**	.300	.092	.187	.199	.495*
16	-.748**	-.331	-.070	.084	.255	.299	.339	.004	.397	.199	.231	.710**	.572**	.339	.339		.024	-.171	.058	-.611**	-.764**	.188	-.168	.244	.336	-.371	-.198
17	.175	.084	.256	.223	-.054	.073	-.085	.103	-.103	.320	-.123	-.193	.086	-.073	.142	.024		-.167	-.017	.204	.067	.295	.076	.067	.166	-.050	.149
18	-.063	.190	.049	-.257	.104	-.210	-.108	.008	-.059	-.164	-.086	-.102	.137	-.121	.429	-.171	-.167		-.207	.228	.352	.367	.541*	.039	.013	.451*	.372
19	-.014	-.253	.232	.214	.364	.266	.393	.118	-.079	.340	.064	.183	.374	.041	.054	.058	-.017	-.207		-.089	-.203	.029	-.037	.039	.113	-.028	.082
20	.615**	.240	.209	-.104	-.193	-.458*	-.342	-.263	-.258	-.476*	-.259	-.441	-.302	-.412	-.043	-.611**	.204	.228	-.089		.773**	.304	.564**	-.482*	-.702**	.659**	.462*
21	.434*	.214	.289	.083	-.125	-.549**	-.487*	-.114	-.381	-.261	-.134	-.381	-.481*	-.302	.044	-.764**	.067	.352	-.203	.773**		.108	.609**	-.268	-.405	.605**	.433*
22	.030	.046	.088	.177	.161	-.109	.140	-.138	-.020	.088	-.244	.064	.363	-.147	.611**	.188	.295	.367	.029	.304	.108		.594**	-.091	-.125	.564**	.847**
23	.055	.086	.153	.022	.106	-.418	-.024	-.040	-.243	-.194	-.165	.000	-.018	-.188	.300	-.168	.076	.541*	-.037	.564**	.609**	.594**		-.265	-.258	.772**	.634**
24	-.436*	-.147	-.003	.210	.339	.603**	.389	.681**	.348	.366	.409	.276	.157	.389	.092	.244	.067	.039	.039	-.482*	-.268	-.091	-.265		.641**	-.243	-.174
25	-.538*	-.184	-.223	.084	.127	.317	.347	.430	.357	.443*	.084	.297	.399	.274	.187	.336	.166	.013	.113	-.702**	-.405	-.125	-.258	.641**		-.444*	-.193
26	.274	.074	-.026	-.178	-.034	-.445*	-.052	-.088	-.386	-.252	-.178	-.198	-.035	-.058	.199	-.371	-.050	.451*	-.028	.659**	.605**	.564**	.772**	-.243	-.444*		.663**
27	.207	.013	.098	.184	.018	-.234	-.024	-.175	-.200	-.044	-.380	-.156	.164	-.277	.495*	-.198	.149	.372	.082	.462*	.433*	.847**	.634**	-.174	-.193		.663**

1= Speak english at home
 2=number of books owned
 3=read report card comments
 4=importance to parents
 5=worry about a bad report
 6=report tells how to improve
 7=LA grade motivates
 8=Math grade motivates

9=thinking about grades motivates
 10=effort>letter grades
 11=know how to get good marks
 12=want to learn more
 13=find out about a new topic
 14=learning>A
 15=read, think talk about interests
 16=read and research new topics

17=receive rewards for a good rept.
 18=how many grades remembered
 19=how often think about report
 20=actual Math grade
 21=actual LA grade
 22=how well LA grade remembered
 23=how well Math grade remembered
 24=have few interests

25=grades>learning
 26=remembered Math grade
 27=remembered LA grade

Table 15: Spearman Correlations for grade 4 boys

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1		.323	.331	.138	.220	.030	-.135	.225	.171	.206	-.159	-.116	.212	.129	.140	-.311	.269	.233	.261	-.067	.062	.424*	.346	-.061	.071	.315	.376
2	.323		.108	.109	.258	.019	-.375	-.398*	-.011	.060	-.092	.231	.114	.011	-.025	.078	-.074	.290	.381	.249	.093	.577**	.354	-.106	-.021	.521**	.569**
3	.331	.108		.048	.230	.201	.151	.386	.335	-.014	.295	.234	.273	.087	.463*	.178	.187	.452*	.368	.357	.586**	.185	.481*	-.218	-.377	.556**	.266
4	.138	.109	.048		.128	-.044	.413*	.560**	-.270	.163	.081	.088	.191	.206	-.213	.084	.039	.464*	-.006	-.133	-.069	.058	.407*	-.130	-.040	.343	-.121
5	.220	.258	.230	.128		-.288	-.129	.183	-.229	.148	.077	.281	.385	-.265	-.267	.062	-.114	.053	.476*	.168	.077	.477*	.439*	-.178	-.029	.360	.230
6	.030	.019	.201	-.044	-.288		.043	-.044	.418*	.326	.030	.096	.026	.052	.156	-.032	.529**	-.074	-.081	.119	.433*	.097	-.066	.279	.263	-.025	.172
7	-.135	-.375	.151	.413*	-.129	.043		.510*	.347	.071	.033	.121	.284	.398*	.060	.244	.207	.293	-.244	-.003	.040	.426*	.136	-.020	-.070	-.067	-.255
8	.225	-.398*	.386	.560**	.183	-.044	.510*		-.031	.089	.135	.021	.390	.015	.216	.013	.205	.326	.083	-.140	.103	-.039	.315	-.089	-.160	.210	-.228
9	.171	-.011	.335	-.270	-.229	.418*	.347	-.031		.158	.000	.162	.171	.287	.531**	.328	.545**	.054	-.005	.038	.088	.086	.143	-.047	-.045	-.005	.431*
10	.206	.060	-.014	.163	.148	.326	.071	.089	.158		-.167	-.124	.313	.083	.203	-.137	.362	-.258	.088	-.205	-.035	.035	.185	.343	.411*	-.002	.112
11	-.159	-.092	.295	.081	.077	.030	.033	.135	.000	-.167		.420*	.248	-.119	.273	.343	-.092	.190	.136	.046	.254	-.035	.048	.035	-.090	.282	-.035
12	-.116	.231	.234	.088	.281	.096	.121	.021	.162	-.124	.420*		.415*	-.013	.068	.407*	.186	.172	-.097	.315	.371	.143	.472*	-.369	-.158	.610**	.085
13	.212	.114	.273	.191	.385	.026	.284	.390	.171	.313	.248	.415*		.006	.191	.268	.148	.268	.098	.288	.228	.099	.608**	-.106	.035	.520**	.109
14	.129	.011	.087	.206	-.265	.052	.398*	.015	.287	.083	-.119	-.013	.006		-.022	.247	.035	-.056	-.376	.187	.203	-.239	.076	-.247	-.278	-.106	-.219
15	.140	-.025	.463*	-.213	-.267	.156	.060	.216	.531**	.203	.273	.068	.191	-.022		.246	.446*	.159	.194	-.163	.055	-.016	.170	.018	-.085	.227	.286
16	-.311	.078	.178	.084	.062	-.032	.244	.013	.328	-.137	.343	.407*	.268	.247	.246		-.066	-.001	-.105	-.047	-.019	.087	.131	-.222	-.357	.142	.002
17	.269	-.074	.187	.039	-.114	.529**	.207	.205	.545**	.362	-.092	.186	.148	.035	.446*	-.066		-.032	-.019	-.130	.123	.106	.242	-.147	.224	.096	.384
18	.233	.290	.452*	.464*	.053	-.074	.293	.326	.054	-.258	.190	.172	.268	-.056	.159	-.001	-.032		.416*	.306	.256	.270	.504**	-.273	-.342	.594**	.295
19	.261	.381	.368	-.006	.476*	-.081	-.244	.083	-.005	.088	.136	-.097	.098	-.376	.194	-.105	-.019	.416*		-.006	.048	.537**	.214	-.009	-.003	.273	.593**
20	-.067	.249	.357	-.133	.168	.119	-.003	-.140	.038	-.205	.046	.315	.288	.187	-.163	-.047	-.130	.306	-.006		.670**	.036	.376	-.320	-.179	.483*	.008
21	.062	.093	.586**	-.069	.077	.433*	.040	.103	.088	-.035	.254	.371	.228	.203	.055	-.019	.123	.256	.048	.670**		.131	.146	-.307	-.286	.424*	.097
22	.424*	.577**	.185	.058	.477*	.097	.426*	-.039	.086	.035	-.035	.143	.099	-.239	-.016	.087	.106	.270	.537**	.036	.131		.255	-.198	-.172	.343	.640**
23	.346	.354	.481*	.407*	.439*	-.066	.136	.315	.143	.185	.048	.472*	.608**	.076	.170	.131	.242	.504**	.214	.376	.146	.255		-.407*	-.265	.755**	.184
24	-.061	-.106	-.218	-.130	-.178	.279	-.020	-.089	-.047	.343	.035	-.369	-.106	-.247	.018	-.222	-.147	-.273	-.009	-.320	-.307	-.198	-.407*		.603**	-.424*	-.198
25	.071	-.021	-.377	-.040	-.029	.263	-.070	-.160	-.045	.411*	-.090	-.158	.035	-.278	-.085	-.357	.224	-.342	-.003	-.179	-.286	-.172	-.265	.603**		-.161	.105
26	.315	.521**	.556**	.343	.360	-.025	-.067	.210	-.005	-.002	.282	.610**	.520**	-.106	.227	.142	.096	.594**	.273	.483*	.424*	.343	.755**	-.424*	-.161		.341
27	.376	.569**	.266	-.121	.230	.172	-.255	-.228	.431*	.112	-.035	.085	.109	-.219	.286	.002	.384	.295	.593**	.008	.097	.640**	.184	-.198	.105		.341

1= Speak english at home
 2=number of books owned
 3=read report card comments
 4=importance to parents
 5=worry about a bad report
 6=report tells how to improve
 7=LA grade motivates
 8=Math grade motivates

9=thinking about grades motivates
 10=effort>letter grades
 11=know how to get good marks
 12=want to learn more
 13=find out about a new topic
 14=learning>A
 15=read, think talk about interests
 16=read and research new topics

17=receive rewards for a good rept.
 18=how many grades remembered
 19=how often think about report
 20=actual Math grade
 21=actual LA grade
 22=how well LA grade remembered
 23=how well Math grade remembered
 24=have few interests

25=grades>learning
 26=remembered Math grade
 27=remembered LA grade

Table 16: Spearman correlations for Grade 7 girls

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1		.112	.000	-.178	.199	-.145	-.247	-.017	-.179	.212	-.663**	-.428	-.171	-.079	-.093	-.188	.231	.000	-.436	-.495*	-.589*	-.229	-.163	.055	.000	-.353	-.405
2	.112		-.181	.262	.279	-.020	-.219	-.022	.096	-.134	-.050	.003	.146	-.307	.564*	-.015	.059	-.051	.016	-.139	-.220	-.525*	-.333	-.003	-.032	-.059	-.416
3	.000	-.181		.130	.208	.167	-.322	-.256	.120	.073	.051	.396	-.051	-.014	.057	-.055	-.172	-.122	-.208	.150	-.015	-.048	-.199	-.342	.077	.182	-.041
4	-.178	.262	.130		.130	.286	.151	.015	.679**	-.364	.245	.355	.213	.051	.076	.124	-.026	-.490*	-.249	-.013	-.054	-.158	-.238	.042	.069	.038	-.098
5	.199	.279	.208	.130		-.122	-.322	-.256	-.239	.305	-.257	-.029	-.051	-.243	.242	-.236	-.172	.167	-.208	.150	-.015	-.048	.221	.047	.077	.225	-.041
6	-.145	-.020	.167	.286	-.122		.168	-.012	.267	.276	.175	.064	.099	.251	-.010	-.223	.336	.156	.247	.000	.023	.107	.132	.023	.011	-.082	-.080
7	-.247	-.219	-.322	.151	-.322	.168		.409	.355	-.151	.101	-.044	.365	-.226	.047	.335	.455	.168	.357	-.186	.035	.244	.236	.214	-.380	-.323	.226
8	-.017	-.022	-.256	.015	-.256	-.012	.409		.000	-.365	.265	-.108	.234	-.154	.144	.138	.146	-.274	-.154	-.188	-.123	-.072	.083	.240	-.668**	-.328	-.134
9	-.179	.096	.120	.679**	-.239	.267	.355	.000		-.401	.230	.347	.441	.113	-.277	.095	.000	-.267	-.270	.000	.104	-.187	-.256	-.249	-.133	.055	.027
10	.212	-.134	.073	-.364	.305	.276	-.151	-.365	-.401		-.447	-.058	-.237	.000	-.246	-.451	.050	.615**	.152	.110	.086	.247	.285	.272	.458*	.150	.133
11	-.663**	-.050	.051	.245	-.257	.175	.101	.265	.230	-.447		.576**	.473*	.011	-.031	.161	-.349	-.050	.065	.422	.576*	.106	.083	.145	-.185	.232	.204
12	-.428	.003	.396	.355	-.029	.064	-.044	-.108	.347	-.058	.576**		.540*	-.119	-.043	.367	-.249	-.064	-.179	.100	.256	-.169	-.297	.149	.154	.011	-.025
13	-.171	.146	-.051	.213	-.051	.099	.365	.234	.441	-.237	.473*	.540*		-.404	.048	.366	.256	.099	-.232	-.004	.244	-.174	-.068	.101	-.175	-.169	.005
14	-.079	-.307	-.014	.051	-.243	.251	-.226	-.154	.113	.000	.011	-.119	-.404		-.358	-.442	-.118	-.251	-.120	.038	-.174	-.252	-.056	.001	-.021	.083	-.312
15	-.093	.564*	.057	.076	.242	-.010	.047	.144	-.277	-.246	-.031	-.043	.048	-.358		.353	.441	-.166	.332	-.332	-.453	-.356	-.234	-.050	-.219	-.365	-.380
16	-.188	-.015	-.055	.124	-.236	-.223	.335	.138	.095	-.451	.161	.367	.366	-.442	.353		.255	-.243	.219	-.451	-.159	-.001	-.240	-.051	-.106	-.586**	-.070
17	.231	.059	-.172	-.026	-.172	.336	.455	.146	.000	.050	-.349	-.249	.256	-.118	.441	.255		.000	.189	-.612**	-.535*	-.140	-.222	-.059	-.122	-.649**	-.259
18	.000	-.051	-.122	-.490*	.167	.156	.168	-.274	-.267	.615**	-.050	-.064	.099	-.251	-.166	-.243	.000		.469*	.326	.456	.456	.498*	.102	.090	.143	.309
19	-.436	.016	-.208	-.249	-.208	.247	.357	-.154	-.270	.152	.065	-.179	-.232	-.120	.332	.219	.189	.469*		.107	.202	.428	.356	.108	.115	-.052	.205
20	-.495*	-.139	.150	-.013	.150	.000	-.186	-.188	.000	.110	.422	.100	-.004	.038	-.332	-.451	-.612**	.326	.107		.834**	.392	.582*	.003	.309	.910**	.530*
21	-.589*	-.220	-.015	-.054	-.015	.023	.035	-.123	.104	.086	.576*	.256	.244	-.174	-.453	-.159	-.535*	.456	.202	.834**		.621**	.504*	.031	.284	.727**	.766**
22	-.229	-.525*	-.048	-.158	-.048	.107	.244	-.072	-.187	.247	.106	-.169	-.174	-.252	-.356	-.001	-.140	.456	.428	.392	.621**		.509*	-.050	.269	.311	.861**
23	-.163	-.333	-.199	-.238	.221	.132	.236	.083	-.256	.285	.083	-.297	-.068	-.056	-.234	-.240	-.222	.498*	.356	.582*	.504*	.509*		.350	.024	.376	.355
24	.055	-.003	-.342	.042	.047	.023	.214	.240	-.249	.272	.145	.149	.101	.001	-.050	-.051	-.059	.102	.108	.003	.031	-.050	.350		.133	-.094	-.159
25	.000	-.032	.077	.069	.077	.011	-.380	-.668**	-.133	.458*	-.185	.154	-.175	-.021	-.219	-.106	-.122	.090	.115	.309	.284	.269	.024	.133		.408	.294
26	-.353	-.059	.182	.038	.225	-.082	-.323	-.328	.055	.150	.232	.011	-.169	.083	-.365	-.586**	-.649**	.143	-.052	.910**	.727**	.311	.376	-.094	.408		.584**
27	-.405	-.416	-.041	-.098	-.041	-.080	.226	-.134	.027	.133	.204	-.025	.005	-.312	-.380	-.070	-.259	.309	.205	.530*	.766**	.861**	.355	-.159	.294	.584**	

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 22=how well LA grade remembered
 23=how well Math grade remembered
 24=have few interests

25=grades>learning
 26=remembered Math grade
 27=remembered LA grade

Table 17: Spearman correlations for Grade 7 boys

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1		.184	.016	-.266	-.052	.222	-.062	-.356	-.226	.156	.233	.076	.052	-.186	-.136	-.010	.068	-.020	-.201	-.080	-.010	-.175	-.041	-.339	-.147	.026	.093
2	.184		.306	-.185	-.070	-.024	.067	.377*	.083	.475**	.218	.133	.151	.350	.276	.276	.043	.088	.024	.402*	.384*	.310	.222	.117	-.183	.184	.407*
3	.016	.306		.348	.519**	.147	.311	.232	.376*	.009	.028	.589**	.461*	.467**	.353	.426*	.246	.183	.168	.536**	.457*	.477**	.342	-.364*	-.409*	.461*	.586**
4	-.266	-.185	.348		.338	.121	.203	.211	.394*	-.236	.065	.382*	.150	.221	.164	.190	.067	.093	.479**	-.015	-.140	.157	.103	.169	-.231	.137	-.022
5	-.052	-.070	.519**	.338		-.023	.017	.155	.176	-.134	-.034	.293	-.050	.221	-.089	.134	.014	-.019	-.156	.055	.042	.088	-.098	-.329	-.308	.298	.219
6	.222	-.024	.147	.121	-.023		.539**	.256	.364*	.024	.443*	.331	.559**	.359	.371*	.100	.144	.249	.126	.160	.211	.102	.040	.008	-.012	-.091	.028
7	-.062	.067	.311	.203	.017	.539**		.427*	.503**	.221	.452*	.454*	.756**	.438*	.548**	.558**	.053	.299	.406*	.055	.110	.346	.204	.131	-.009	.020	.269
8	-.356	.377*	.232	.211	.155	.256	.427*		.506**	.279	.156	.321	.265	.441*	.417*	.336	-.078	.036	.227	.099	.128	.208	.070	.217	.068	-.197	.093
9	-.226	.083	.376*	.394*	.176	.364*	.503**	.506**		.179	.474**	.488**	.633**	.459*	.408*	.293	.255	.424*	.418*	.316	.237	.379*	.236	.050	-.025	.080	.154
10	.156	.475**	.009	-.236	-.134	.024	.221	.279	.179		.317	.170	.195	.123	.223	.357	.134	.141	.048	.145	.365	.156	.109	.112	.090	-.018	.266
11	.233	.218	.028	.065	-.034	.443*	.452*	.156	.474**	.317		.321	.462*	.204	.457*	.272	.197	.397*	.289	.248	.279	.204	-.072	.048	-.016	.241	.264
12	.076	.133	.589**	.382*	.293	.331	.454*	.321	.488**	.170	.321		.495**	.268	.323	.479**	.327	.497**	.381*	.349	.250	.523**	.347	-.256	-.249	.393*	.511**
13	.052	.151	.461*	.150	-.050	.559**	.756**	.265	.633**	.195	.462*	.495**		.433*	.407*	.366*	.144	.343	.381*	.330	.268	.374*	.324	.022	.012	.064	.229
14	-.186	.350	.467**	.221	.221	.359	.438*	.441*	.459*	.123	.204	.268	.433*		.370*	.367*	.265	.113	.206	.328	.303	.499**	.290	.021	-.310	.182	.347
15	-.136	.276	.353	.164	-.089	.371*	.548**	.417*	.408*	.223	.457*	.323	.407*	.370*		.665**	.296	.154	.415*	.396*	.495**	.371*	-.151	.001	-.070	.146	.446*
16	-.010	.276	.426*	.190	.134	.100	.558**	.336	.293	.357	.272	.479**	.366*	.367*	.665**		.291	.242	.405*	.363	.449*	.447*	.116	-.236	-.344	.314	.621**
17	.068	.043	.246	.067	.014	.144	.053	-.078	.255	.134	.197	.327	.144	.265	.296	.291		.342	.146	.401*	.553**	.318	.067	-.254	-.337	.198	.481**
18	-.020	.088	.183	.093	-.019	.249	.299	.036	.424*	.141	.397*	.497**	.343	.113	.154	.242	.342		.168	.521**	.478**	.389*	.445*	-.122	-.286	.459*	.481**
19	-.201	.024	.168	.479**	-.156	.126	.406*	.227	.418*	.048	.289	.381*	.381*	.206	.415*	.405*	.146	.168		.154	.087	.378*	.015	.228	-.043	.094	.081
20	-.080	.402*	.536**	-.015	.055	.160	.055	.099	.316	.145	.248	.349	.330	.328	.396*	.363	.401*	.521**	.154		.794**	.369*	.252	-.290	-.171	.560**	.561**
21	-.010	.384*	.457*	-.140	.042	.211	.110	.128	.237	.365	.279	.250	.268	.303	.495**	.449*	.553**	.478**	.087	.794**		.396*	.234	-.208	-.179	.465*	.696**
22	-.175	.310	.477**	.157	.088	.102	.346	.208	.379*	.156	.204	.523**	.374*	.499**	.371*	.447*	.318	.389*	.378*	.369*	.396*		.587**	.094	-.239	.569**	.734**
23	-.041	.222	.342	.103	-.098	.040	.204	.070	.236	.109	-.072	.347	.324	.290	-.151	.116	.067	.445*	.015	.252	.234	.587**		.080	-.177	.477**	.445*
24	-.339	.117	-.364*	.169	-.329	.008	.131	.217	.050	.112	.048	-.256	.022	.021	.001	-.236	-.254	-.122	.228	-.290	-.208	.094	.080		.543**	-.348	-.354
25	-.147	-.183	-.409*	-.231	-.308	-.012	-.009	.068	-.025	.090	-.016	-.249	.012	-.310	-.070	-.344	-.337	-.286	-.043	-.171	-.179	-.239	-.177	.543**		-.422*	-.452*
26	.026	.184	.461*	.137	.298	-.091	.020	-.197	.080	-.018	.241	.393*	.064	.182	.146	.314	.198	.459*	.094	.560**	.465*	.569**	.477**	-.348	-.422*		.745**
27	.093	.407*	.586**	-.022	.219	.028	.269	.093	.154	.266	.264	.511**	.229	.347	.446*	.621**	.481**	.481**	.081	.561**	.696**	.734**	.445*	-.354	-.452*	.745**	

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 27=remembered LA grade

Student success and curiosity.

The relationship between student success and curiosity was extremely interesting. All significant correlations for boys were positive, and all significant correlations for girls were negative. The strongest negative correlation in the study was that between Math grade and doing extra reading or research on a new topic for Grade 4 girls. (-.764). The boys had a more positive correlation than the girls for 14 out of 16 items, and many of the differences were huge (e.g. read, think, talk about topics and Math grade [+0.495 for Grade 7 boys, -0.453 for Grade 7 girls]). The strongly opposed tendencies of the boys and girls tended to cancel each other out. The curiosity questions had different foci. Some involved attitude (The more I learn the more I want to learn) and others were more action oriented. The interesting thing about the reading and research question, which drew such a negative response from high-achieving girls, was that it asked about a pursuit that might interfere with getting higher marks, an activity which was not directly connected with gaining credit. There are two likely explanations. The first is that high-achieving girls are generally more anxious and therefore less curious, than high-achieving boys (Spielburger and Starr, 1994). The second is that academically successful boys and girls in this community often have different ways of approaching learning. It is also possible, of course, that girls manifest curiosity in a somewhat different way than boys do, and that this was not picked up by these questions. These explanations will be examined fully in the Conclusions.

Student success and motivation.

There was little significant correlation between academic success, as defined by Language Arts and Math grades on the previous report card and motivation (as defined by student interest in making an effort based on their last report card) in any of the groups. The only exception was Grade 4 girls, who had a negative correlation between grades and motivation. Looking at

specific student responses in detail was revealing. One Grade 7 student, who had grades of C and C+ (far from the lowest), disagreed strongly with all curiosity and motivation statements. He also gave very negative answers to the open-ended questions. Another Grade 7 student reported that report cards made her feel “good –A’s” and “disappointed –B’s” Another student reported that good things about reports were “getting A’s and B’s”. These statements reinforce the idea that the relationships of grades to feelings and motivation are highly contextual and probably dependent on expectations. Also, it appears that parent reactions to grades are extremely important, and that very strong negative parental reactions may influence motivation and curiosity.

Importance and motivation.

Memory of grades and motivation were weakly correlated. However, Grade 4 boys who remembered their LA grade well tended to be less motivated by it, whereas Grade 7 boys who remembered their LA grade well tended to be more motivated by grades in general. Girls’ associations for memory of grades and motivation items were weak and variable. Both boys and girls who said that their reports were important to parents were more motivated by grades. Overall, there was a positive association between reading report comments and motivation for boys, and a negative association for girls. Worrying about a bad report was positively associated with motivation for Grade 4 girls, negatively associated for Grade 7 girls, and weakly associated for boys in both grades.

Importance and curiosity

The correlation between how well grades were remembered and curiosity showed a similar gender bias as the relationship between curiosity and achievement, although the relationship was weaker. Boys who remembered their grades better tended to agree more strongly with the

curiosity statements. Several of these correlations were significant (Tables 9-12). These differences were much more pronounced for Grade 7 students than for Grade 4 students. Boys who read their report comments were more likely to respond positively to the curiosity items. Four out of eight correlations for boys were significant. There were small positive correlations for both boys and girls between the curiosity items and importance to parents. It is important to note that so many students answered, “strongly agree” to the statement “reports are important to my parents” that it lost most of its power to discriminate between groups. Worrying about a bad report had a strongly positive correlation with wanting to learn as much as possible about a topic for grade 4 girls, but other correlations were weak. If one equates worrying about a bad report with anxiety this result appears to contradict Spielburger and Starr’s (1994) contention that curiosity and anxiety are antagonistic. The issue of nervousness and anxiety is discussed more in the Assertions section.

Other Results

Rewards and achievement.

Grade 7 boys who were high achievers reported receiving more rewards, whereas Grade 7 girls who were high-achievers reported receiving fewer rewards. The difference between the two groups was the largest recorded in the study. This difference raises a number of questions about the structure of rewards in this community. Do girls only get rewards if they are struggling students, and if they are successful is it taken for granted? Do boys get rewards if they succeed, but punishments if they don’t?

Relationships between items for each construct.

The questions on curiosity were strongly correlated with each other for all of the subgroups. The main exception was the relationship between wanting to learn more and reading, thinking

and talking about interests, which was weak. This result gives a preliminary indication that the questions are useful for measuring curiosity, and could be useful for factor analysis with a larger group. There was a strong association for the two negative curiosity items (I have few interests and I only care about my grades, not what I am learning) for all groups except the Grade 7 girls. The questions on motivation had surprisingly weak correlations, given how similar the questions were. Students' experiences of subjects such as Math and Language Arts can be quite different and their motivation is likely to vary accordingly. The item "thinking about letter grades motivates me" asked for a general response to grades. The relationship between the general motivating response of grades and the specific response to LA grades was very strongly positive for Grade 7 boys, and moderately positive for the other groups. The relationship between the motivating response of grades in general and Math grades was very strong for Grade 7 boys and nonexistent for the other groups. This result suggests that the motivating effect of letter grades is highly specific by subject, and that Language Arts, not surprisingly, is a better proxy for overall attitudes than Math.

Importance and achievement.

Students who remembered their grades well tended to be those who got higher grades. A possible cause for poor memory among those students with lower grades could have been that they didn't wish to remember their grades because they were upset by their low grades. Cross checking with responses for how students felt about report cards, though, showed that many of the students with low grades who had poor memory of their grades had positive feelings about reports. Sometimes this appeared to be due to blissful ignorance, particularly among Grade 4's. Take, for example, a Grade 4 boy, who had grades of C- or lower in both LA and Math. He

couldn't remember his grades, but was strongly motivated by them. He reported that grades made him feel "happy".

Curiosity and motivation.

There was a strong relationship between curiosity and motivation responses. Correlations were much stronger for Grade 7 students than Grade 4 students.

Assertions

The following assertions were developed using the answers to the open-ended questions:

1. Grade 7 students are much more aware of the social context of reports than Grade 4 students.
2. Grade 7 boys are more likely to report severe parental responses and to evaluate themselves negatively than Grade 7 girls.
3. Feelings are largely independent of actual grades, and expectations are likely important.

Wordles that illustrate the assertion are presented first. A discussion of the assertion follows.

The concepts of real and symbolic violence are useful in looking at student responses to the open-ended questions. When students were asked about bad things about report cards many of them reported parental anger, and a few even referred to actual physical violence.

The responses to the question “How do report cards make you feel?” could be seen as an illustration of Bourdieu’s concept of symbolic violence. Many low-achieving students accept the symbols (letter grades) with which they are being judged. In fact, a large number of them seem to be happy to know their place and to participate in the ritual of grading. It is important to note that this is one perspective on this issue and that other perspectives may be equally valid.

Figure 1: Good things about reports: Grade 4 students

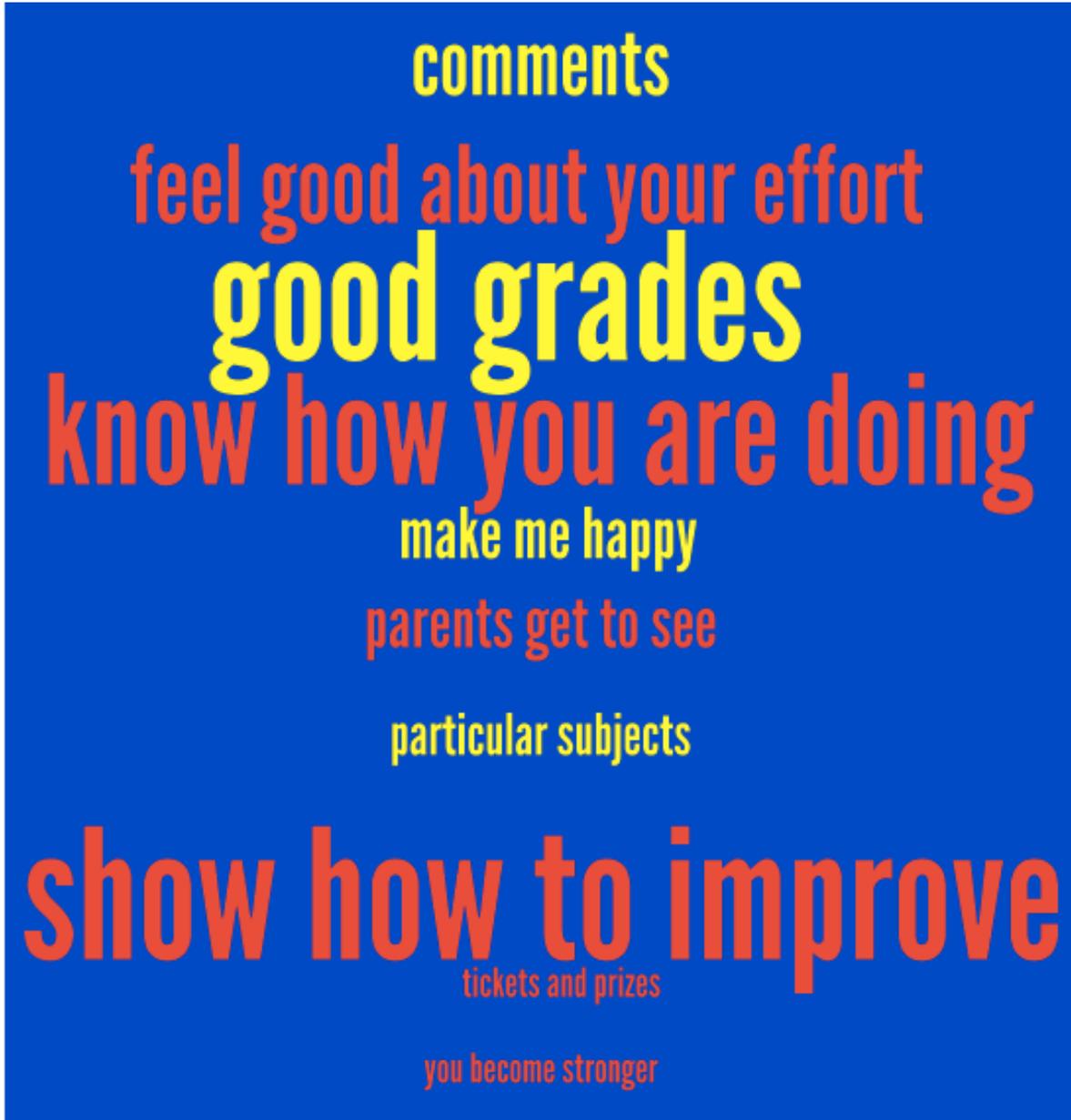


Figure 2: Good things about reports: Grade 7 students

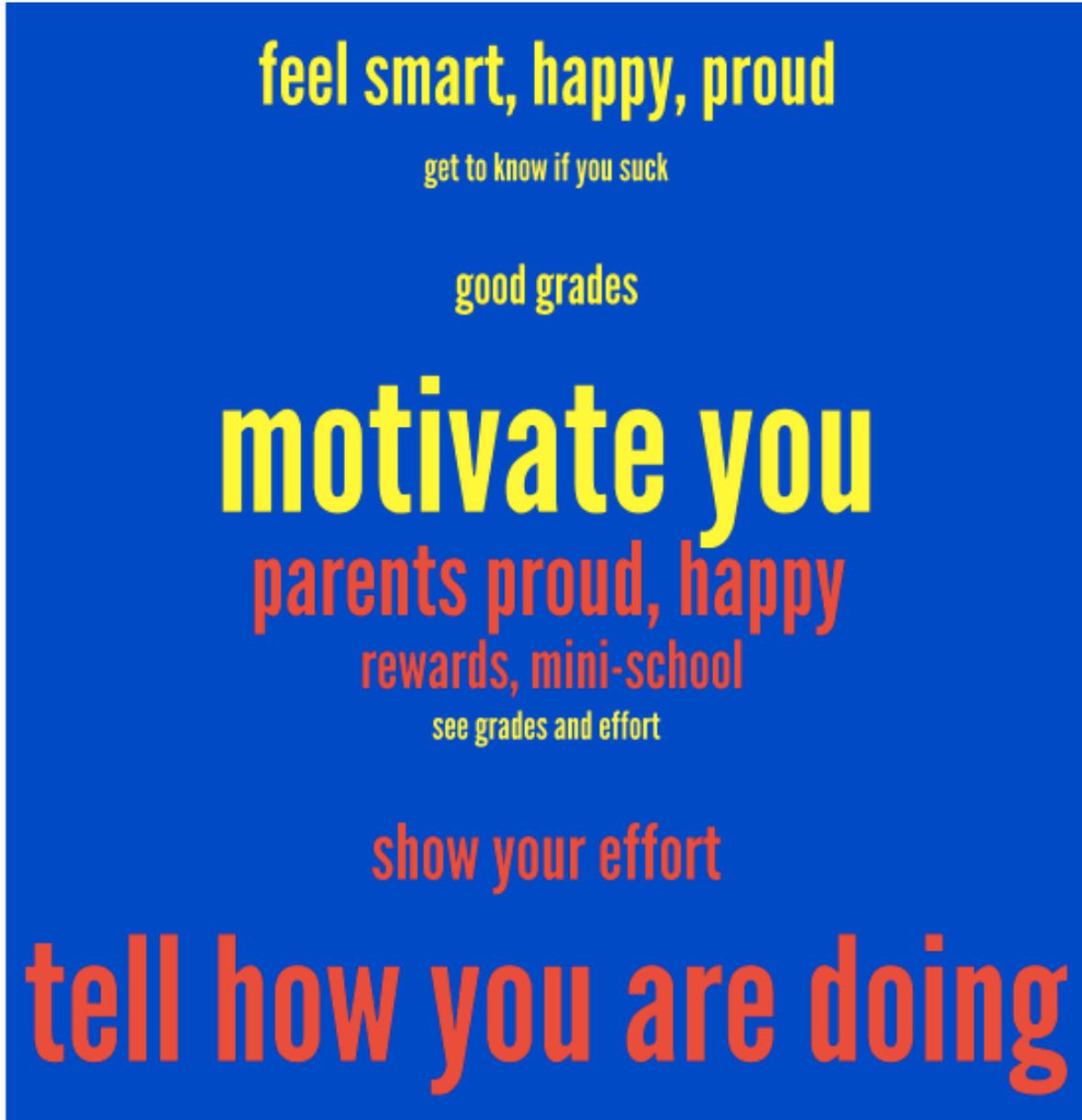


Figure 3: Bad things about reports – Grade 4 students

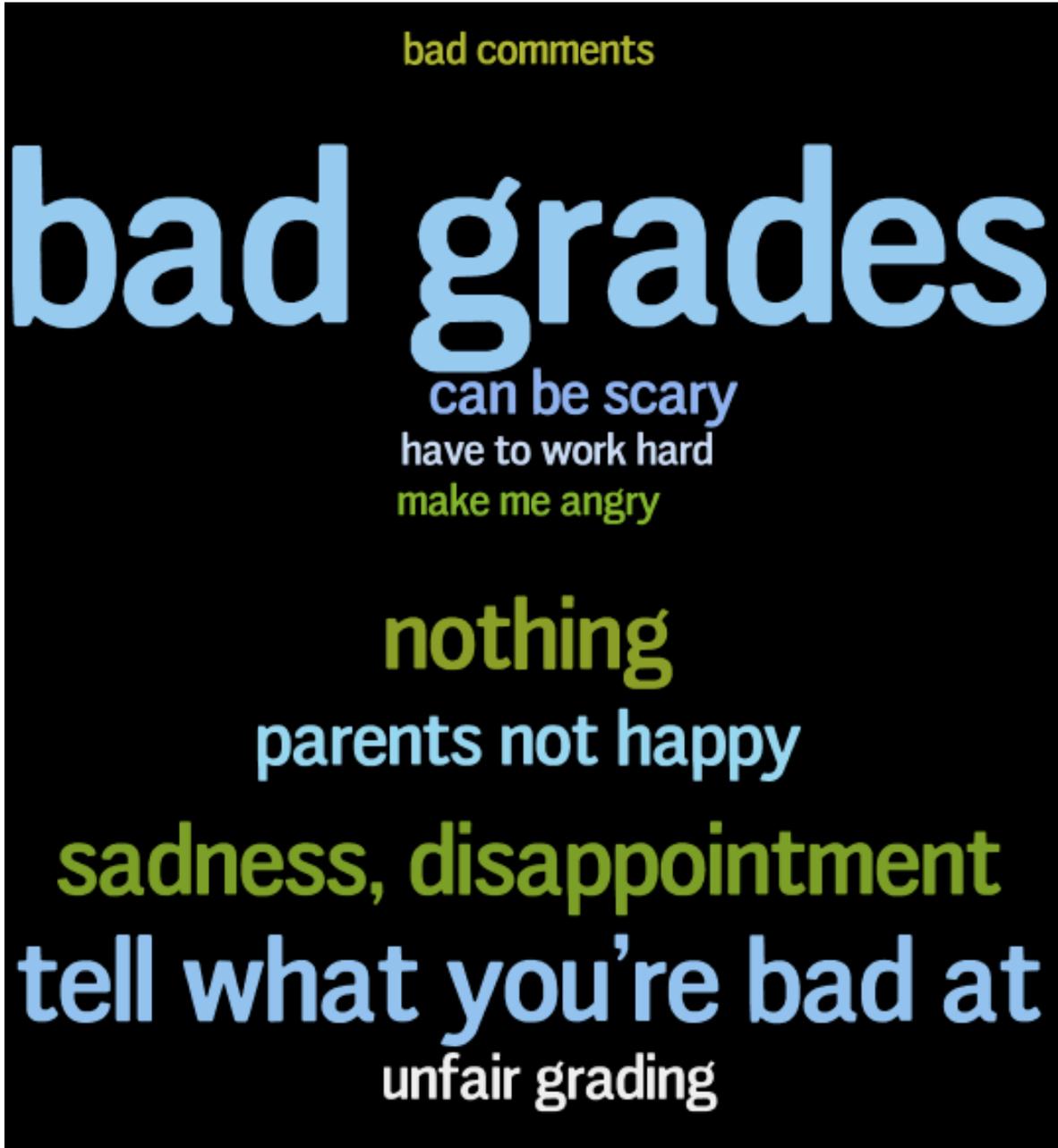


Figure 4: Bad things about reports – Grade 7 students

bad grades
feel sad (others do better)
feel you're a failure
kids focus on grades
marks (judgement, unfairness)
parents disappointed, compare
parents mad (hit, yell)
written comments

Assertion 1: Grade 7 students are much more aware of the social context of reports than Grade 4 students.

Grade 4 students in this study responded much the same way as those in the research conducted by Tuten (2005). The most commonly cited good thing about reports was “good grades” and the most commonly cited bad thing was “bad grades”. Grade 7 students referenced the personal and social consequences of reports frequently, whereas Grade 4 students rarely mentioned these. Differences between the two groups were much more pronounced when it came to the negative things about reports. Several Grade 4 students said that there was nothing bad about reports, whereas all Grade 7 students had something negative to say. Reactions of parents, other students, and the feeling of one’s diminished place in the group figured prominently.

The differences between the two groups when commenting on the good things about reports were subtler. A large number of students in both grades said that reports told you how you were doing. However, a number of the Grade 7 students seemed to be seeing this through the eyes of others. For example, one student said that reports “show a reflection of me academically.” Also, Grade 7 students were more likely to mention rewards or opportunities, such as getting into mini-school, than Grade 4 students.

The differences between the grade groups agree with the results of Reynolds and Dwyer (2003), Tuten (2005), Brookhart and Bronowicz (2003), and Evans and Engelberg (1985) that suggest an increasingly sophisticated understanding of the academic and social implications of grades with age. It is important to note that this is probably a combination of thinking about and being aware of grades for a longer time, and of the increasing importance put on grades by parents, peers, and the school system as students get older. Finally, there is ample evidence

from the comments of Grade 7's to support the conclusions of Bell (2001) that older students suffer more severely from the negative effects of grading and reports. This is dealt with more specifically in the analysis of Assertion 2.

Figure 5: Bad things about reports – Grade 7 boys

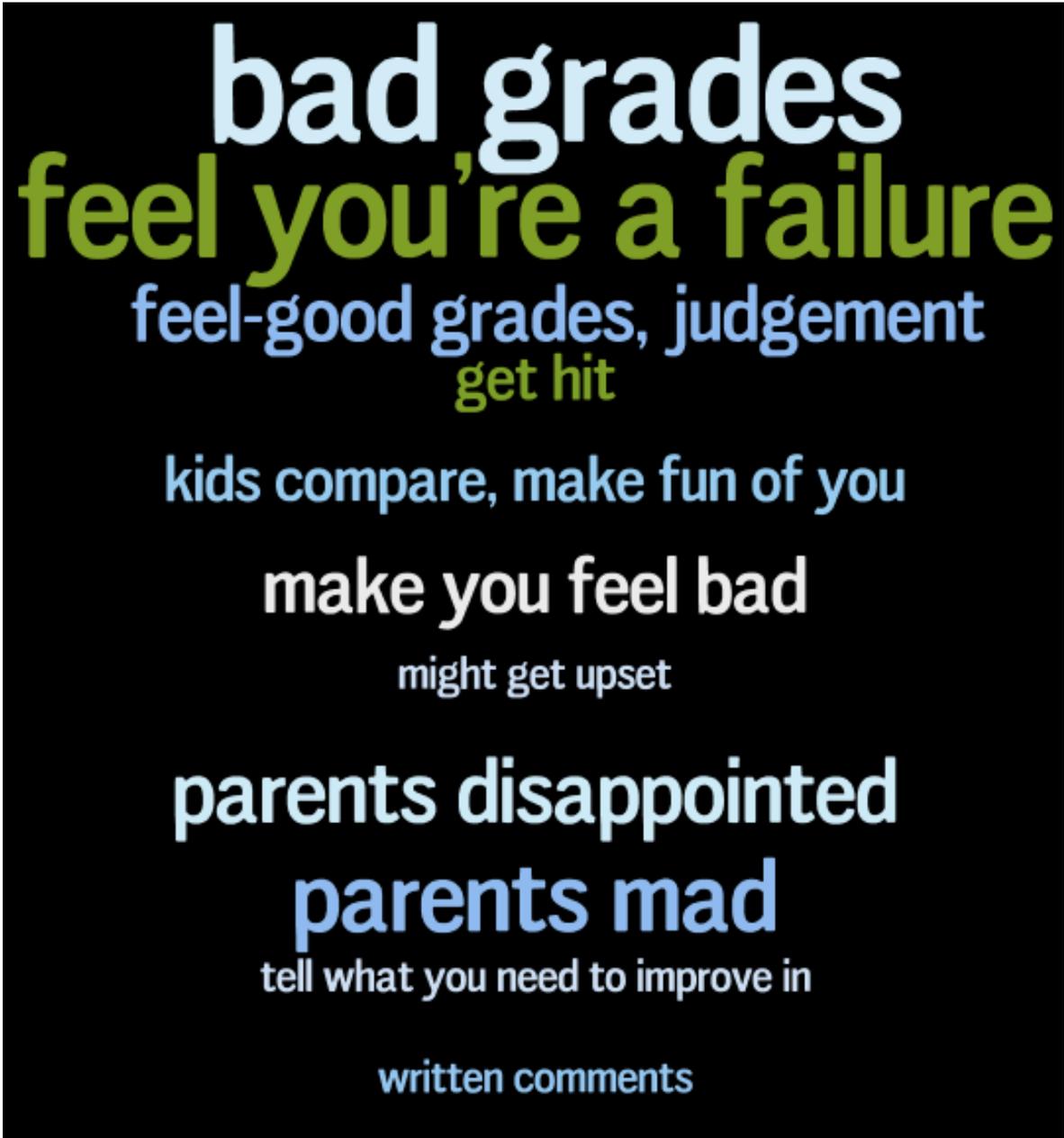


Figure 6: Bad things about reports – Grade 7 girls



bad grades
disappoint parents
disappointment, stress
discouraging
feel anxious
kids get too carried away
make you feel sad
parents compare, yell
unfair grading, judgement

Assertion 2: Grade 7 boys are more likely to report severe parental responses and to evaluate themselves negatively than Grade 7 girls.

Several Grade 7 boys reported angry parental responses (including hitting) to report cards. Only one girl reported such a response (yelling). However, girls were more likely to report parental disappointment than boys. Another significant difference was in the negative feelings mentioned by each gender. A number of girls reported feeling discouraged by bad grades. The most extreme remark from a girl was “make you feel dumb”. Some boys felt strongly that reports configured them as failures in a more global sense. Some of the remarks included “feel sad, embarrassed, hate yourself”, “find out that you suck”, and “think you are a failure”. The responses of these students also support the conclusions of Bell (2001) that older students tend to suffer more severely from the effects of grading, since Grade 4 students did not report such severe reactions or negative feelings. The cumulative effects of several years of grading and the increasing frustration of parents and teachers are likely causes of the effects observed here and by Bell (2001).

Figure 7: Feelings about grades (high achievers in Language Arts)

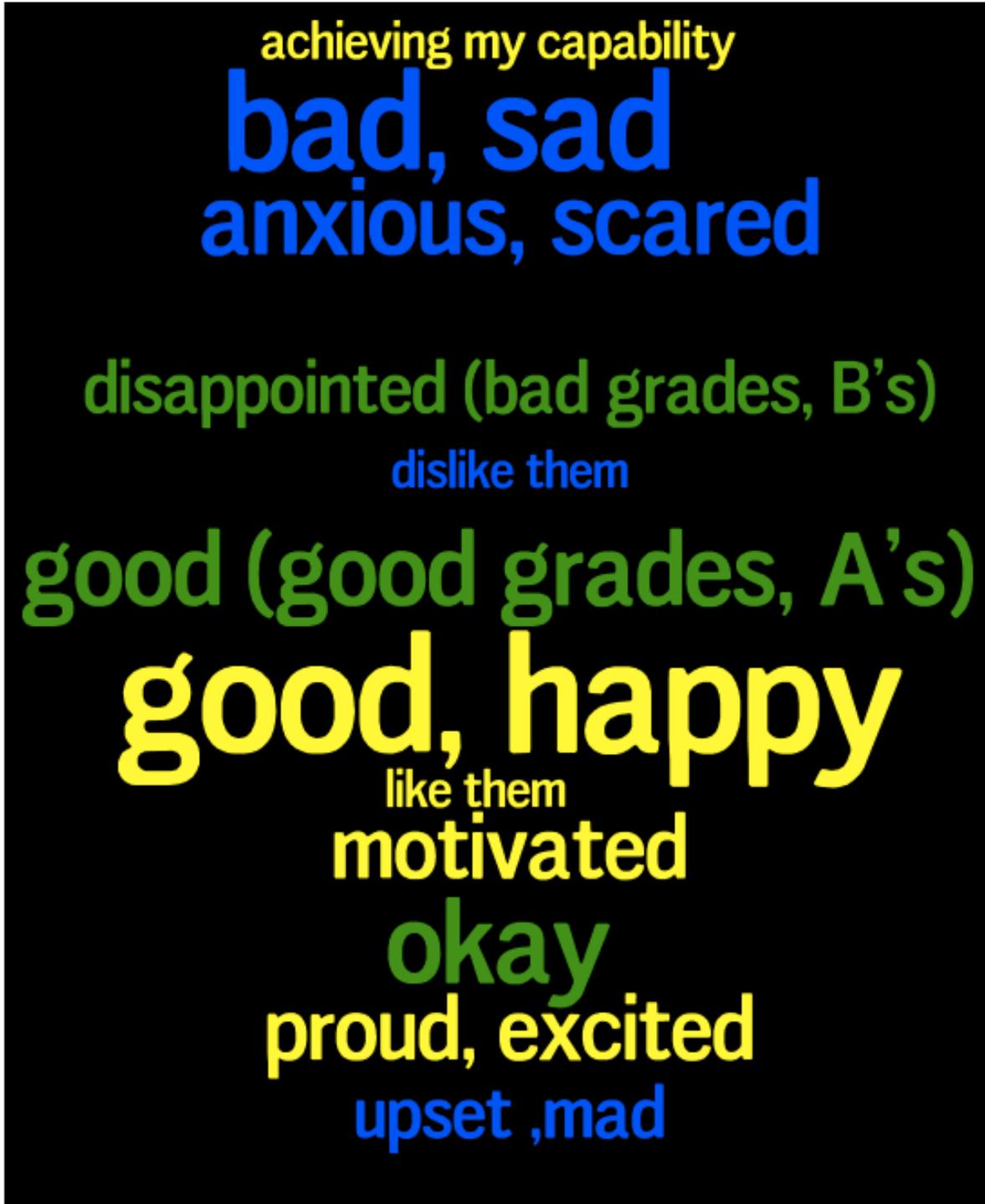
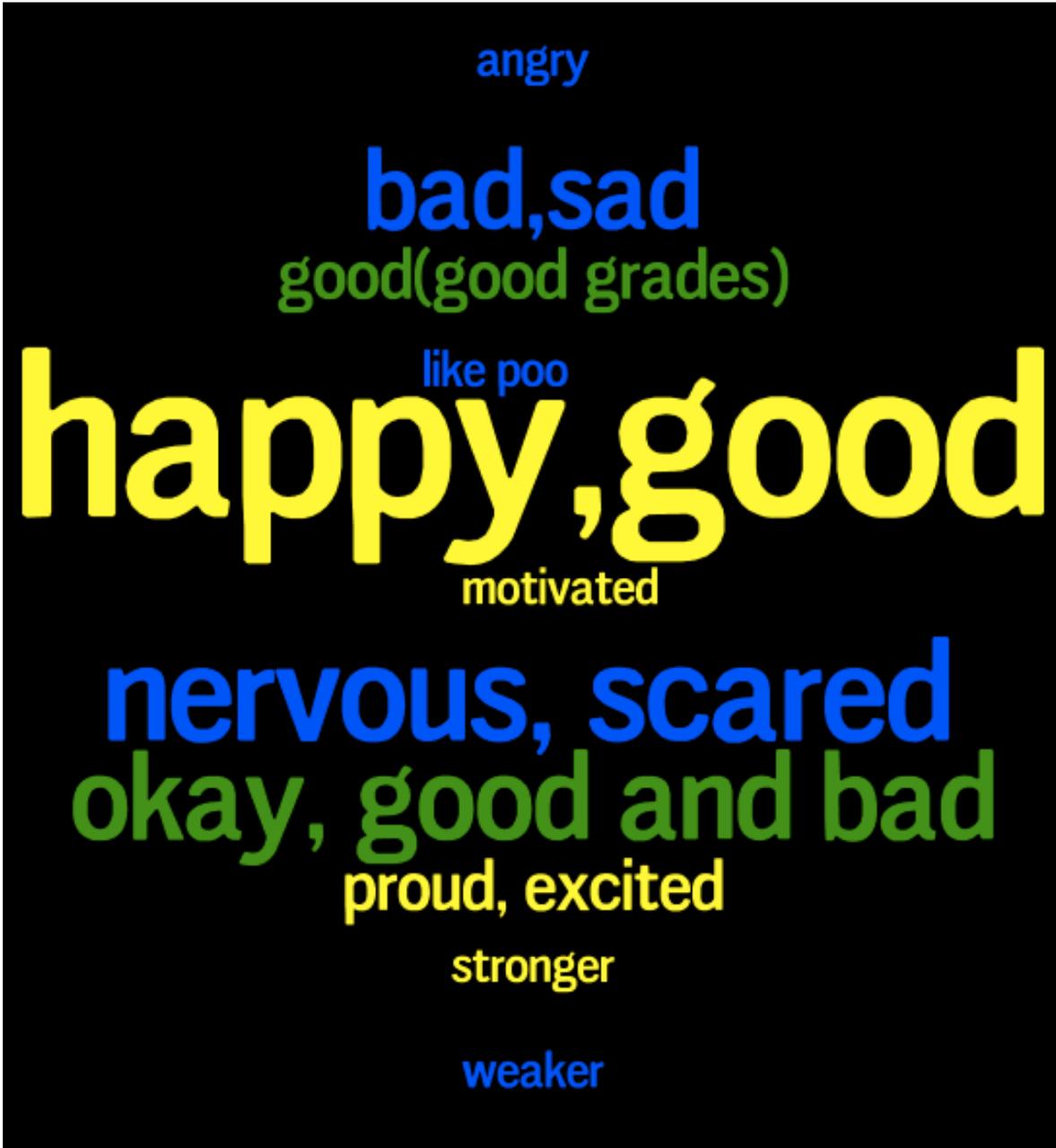


Figure 8: Feelings about grades (low achievers in Language Arts)



Assertion 3: Feelings are largely independent of actual grades.

Low-achievers (C or less) and high-achievers (B or A) in Language Arts had an almost equal mix of negative and positive feelings about reports. This agreed with the conclusions of Evans and Engleberg (1985). In the Wordles positive feelings are displayed in yellow, negative feelings in blue, and neutral or mixed feelings in green. Conditional feelings such as “good if I get A’s” were considered as neutral.

There were some differences between the high achievers and the low achievers. Low achievers were more likely to be nervous or scared about reports and high achievers were more likely to have conditional feelings. However, it was fairly clear that there was little overall relationship between grades and feelings. Three possible reasons appear in the responses:

1. Feelings are related to expectations, not to absolute grades. Evidence for this is skimpy, but the comments of two students give a hint of this: (good things about reports are) “getting A’s and B’s”, (I feel) “good-A’s”, “disappointed- B’s”. For one student B’s are positive, and for the other B’s are negative.
2. Even students who get poor grades have some liking for the clarity that grades appear to provide. Students who made comments like “know your level” fall into this category.
3. ESL students who have low grades at present, but high future expectations were a significant part of this group. Many of the students who only spoke English sometimes at home and who had poor grades reported positive feelings.

It is likely that all three factors played a part in this group. However, I suspect that the first may be the most important. Expectations of grades and their importance in future studies on this topic are discussed in the Conclusions chapter.

Table 13 gives a quantitative look at the feelings expressed by students. Feelings were reported as neutral/mixed if both good and bad feelings were reported or if the only response was “okay” or “normal”. A student who described his feelings as “6.5 out of 10” was also included in this category. “Nervous” was categorized as a negative feeling, but it could also be considered as a mixed feeling as it could signify anticipation or dread.

This data does show a tendency towards more positive feelings among students who got A’s.

The proportion of negative feelings did not show a trend, however. None of the groups by grade achieved showed a statistically significant difference from any other group using Fisher’s exact test ($p=.05$). These groups were small, ranging from 8 to 30 students, however. It is possible that using a larger sample size might yield statistically significant results.

Table 18: Grades and feelings

Feelings and Math grades			
Actual math grade	Feelings		
	bad feelings only	neutral/mixed feelings	good feelings only
C- I or *	13	53	33
C	29	36	36
C+	38	38	23
B	25	33	42
A	21	25	54
All students	24	36	40

Feelings and LA grades			
Actual LA grade	Feelings		
	bad feelings only	neutral/mixed feelings	good feelings only
C- I or *	13	38	50
C	40	40	20
C+	33	33	33
B	22	35	43
A	13	25	63
All students	24	36	40

Summary of assertions.

The survey group showed significant differences in attitudes and feelings based on age and gender, but very little systemic difference based on achievement. Grade 7 students were significantly more aware of the social consequences of reports, and the negative effects of reports appeared to be more severe among Grade 7s than among Grade 4s. Grade 7 boys reported more severe parental consequences, and made more sweeping negative generalizations about their own competence. Finally, bad and good feelings did not show any strong trend in relation to grades; students at all levels reported good and bad feelings about reports.

Chapter 5: Conclusions

Relationships Among the Research Variables

The finding that curiosity and achievement were negatively correlated among girls and positively correlated among boys is believed to be a new one. The overall lack of relationship between curiosity and achievement agrees with Fulcher (2004). His study did not separate the results by gender, however, so the same gender-based differences may have been present in his sample. In my study a group of high-achieving girls who were savvy about grades and who appeared to be more pragmatic, contrasted with a group of high-achieving boys who were generally less sophisticated but more confident about grades and who achieved well possibly because of a high-overall interest level. It is possible that as boys gain a more sophisticated knowledge of grading that some of this gender difference may disappear. It is also possible that parents and teachers in this group expect girls to be high-achievers, but celebrate the achievements of successful boys more. It is possible that Spielberg and Starr's (1994) idea that curiosity and anxiety are antagonistic could explain the reactions of high-achieving girls. Perhaps they are less curious because they are more anxious. Perhaps stress and anxiety around grades is associated with higher performance among girls and lower performance among boys. However, there are no indications in the results that high-achieving girls are more anxious (i.e. they did not worry more about their reports or comment more about being anxious). A more likely explanation seems to be that the high-achieving girls in this group included more students with a strong and more exclusive focus on what was required to get a good grade, whereas the group of high-achieving boys seemed to include more who had were very curious and whose achievement was more of a consequence of having this attitude. Conversely, the lower-achieving girls seemed to be those who had a lot of interest, but weren't able to parlay it into

academic success. Finally, the lower-achieving boys were more likely to be turned-off and disinterested. It is important to note that there is no support for the idea that higher achieving girls only cared about grades, not what they were learning. Also, one would not like to draw broad conclusions about gender-based learning styles based on a small group from one school. However, the results do raise an interesting question: Is it possible that many girls don't particularly want a lot of effort made to gain their interest; they just want to know what the job is so they can get on with it? Conversely, is it possible that many boys do want their curiosity stimulated as a routine part of learning activities? It is also important to note that girls may exhibit curiosity differently than boys, so one needs to be cautious about making generalizations based on these results.

The results for memory of grades confirmed the results of previous studies by Bahrlick et al. (2008) and Bahrlick and Berger (1996) that students with higher grades remember them better, and that where students made mistakes they tend to remember their grades as better than they actually were. My study confirmed that these relationships also hold for younger students. It also quantified the difference between actual and remembered grades and looked at memory of grades in relation to student feelings about reports. Students were also given the choice of stating that they didn't remember their grades in the present study. Clearly, if a forced response was required from these students they would have needed to create fill-in memories as described by Bahrlick and Berger (1996). However, the students who answered that they couldn't remember were not independently creating fill-in memories. In this student population, students who remembered their grades poorly had a similar mix of positive and negative feelings to those who remembered them well, so the unpleasantness of low grades didn't appear to be the main factor. Part of the issue may be considering a grade as a commodity with the

same fixed value to everyone. Expectations of grades likely play a big role. The question of whether remembering grades well represents importance is consistent with the results of this study, but is still very much an open question.

The gender-based results between memory of grades and curiosity likely follow from those for achievement and curiosity. High-achieving boys were more curious than low-achieving boys. High-achievers remember grades better. Therefore boys who remember grades better are more curious.

The correlation between curiosity and motivation may very well mirror the findings of Harackiewicz et al. (2002) that mastery goals and interest show a consistent correlation, as well as those of Fulcher (2004) that mastery goals and curiosity are correlated. Quantitatively, the correlations found by these researchers were very similar to those for curiosity and motivation in this study. However, it is not clear how being motivated by seeing one's grades is related to having a mastery orientation.

Motivation was not significantly correlated with achievement or importance. The results for motivation may seem surprising. They are at odds with those who posit grades as pure examples of rewards or punishments or who regard them as universally motivating or discouraging (Cameron, 1994; Chance, 1993; Deci, 2001; Kohn, 1993).

However, the results for motivation are in agreement with Brookhart and Bronowicz (2003) and Hickey and Zuiker (2005) who view the whole assessment environment as being a key determinant of student reactions. They also are in agreement with Evans and Engelberg (1985) who found that students with lower grades liked grades almost as much as those with higher grades. In terms of goal theory it could be said that those who have performance orientation like

grades, but are not necessarily high performers. It also appears that performance-avoiders may not be limited to low-achievers (Brophy, 2004).

Social Group Responses to Grades

One of the things that emerged from looking at detailed student responses to grading is that there seems to be a set of definable responses to reports among students that is analogous to the social group responses identified by Moni et al. (2002), for example, the blissfully ignorant low-achieving Grade 4 student, or the parent-stressed Grade 7 student. It is possible that the peer group may reinforce some of these attitudes causing them to strengthen over time. Others may change as students mature and become more experienced. Looking at these group responses in detail is beyond the scope of my study.

Differences in Attitudes to Report Cards between Grade 4 Students and Grade 7 Students

Grade 7 students reacted quite differently to report cards than grade 4 students. Their responses were more elaborate, more connected with social implications, and more varied. The responses of the Grade 4 students were consistent with the findings of Tuten (2005). Although the overall reactions of Grade 7 students were not significantly more negative there was a group of Grade 7 students with very negative feelings about reports and low curiosity and motivation. Such a group was not evident in the Grade 4 cohort. Grade 7 students who said they knew how to get good grades actually had higher grades, but Grade 4 students who said this didn't have higher grades on average. These findings are in accord with Evans and Engelberg (1985) and Moni et al. (2002) who found increasing sophistication over time. Grade 7 students actually were more positive about learning in relation to grades than the Grade 4 students. This differed from the findings of Moni et al. (2002) and Evans and Engelberg (1985). This suggests that the assessment environment and group attitudes are very important. The findings that Grade 7's

were less likely than Grade 4's to believe that their report card told them how to improve, and that effort is more important than grades is in accord with the findings of these researchers, however.

Student Feelings, Achievement, and Curiosity

In my study student feelings about reports were uncorrelated with achievement. However, students who reported very negative parental reaction to reports had very negative feelings about reports and had low motivation and curiosity. The idea that high-achievers can be performance-avoiders with negative feelings about school is in accordance with the ideas of Brophy (2004). It is clear that from this research that the assessment environment as envisioned by Brookhart and Bronowicz (2003) should also include the attitudes of parents. The situation of ESL learners, who may be low-achievers with high future expectations, was probably a factor as well.

Motivation and Curiosity in ESL Learners

A high ESL population makes understanding the effects of report cards more complex. A school with a large number of ESL students contains a large number of students who have low grades (because of language issues). Many of these students are highly capable and have high future expectations. On the other hand, the population of low-achievers at a school with few ESL learners tends to be dominated by those with low future expectations. (McCoach and Siegle, 2001). There are many good examples of this phenomenon among the respondents and it is easily observed when looking at a population of students who have recently immigrated to Canada. Finally, the effects of different cultural backgrounds are significant. Students may come from a background where high school exam performance almost completely determines life trajectory, as it does in South Korea (Robinson, 1994) or they may come from an area like

the rural Punjab where the education authorities need to provide a mid-day meal to try to get students to attend school (www.punjabeducation.net, 2010). In this study some minor differences on the basis of cultural background were found, but the small size of all of the groups except Punjabi speakers meant that it was difficult to find significant differences. A larger group would likely result in many significant differences being found.

Applications of the Research and Directions for Future Research

Overall questions.

The following general questions would be interesting to explore in future research:

1. How do students in different schools respond to report cards?
2. Would the opposing relationships between achievement and curiosity among boys and girls be found in other elementary schools or high schools? Would they be found by re-examining the college data? Is there a relationship between anxiety about reports and decreased curiosity? Does the difference between the two genders represent a basic gender difference in pathways to academic success in this community?
3. Would getting rid of letter grades really reduce the stress of reporting for the group of students who experience distress around grades? How would it affect other students? How do students who move to environments where there are no letter grades (e.g. students in gifted programs) react to the change?
4. Are the questions asked a good measure of curiosity, motivation, and importance and could they be established as valid overall instruments by using a larger sample size? Is creating a scale that measures a construct a worthwhile endeavor, or is it better to just look at actual responses to particular questions? Would confirmatory factor analysis or structural equation modeling be useful in this area of research?

5. Do the responses of the Grade 7 students (a positive attitude towards learning, but an increasing lack of trust about the accuracy and usefulness of the information on report cards and the importance of effort) represent a trend towards cynicism about learning in an environment that includes grading? How much does the learning environment affect the development of cynicism?
6. Is the strong relationship between the depth curiosity questions and being motivated to make an effort after seeing one's grades analogous to the interest-mastery goals correlation found by Harackiewicz et al. (2002) and the curiosity – mastery goals connection found by Fulcher (2004)? If so, how does this type of motivation represent a mastery goal?
7. How do curiosity, motivation, and importance as defined in this study relate to the concept of cultural capital? Do they represent positive cultural capital that can be parlayed into academic capital? If so, how?

Use of the questions and constructs from this research.

The preliminary evidence from this study suggests that the questions used to measure depth curiosity are good ones. Questions about motivation looked at the arousal and direction of behaviour, but not with its persistence. It would be interesting to include the persistence aspect of motivation by using the same type of confidential cross-referencing that was used in this study to determine whether student memory of grades was accurate. A longitudinal study would allow for this.

Importance questions evaluated how well grades were remembered and how often students thought about them. Getting an accurate answer to a question that is trying to evaluate frequency of thought is quite difficult. Perhaps keeping a diary or record would help in

obtaining better data. Other questions that involved focus on reports were looked at as indicators of importance. A direct question about importance would probably be useful as well. Language Arts and Math grades were used as a proxy for achievement. Experience with reporting and reading report cards suggested that Language Arts grades and overall achievement are highly correlated. However, a more rigorous examination of this assumption would be helpful. This would involve a simple analysis of existing report cards.

Use of confirmatory factor-analysis, and structural equation modeling for researching curiosity, motivation, and report cards.

Confirmatory factor analysis (CFA) is an excellent way of ensuring that answers to a series of survey questions unite to refer to a particular construct. However, it does impose certain constraints on the organization of a study and the underlying measurement model. The sample size has to be large enough in relation to the number of survey questions that a meaningful grouping of observed variables can be obtained through exploratory factor analysis. Furthermore, to test the results obtained through CFA and to see whether different groups are responding the same way, it would be desirable to independently test subsets of the whole group. Therefore, for this survey sample size would probably have to be significantly larger than the number of students found in one or two grades at an elementary school. Furthermore, a measurement model for a single latent variable cannot be identified with CFA because the resulting model will have no degrees of freedom and will always fit perfectly. Fulcher's (2004) study avoided this problem by looking at depth and breadth curiosity. Replicating his study with elementary school students would be valuable because it would confirm that the modified questions provide a solid instrument for measuring curiosity among younger respondents. A structural equation model for this topic would be challenging because there are a large number

of variables which appear to influence curiosity and motivation (gender, grade, socio-economic level, cultural background, assessment environment, social role in the school, and parental reactions to name a few). These may be better evaluated using detailed qualitative and demographic data.

The expectations-adjusted grade and student responses to reporting.

I believe that looking at grades in comparison to expectations might give a clearer picture of how students are reacting to grades, and possibly lead to the conclusion that they do, in fact, affect curiosity and motivation. Such a concept would be analogous to the Expectations Adjusted Phillips Curve in Economics (Hoover, 2008). Up to the 1970s an empirically demonstrated reciprocal relationship between unemployment and inflation existed. The stagflation era in the 1970s (with high inflation and unemployment) led to a new formulation where the expected inflation rate was a key factor in determining the behaviour of workers, businesses and consumers. Likewise student reaction to grades probably has a great deal to do with personal and parental expectations and previous history with grades. A student who is expecting to get a C+ and who got a C last time likely will feel positive about getting a B, but someone who expects an A and got an A last time will probably find the same B very disappointing. That is to say a particular letter grade has no absolute value as a reward or commodity, but is highly contextual. Some of the anecdotal remarks from students in this survey support this idea. A longitudinal study using this concept might provide interesting insights.

Recommendations for future study.

There are a number of interesting areas to examine in future studies on this topic.

An ideal study of this topic, in my opinion, would be longitudinal, and could thus make use of the “expectations-adjusted” grade discussed above. Using Grade 6 and 7 students and following them through a few reporting periods would likely produce a more homogeneous sample for looking at curiosity and motivation as they relate to reporting, and would allow for a more in-depth understanding of students’ thoughts on this topic. It would also allow some evaluation of changing attitudes over time. Taking an ethnographic perspective and looking at how different social groups react to reporting and how this reaction is related to achievement, motivation, and curiosity would be a very interesting project. I believe that some well-thought out interviews might provide additional insights. A comparative study covering several schools might produce some understanding of the effects of school evaluation policies and attitudes. It might also give additional insights into the roles of cultural factors and the attitudes of ESL learners in curiosity and motivation.

Recommendations for Practice and Policy in Education

Recommendations for teachers.

The results of my study do not lead to any prescriptions for classroom practice, but they do suggest some areas that should be given consideration. The responses of the students emphasize the importance of letting students know what they have to do to get a grade. The devastating effects of letter grades on some students in this survey emphasize how important it is to find strengths in students who aren’t experiencing academic success and to encourage positive communication between parents and students on this topic. Caution about communicating with parents about students who are struggling is advised. Parents who are showing a severe angry response may need to be reminded about what response is appropriate. For troubled students it appears to be particularly important to give a pragmatic road to improvement, and to show confidence that it can be achieved. It was also clear from this study that medium and high-

achieving students may be experiencing a great deal of stress around grades. The opposing relationships between curiosity and achievement between boys and girls raise an interesting question: How do you balance the needs of the learners who want to explore and connect their learning to the outside world and those who want to get on with the job? Finally, the overall classroom learning environment and the teacher's relationships with students would appear to be very important in determining how grades affect students.

Recommendations for parents.

It is clear from this study that parents' negative reactions to a student's report can be associated with very negative self-assessment by students. It is hard to be categorical about anything to do with parenting, but this study suggests very strongly that parents should think carefully before expressing anger or extreme disappointment about their child's report. The results of my study also suggest that parents, like teachers, keep in mind the balance between task-orientation and curiosity when looking at their child's academic progress. What balance best fits your child? Does she need her curiosity stimulated or does she just need clearer instructions on what to do? Is he a curious student that just needs to get on with it, or does he need to find a route to being curious and interested. I believe that good communication between parents and teachers on this topic has a lot of potential to improve the educational experience of students.

Recommendations for policy makers.

This study opens a number of questions for educational policy makers. While there is considerable evidence that letter grades cause distress, there is also evidence that students at all levels want to know how they are doing. It is not clear that anecdotal comments, the way they are currently structured, will necessarily provide this. Also, the current system of letter grades is

a very strong societal norm. Making changes to letter grades, or removing them altogether, should be done slowly and carefully. Whether it should be done at all is debatable. The curiosity-achievement data suggest that policy makers should be cautious in their introduction of the 21st century learning agenda. What is a good balance between curiosity and task-orientation, between creativity and knowledge? Finally, the strength of the data generated by the open-ended questions suggests that policy-makers need to support and have confidence in deeper and richer qualitative research in their own jurisdictions to evaluate their educational systems, rather than relying solely on comparisons generated by international testing with its limited scope and many statistical flaws (Goldstein, 2004). A recent talk by the BC Minister of Education, George Abbott (Nov. 28, 2011), where he repeatedly equated having the best educational system with having the best PISA (Program for International Student Assessment) test results, illustrates this. This is not to suggest that bureaucrats and politicians should ignore testing results. However, to answer the question of how well our education system has equipped students to pursue a rewarding career and to shape the society of the future more information is clearly needed.

References

- Anderson, James C. & Gerbing. (1988). David W. Structural equation modeling in practice: a review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411-423. Retrieved on August 5, 2010 from <http://www.fdewb.unimaas.nl/meteor/EDEN>
- Alkharusi, Hussain (2008). Effects of classroom assessment practices on students' educational goals. *Educational Assessment*, 13, 243-266.
doi:10.1080/10627190802602509
- Bahrnick, H. P., Hall, L. K., & Berger, S. A. (1996). Accuracy and distortion in memory for high school grades. *Psychological Science*, 7, 265–271. Retrieved from ebscohost.com.
- Bahrnick, H.P., Hall, L.K., & Da Costa, L.A. (2008). 50 years of memory for college grades: Accuracy and distortions. *Emotion*, 8(1), 13-22. doi:10.1037/1528-3542.8.1.13
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman.
- Bell, Stephen K. (2001). The Hopelessness theory of depression: a comprehensive test of its applicability to elementary school children (doctoral dissertation). Retrieved from Proquest Information and Learning Company Database (UMI No. 3017949).
- Berlyne, D.E. (1950). Novelty and curiosity as determinants of exploratory behaviour. *British Journal of Psychology*, 41, 68-80. Retrieved on Jan. 17, 2010 from <http://pao.chadwyck.com/1329680711967.pdf>
- Berlyne, D.E. (1954). A theory of human curiosity. *British Journal of Psychology*, 45, 180-191. Retrieved on Jan. 17, 2010 from <http://pao.chadwyck.com/1329681115147.pdf>

- Boninger, D. S., Krosnick, J. A., & Berent, M. K. (1995). Origins of attitude importance: Self-interest, social identification, and value relevance. *Journal of Personality and Social Psychology*, 68 (1), 61–80.
- Bourdieu, P. (1984) *Distinction: A social critique of the judgment of taste*. Cambridge Mass.: President and fellows at Harvard College and Routledge and Kegan Paul Ltd.
- Bourdieu, P. (1986) The forms of capital. In J. Richardson (Ed.) *Handbook of Theory and Research for the Sociology of Education* (New York, Greenwood), 241-258.
- Bousquet, Tim (2010, June 3). City Council Report Card Rating the elected officials responsible for running Halifax. *The Coast*. Retrieved on November 7, 2010 from <http://www.thecoast.ca/halifax/city-council-report-card/Category?oid=1121044>
- Brookhart, Susan M. (1997). A theoretical framework for the role of classroom assessment in motivating student effort and achievement. *Applied Measurement in Education*, 10, 161-180. Retrieved from <http://web.ebscohost.com>
- Brookhart, Susan M. & Bronowicz, Diane L. (2003). “I don’t like writing it makes my fingers hurt”: students talk about classroom assessments. *Assessment in Education*, 10, 221-241. doi: 10.1080/0969594032000121298
- Brophy, Jere E. (2010) *Motivating students to learn*. New York: Routledge .
- Brough, J. & Halfords, M. (2010, April 27). Things are more than satisfactory for the Canucks. *The Province*, p. A43.
- Brown, Gavin & Hirschfield, Gerrit (2008). Students’ conceptions of assessment: links to outcomes. *Assessment in Education: Principles, Policy, and Practice*, 15, 3-17. doi:10.1080/09695940701876003

- Cameron, Judy & Pierce, David W. (1994) Reinforcement, Reward and Intrinsic Motivation: A Meta-Analysis, *Review of Educational Research*, 64, 363-423. Retrieved from <http://www.jstor.org/stable/1170677>
- Chance, Paul (1993) Sticking up for rewards, *The Phi Delta Kappan*, 74, 787-790. Retrieved from <http://www.jstor.org/stable/20405002>
- Carr, Margaret & Claxton, Guy (2002) Tracking the development of learning dispositions. *Assessment in Education*, 9, 9-37. Retrieved from ebscohost.com
- Chen, F., Bollen K, Paxton, P., Curran, P. & Kirby, J. (2001). Improper Solutions in Structural Equation Models : Causes, Consequences, and Strategies. *Sociological Methods & Research*, 29: 468. doi:10.1177/0049124101029004003
- cis software (2009, Nov.2). Solution: Supplier Report Cards and Management - ISO 9001/AS 9100 (Video File). Retrieved on Nov. 23, 2010 from <http://www.youtube.com/watch?v=3aEMo4EeU4U>
- Cragin, John Paul (1980). An Investigation of the nature of importance perception (Doctoral Dissertation). Retrieved from Proquest Information and Learning Company Database (Proquest document ID 753793191).
- Crozier (2002). A unique experiment. Retrieved from <http://www.sacu.org/examinations.html>
- Cullingford, Cedric(2006). Children's Own Vision of Schooling. *Education*, 34, 211-221.
- Czaja, Ronald and Blair, Johnny (2005). *Designing Surveys: a guide to decisions and procedures*. Thousand Oaks, California: Pine Forge Press.
- Daniels, Earl (1994, April 20). Grading grades- Report card reactions: gladness to gloom. *Palm Beach Sun-Sentinel*. Retrieved on Feb. 16, 2011 from <http://articles.sun-sentinel.com>

- Day, H.I. (1971). The measurement of specific curiosity. In H.I. Day, D.E. Berlyne & D.E. Hunt (Eds.), *Intrinsic Motivation: A new direction in education* (pp.99-112). Toronto: Holt, Rinehart, and Wilson of Canada.
- Deci, Edward R., Ryan, Richard M., & Koestner, Richard (2001). The Pervasive Negative Effects on Intrinsic Motivation: Response to Cameron, *Review of Educational Research*, 71, 43-51. Retrieved from <http://www.jstor.org/stable/3516065>
- Durm, Mark W. (1993). An A is not an A: A history of grading. *The Educational Forum*. 57, 1-4. Retrieved from http://www.indiana.edu/~educy520/sec6342/week_07/durm93.pdf
- Eaton, Asia and Visser, Penny (2008). Attitude importance: understanding the causes and consequences of passionately held views. *Social and Personality Psychology Compass* 2/4: 1719–1736. doi:10.1111/j.1751-9004.2008.00125.x
- Erickson, Frederick (1986) Qualitative methods in research on teaching. In Wittrock, Merlin C. (ed.), *Handbook of Research on Teaching*. New York: Macmillan.
- Evans, Ellis D. & Engelberg, Ruth A. A. (1985) developmental study of student perceptions of school grading, *Biennial Meeting of the Society for Research in Child Development*. Toronto, April 25-28, 1985.
- Fairview Class of '66 (2009). *Fairview '66 Bulldogs Alumni-Memorabilia* (Report Card Image). Retrieved on Feb. 18, 2011 from <http://www.fairview66.org/3/miscellaneous9.htm>
- Fink, Arlene & Kosecoff, Jacqueline (1998). *How to Conduct Surveys: A step-by- step guide*. Thousand Oaks California: Sage Publications.
- Franken, R. (1994) *Human motivation*. Pacific Grove California: Brooks/Cole.

- Fulcher, Keston H. (2004). Towards Measuring Lifelong Learning: The Curiosity Index (Doctoral Dissertation). Retrieved from Proquest Information and Learning Company Database (UMI No. 3123950).
- Glantz, Stanton A. (2005). *Primer of Biostatistics*. United States: The McGraw-Hill Companies.
- Goldstein, Harvey (2004). International comparisons of student attainment: some issues arising from the PISA study. *Assessment in Education Principles Policy and Practice* 11:3, 319–330.
- Guskey, Thomas R. (2002). *How's My Kid Doing? A Parents' Guide to Grades, Marks, and Report Cards*. San Francisco: Jossey Bass.
- Guskey, Thomas R. (2010). *Grading Systems*. Retrieved on April 6, 2011 from <http://education.stateuniversity.com>
- Guy, Shannon and Cahill, Larry (1999). The role of overt rehearsal in enhanced conscious memory for emotional events. *Consciousness and Cognition*, 8,114–122.
doi:10.1006/ccog.1998.0379
- Harackiewicz Judith M. et al. (2002) Revision of Achievement Goal Theory: Necessary and Illuminating. *Journal of Educational Psychology*, 94, 638-645.
doi:10.1037/0022-0663.94.3.638
- Hickey, Daniel T. & Zuiker, Steven J. (2005) Engaged Participation: a sociocultural model of motivation with implications for educational assessment. *Educational Assessment*, 10, 277-305. doi:10.1207/s15326977ea1003_7
- Hicks, Mark A. (1998). boy reading report card (Image). Retrieved on Jan. 8, 2010 from <http://school.discoveryeducation.com/clipart/clip/report2.html>

- Holbrook, A., Berent, M., Krosnick, J. Visser, P., and Boninger, D. (2005). Attitude Importance and the Accumulation of Attitude-Relevant Knowledge in Memory. *Journal of Personality and Social Psychology* 88(5), 749-769. doi:10.1037/0022-3514.88.5.749
- Hooper, D., Coughlan, J. & Mullen, M.R. (2008) Structural Equation Modeling: Guidelines for Determining Model Fit. *The Electronic Journal of Business Research Methods* 6(1), 53 – 60. Retrieved on July 8, 2010 from www.ejbrm.com
- Hoover, Kevin D. (2008). Phillips Curve. *The Concise Encyclopedia of economics*. Retrieved on July 23, 2010 from <http://www.econlib.org/library/Enc/PhillipsCurve.html>
- Huitt, W. (2001). Motivation to learn: An overview. *Educational Psychology Interactive*. Valdosta, GA: Valdosta State University. Retrieved on April 10, 2010 from <http://www.edpsycinteractive.org/col/motivation/motivate.html>
- infofeast (2007, Dec. 8). DFG Commission part 1 – Report Cards (Video File) Retrieved on July 22, 2010 from <http://www.youtube.com/watch?v=1SMDn7YXeic>
- Jern P. (2007). *report card 1944* (Image). Retrieved on Feb. 16, 2011 from <http://www.flickr.com/photos/pjern/2150873799>
- Kaplan D., Liu, R., & Kaplan H. (2005) School related stress in early adolescence and academic performance three years later: the conditional influence of self-expectations. *Social Psychology of Education* 8, 3–17. doi:10.1007/s11218-004-3129-5
- Kenny, David A. (2002). Identification. Retrieved on July 18, 2010 from <http://davidakenny.net/cm/identify.htm>

- Klassen, Wendy Lynn (1998). Teacher, student, and parent perceptions of reporting practices in Mathematics: A study at the Grade 8 level (doctoral dissertation). Retrieved from Proquest Information and Learning Company Database (UMI No. 3123950).
- Kohn, Alfie (1993) Rewards versus Learning: A Response to Paul Chance, *Phi Delta Kappan*, 74, 783-787. Retrieved from <http://www.jstor.org/stable/20405001>
- Larson, D. (2010) *Joseph Emanuel Freeberg* (Report Card Image) Retrieved on Feb. 19, 2011 from http://www.leighlarson.com/joseph_emanuel_freeberg.htm
- Ley, Phillip (1972). Primacy, rated importance, and recall of medical statements. *Journal of Health and Social Behaviour*, 13, 311-317. Stable URL: <http://www.jstor.org/stable/2136768>
- McCoach, D.B. & Siegle, D. (2001). A comparison of high achievers' and low achievers' attitudes, perceptions, and motivations. *Academic Exchange Quarterly*, Summer 2001. Retrieved on April 8, 2011 from http://findarticles.com/p/articles/mi_hb3325/is_2_5/ai_n28848611/
- Moll, Marita (1998) A brief history of grading. Retrieved on April 15, 2011 from <http://bctf.ca/publications/NewsMagArticle.aspx?id=13110>
- Möller, J., Streblow L., Pohlmann B., & Köller, O. (2006). An extension to the internal/external frame of reference model to two verbal and numerical domains. *European Journal of Psychology in Education*, 21, 4, 467-487.

Moni, Karen, van Kraayenoord, Christina, & Baker, Carolyn (2002). Students' Perceptions of Literacy Assessment. *Assessment in Education*, 9, 319-342.

doi:10.1080/0969594022000027654

Nason, Leslie J. (1961, October 13). Report Cards are necessary for record. *The Telegraph*.

Retrieved on Feb. 12, 2011 from <http://news.google.com/newspapers>

National Network of Education (2010) Education Policies and Initiatives in Punjab. Retrieved

on November 8, 2010 from <http://www.punjabeducation.net/Facts/Policies.aspx>

O'Laughlin, Marjorie (1992) Rethinking Science Education: Beyond Piagetian Constructivism towards a Sociocultural model of teaching and learning. *Journal of research in Science*

teaching, 29(8), 791-820. Retrieved from <http://onlinelibrary.wiley.com>

Phillips, A. W. H. "The Relation Between Unemployment and the Rate of Change of Money

Wage Rates in the United Kingdom, 1861-1957." *Economica*, 25(2), 283-299.

Retrieved from <http://www.jstor.org/stable/2550759>

Potter, D. (2009). *Cass-Union School* (Report Card Image). Retrieved on Feb. 19, 2011 from

http://www.donpotter.net/cass_union_school.html

Pruiett, B. (2010). *The Pruiett-Parker Family Histories* (Report Card Image). Retrieved on Feb.

20, 2011 from <http://pruiett-parker.com/pruiett7.php>

Reynolds, Karen J. & Dwyer, Sonia Corbin (2003). This report card is pretty ugly:

children's perspectives of assessment, *Brock Education*, 12(2), 40-53. Retrieved on

March 7, 2010 from <http://brocked.ed.brocku.ca/>

Robinson, James (1994). Social Status and Academic Success in South Korea. *Comparative*

education review, 38(4), 506-530. Retrieved from <http://web.ebscohost.com>

- Rowan-Kenyon, H., Bell, A. & Perna, L (2008). Contextual influences on parental involvement in college going: variations by socioeconomic class. *Journal of Higher Education*, 79(5), 564-586. Retrieved from <http://web.ebscohost.com>
- Shapcottmichael (2009, May 12). Report cards to end homelessness: Housing Network of Ontario (Video file). Retrieved on August 7, 2010 from <http://www.youtube.com/watch?v=KdUXCN3M7c0>
- SISA (2010). The Fisher Exact Test for a 2X5 or smaller crosstable. Retrieved on Feb. 12, 2012 from <http://www.quantitativeskills.com/sisa/statistics/fiveby2.htm>
- Smith, Emma & Gorard, Stephen (2005) “They don’t give us our marks”: the role of formative feedback in student progress, *Assessment in Education*, 12, 21-38.
doi:10.1080/0969594042000333896
- Spielberger, C.D. and Starr, L.M. (1994). Curiosity and exploratory behavior. In H.F. O’Neil Jr. and M. Drillings, Editors, *Motivation: Theory and research* (pp. 221–243). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Spineth, B. & Steinmayr R. (2007). *Longitudinal Analysis of Intrinsic Motivation and Competence Beliefs: Is There a Relation over Time?* Unpublished manuscript.
Retrieved on Feb. 17, 2011 from <http://www.srce.org/journals/cdev/0-0/Spinath.pdf>
- Stefanou, Candice & Parkes, Jay (2003). Effect of classroom assessment on student motivation in fifth-grade science. *Journal of Educational Research*, 96, 152-162. Retrieved from <http://www.jstor.org/stable/27542426>
- The-Beatles-History.com (2010). *Beatles Historical Documents* (Report Card Image). Retrieved on Feb. 15, 2011 from <http://www.the-beatles-history.com/beatles-historical-documents.html>

- The Human Early Learning Partnership (2011). *EDI*. Retrieved on Jan. 6, 2012 from <http://earlylearning.ubc.ca/edi/>
- Tuten, Jennifer (2005). Report card discourse and the construction of meanings by teacher, parents, and students (doctoral dissertation). Retrieved from Proquest Information and Learning Company Database (UMI No. 3159319).
- Walker C. (2010). *Meet Mrs. Walker* (Report Card Image). Retrieved on April 8, 2011 from http://www.steveandcat.net/mrswalker/meet_mrs_walker.htm
- Wiens, E. (2010?) *Yarrow's pioneers and settlers* (Report Card Image). Retrieved on April 7, 2011 from <http://www.yarrowbc.ca/publicschools/elementaryjuniorhigh.html>
- Wiener, Bernard (1990). History of Motivational Research in Education. *Journal of Educational Psychology*, 82, 616-622. doi:10.1037/0022-0663.82.4.616
- Xitao, F., Wang L., and Thompson, B. (1996) *The effects of sample size, estimation methods, and model specification on SEM fit indices*. Paper presented at the annual meeting of the American Educational Research Association (session #16.52), April 9, 1996, New York, NY. Retrieved from <http://eric.ed.gov:80>

Appendices

Appendix 1: Survey Instrument

What do you think about report cards?

(and how do they affect you?)



What do you think about Report Cards?

About you

1. What grade are you in?

- Grade 4₁ Grade 7₂

2. What is your gender?

- male₁ female₂

3. Do you speak English at home?

- always₁ usually₂ sometimes₃ never₄

4. What languages other than English do you speak at home?

- Punjabi₁
- Other South Asian Language (Hindi, Gujarati, Bengali, Tamil, Urdu, Pashtun)₂
- Cantonese or Mandarin (Chinese)₃
- Tagalong₄
- Spanish₅
- South-East Asian Language (Vietnamese, Cambodian)₆
- Other (Please write the name of the language)_____₇
- I only speak English at home.₈

5. How many books do you own (approximately)?

- more than 100₁ 50-100₂ 20-49₃ less than 2

You and your report card

6. How often do you read the written comments on your report card?

- Always₁ Usually₂ Sometimes₃ Never₄

7. How often do you receive rewards at home (e.g. money) for good report card marks?

- Always₁ Usually₂ Sometimes₃ Never₄

8 . How well do you remember your grades from your last report card? (use the attached blank report card to help you remember the subjects if you need to.)

- I remember all or almost all of my grades (7 or 8)₁
 I remember some of my grades (3-6)₂
 I only remember a few of or none of my grades (2 or less)₃

9. How much do you usually think about your report card?

- frequently (I have no trouble remembering when I last thought about it)₁
 sometimes (I can remember when I last thought about it, but it was at least a few days ago)₂
 rarely (I can't remember when I last thought about it)₃

10. What was your grade for **Language Arts on your last report card?**

- A₄ B₃ C+₂ C₁ C-,I, or *₀ I can't remember₋₁

11. What was your grade for **Math on your last report card?**

- A₄ B₃ C+₂ C₁ C-,I, or *₀ I can't remember₋₁

Use the scale below to answer questions 12-26

- | | Agree
strongly | Agree
slightly | Disagree
slightly | Disagree
strongly |
|---|----------------------------------|----------------------------------|----------------------------------|-----------------------------|
| 12. Report cards are very important to my parents. | <input type="checkbox"/> _1..... | <input type="checkbox"/> _2..... | <input type="checkbox"/> _3..... | <input type="checkbox"/> _4 |
| 13. I worry about bringing a bad report card home. | <input type="checkbox"/> _1..... | <input type="checkbox"/> _2..... | <input type="checkbox"/> _3..... | <input type="checkbox"/> _4 |
| 14. The written part of my report card tells me what I have to do to improve. | <input type="checkbox"/> _1..... | <input type="checkbox"/> _2..... | <input type="checkbox"/> _3..... | <input type="checkbox"/> _4 |
| 15. When I saw my mark in Language Arts I wanted to work my hardest at reading and writing. | <input type="checkbox"/> _1..... | <input type="checkbox"/> _2..... | <input type="checkbox"/> _3..... | <input type="checkbox"/> _4 |
| 16. When I saw my mark in Math I wanted to work my hardest at Math. | <input type="checkbox"/> _1..... | <input type="checkbox"/> _2..... | <input type="checkbox"/> _3..... | <input type="checkbox"/> _4 |
| 17. Thinking about my grades motivates me (makes me want to work as hard as I can) | <input type="checkbox"/> _1..... | <input type="checkbox"/> _2..... | <input type="checkbox"/> _3..... | <input type="checkbox"/> _4 |
| 18. Marks for effort (G, S, and N) are more important than letter grades. | <input type="checkbox"/> _1..... | <input type="checkbox"/> _2..... | <input type="checkbox"/> _3..... | <input type="checkbox"/> _4 |
| 19. I know what I have to do to get good marks. | <input type="checkbox"/> _1..... | <input type="checkbox"/> _2..... | <input type="checkbox"/> _3..... | <input type="checkbox"/> _4 |
| 20. The more I learn about something the more I want to learn about it. | <input type="checkbox"/> _1..... | <input type="checkbox"/> _2..... | <input type="checkbox"/> _3..... | <input type="checkbox"/> _4 |
| 21. When learning about something new I try to find out everything I can about it. | <input type="checkbox"/> _1..... | <input type="checkbox"/> _2..... | <input type="checkbox"/> _3..... | <input type="checkbox"/> _4 |

Agree strongly Agree slightly Disagree slightly Disagree strongly

22. I am only interested in my grades, not in what I am learning. ₁.....₂.....₃.....₄
23. Very few things interest me. ₁.....₂.....₃.....₄
24. Learning a lot is more important than getting an 'A'. ₁.....₂.....₃.....₄
25. I often spend a lot of time reading, thinking, or talking to others about topics I am interested in. ₁.....₂.....₃.....₄
26. I often do extra reading or research about things I have learned in school. ₁.....₂.....₃.....₄

Please give a written answer for questions 27-29.

27. What are some good things about report cards? (list 1-3 items)

28. What are some bad things about report cards? (list 1-3 items)

29. How do report cards make you feel?

Grade 4 Version

Use the following scale to answer Questions 12-26



Agree
strongly

Agree
slightly

Disagree
slightly

Disagree
strongly

12. Report cards are very important to my parents. ₁.....₂.....₃.....₄
13. I worry about bringing a bad report card home. ₁.....₂.....₃.....₄
14. The written part of my report card tells me what I have to do to improve. ₁.....₂.....₃.....₄
15. When I saw my mark in Language Arts I wanted to work my hardest at reading and writing. ₁.....₂.....₃.....₄
16. When I saw my mark in Math I wanted to work my hardest at Math. ₁.....₂.....₃.....₄
17. Thinking about my grades motivates me (makes me want to work as hard as I can) ₁.....₂.....₃.....₄
18. Marks for effort (G,S, and N) are more important than letter grades. ₁.....₂.....₃.....₄
19. I know what I have to do to get good marks. ₁.....₂.....₃.....₄
20. The more I learn about something the more I want to learn about it. ₁.....₂.....₃.....₄

Agree
strongly

Agree
slightly

Disagree
slightly

Disagree
strongly



21. When learning about something new I try to find out everything I can about it. ₁.....₂.....₃.....₄

22. I am only interested in my grades, not in what I am learning. ₁.....₂.....₃.....₄

23. Very few things interest me. ₁.....₂.....₃.....₄

24. Learning a lot is more important than getting an 'A'. ₁.....₂.....₃.....₄

25. I often spend a lot of time reading, thinking, or talking to others about topics I am interested in. ₁.....₂.....₃.....₄

26. I often do extra reading or research about things I have learned in school. ₁.....₂.....₃.....₄

Please give a written answer for questions 27-29.

27. What are some good things about report cards? (list 1-3 items)

28. What are some bad things about report cards? (list 1-3 items)

29. How do report cards make you feel?

Appendix 2: Report Cards Used with the Study Population

Figure 7: Sample report card used with the study population

Grade 6 Term 2
 A has done an excellent job this term. She quietly and efficiently completes her work, and has made big strides in reading and writing. She received intensive support in a small group with basic paragraph-writing skills from the Literacy teacher Ms. L, every day for a period of two weeks and made excellent progress. She also received in-class support from the Resource Teacher Ms. R. A has excellent concentration and skills in sports activities and has become a leader on the school basketball team.

Evaluation criteria based on the learning expectations for your child's grade level. <small>"N" Not yet meeting expectations, "A" Approaching / Minimally meeting expectations, "M" Meeting expectations, "FM" Fully Meets expectations, "E" Exceeds expectations.</small>		N	A	M	FM	E
LANGUAGE ARTS	Letter Grade: C+					
Ability to read and understand a variety of texts at the Grade 6 level			√			
Ability to identify keywords in text and understand them using context				√		
Ability make predictions while reading a work of fiction				√		
Ability to make inferences while reading a work of fiction				√		
Ability to identify the problem and possible solutions in a work of fiction				√		
Ability to write a persuasive essay			√			
Use of correct spelling and grammar in written work			√			
MATHEMATICS	Letter Grade: A					
Knowledge of number facts						√
Knowledge of whole number arithmetic (subtraction and multiplication)						√
Ability to choose the correct operation for problem solving				√		
Knowledge of fractions					√	
FRENCH	Letter Grade: B					
Ability to describe an action in French while acting it out					√	
Pronunciation of basic French vocabulary					√	
SOCIAL RESPONSIBILITY						
Ability to solve problems in peaceful ways					√	
PHYSICAL EDUCATION						
Thirty Minutes of Daily Physical activity				√		

Goals & Support Plan

- We will continue to work on writing skills. A will continue to receive in-class support in this area.
- Problem-solving skills in Math will be a major focus next term.
- A should continue to read a variety of fiction and non-fiction books at home.

INTERMEDIATE PROGRESS REPORT

Subject	Term One		Term Two		Term Three		Final
	Letter Grade	Work Habits/ Effort	Letter Grade	Work Habits/ Effort	Letter Grade	Work Habits/ Effort	Letter Grade
English Language Arts	C+	S	C	G			
Mathematics	A	G	A	G			
Science	C+	G	B	G			
Social Studies	B	G	B	G			
Physical Education	B	G	A	G			
Fine Arts	C	S	B	G			
French	C+	G	B	G			
Health and Career Education	A	G	A	G			
No. of pages <u> 2 </u>		No. of pages <u> 2 </u>		No. of pages <u> 2 </u>			

See Structured Written Comment if an asterisk (*) has been assigned.

NM = no mark is assigned this term.

MINISTRY APPROVED LETTER GRADES

- A** Excellent or outstanding performance
- B** Very good performance
- C+** Good performance
- C** Satisfactory performance
- C-** Minimally acceptable performance
- I** (In Progress or Incomplete). Not demonstrating minimally acceptable performance.
- F** (Failed or Failing). Has not demonstrated or is not demonstrating, minimally acceptable performance.
- SG** Standing Granted. Although completion of normal requirements is not possible, a sufficient level of performance has been attained to warrant the granting of standing. *For final reports only.

WORK HABITS/EFFORT

These symbols report the student’s progress in each subject in relation to his/her own work habits and effort.

N = Needs Improvement

S = Satisfactory

G = Good

Figure 8: Learning outcomes report card (an alternative format)

Stud Teac This If yc chik		 or the term. t with your nly).	
			Not Yet Meeting Expectations Approaching Expectations Meeting Expectations Exceeding Expectations
English Language Arts First Report <input checked="" type="checkbox"/> A Second Report <input checked="" type="checkbox"/> A Third Report <input type="checkbox"/> Final <input type="checkbox"/>			
<ul style="list-style-type: none"> • writes imaginative writing for various purposes and audiences (short stories) featuring well-developed ideas 			×
<ul style="list-style-type: none"> • selects and uses strategies during reading to determine and summarize the importance of ideas/events 		×	
<ul style="list-style-type: none"> • responds to selections they read by expressing opinions and making judgments supported by explanations and evidence 		×	
<ul style="list-style-type: none"> • uses conventional spelling for familiar and frequently used words 		×	
French Language Arts First Report <input checked="" type="checkbox"/> B Second Report <input checked="" type="checkbox"/> B Third Report <input type="checkbox"/> Final <input type="checkbox"/>			
<ul style="list-style-type: none"> • utilizes prediction skills to ensure comprehension 		×	
<ul style="list-style-type: none"> • identifies the principal and secondary ideas of a variety of written material 		×	
<ul style="list-style-type: none"> • establishes a connection between their personal experience and what they have read, comparing certain elements (characters, setting, action, theme, narrative structure) 		×	
<ul style="list-style-type: none"> • effectively communicates ideas and information in a variety of written forms 		×	
<ul style="list-style-type: none"> • uses editing tools (dictionary, class references, Bescherelle, grammar charts, etc) 		×	
<ul style="list-style-type: none"> • recognizes and utilizes idiomatic expressions 		×	
Math First Report <input checked="" type="checkbox"/> B Second Report <input checked="" type="checkbox"/> A Third Report <input type="checkbox"/> Final <input type="checkbox"/>			
<ul style="list-style-type: none"> • distinguishes relationships among multiples, factors, composites, and primes 		×	
<ul style="list-style-type: none"> • uses power, base, and exponent to represent repeated multiplication 		×	
<ul style="list-style-type: none"> • describes equivalent mixed numbers and improper fractions concretely and pictorially 		×	
<ul style="list-style-type: none"> • compares and orders improper fractions, mixed numbers, and decimal fractions 		×	×
<ul style="list-style-type: none"> • demonstrates and explains the meaning of ratio, percentage concretely and pictorially 		×	×
<ul style="list-style-type: none"> • applies learned concepts to problem-solving situations 		×	

Appendix 3: Canucks Report Card

Illustration 1: Canucks report card

THE KURTENBLOG

TUESDAY, APRIL 27, 2010

MIKE HALFORD. JASON BROUGH.
MAKING THE GRADE. SORT OF.



Things are more than satisfactory for Canucks

REPORT CARDS: Samuelsson at top of class with seven goals, 11 points, plus-8 rating in fi

We assigned the Canucks letter grades for the series against the Kings. Please have their parents or guardians sign the following and return it to us. Thanks.

Mikael Samuelsson (A+)

Head of the class. Seven goals. Eleven points. Plus-8. Just don't ask him to talk about it. Public speaking: not really his thing.

Daniel Sedin (A)

Second among Canucks with 10 points. Notched two game-winning goals, including the series-clincher on Sunday. In fact, Daniel was so impressive against the Kings that Mike Milbury made a point to learn his jersey number. High praise indeed.

Henrik Sedin (B+)

Eight points, scored the winner in Game 4, dominant in the faceoff circle. Not too shabby, but he doesn't get an A. Not when he's the Art Ross winner and Sidney Crosby leads the playoff scoring race with five goals and nine assists. That's your competition, Hank. Get used to it.

Ryan Kesler (B-)

Six points in six games is pretty good, offensively speaking, but Kesler led the Canucks with more than 20 minutes in short-handed ice time. Obviously, he wasn't perfect out there.

Roberto Luongo (B)

He made the big saves when needed. Granted, he might not have needed to make the big saves if he'd made a few more of the smaller ones. Fortunately, Luongo seems to be finding his game at the right time. We're at least more optimistic than before the playoffs started ... when we were terrified.

Alex Burrows (C)

Struggled badly until finding his legs in Game 6. For what it's worth, we're predicting a bounce-back in the next series. Burr has more than earned our loyalty. He's

like Lassie that way.

Pavol Demitra (B)

Was demoted to the fourth line in Game 3. Got angry and put up three points in Game 4. Maybe they should make him angry all the time. Keep poking him with a stick or something.

Steve Bernier (A)

Scored four times with limited ice time. Worked hard. Paid the price in front of the net. Got in a few big hits. Can't ask for much more.

Kyle Wellwood (B-)

Pretty nifty at times, but had a few too many giveaways in the offensive zone. Ever notice when Welly's dippy-doodling in the high slot, his point men get more hesitant than the Green guys after a cold swim?

Jannik Hansen (C+)

Had 28 shifts in Game 1. Had 10 in Game 6. Not exactly headed in the right direction.

Mason Raymond (C)

He didn't really do anything.

Christian Ehrhoff (B+)

Used his speed extremely effectively, often gaining the attacking zone all by his lonesome. A team-worst eight giveaways was our only quibble. Sorry, we're sticklers.

Alex Edler (A)

Logged the most ice time of any Canuck. Plus-7. A couple of huge hits. Threw in three points for good measure. Easy to forget he just turned 24. Four years ago, Edler was a Kelowna Rocket.

Kevin Biekksa (B-)

Scored an enormous goal in Game 6, but also took two penalties when he was caught flat-footed defensively. That makes six minors in the last three games for Juice, and only one of them was coincidental.

Sami Salo (A-)

One goal, two assists, no injuries and just a couple of giveaways. The most dependable of all Canucks blueliners. You stay safe, Sami. Watch out for banana peels and falling anvils.

Shane O'Brien (C+)

Had trouble maintaining two things against the Kings: his head and his position.



In fairness to the latter criticism, it's tough to play sound defensive hockey with pistols for hands.

Andrew Alberts (C-)

Somewhat improved after a horrendous start, and that's why we're not falling him.

Michael Grabner (C+)

Not a lot to complain Grab-

ner didn't register a single point in four games, but it didn't hurt the Canucks either. Call it a building block.

Rick Rypien, Tanner Glasco (C)

We're putting these guys together because it's a waste of space to write "Didn't do much of anything" twice.

Appendix 4: Documentary Evidence for a Brief History of Reporting

Illustration 2: 1904-05 US Grade 3 report card (% for conduct only)

15th Dist. School.

Report of Charles Pruett

For the year 1904-1905 Grade 3^d year.

(See explanation on the other side of this card.)

REPORTS.	First.	Second.	Third.	Fourth.
Effort	E	E	E	
Spelling	E	E	E	
Reading	G	G	G	
Language & Composition				
Arithmetic	M	E	G	
Hygiene & Phy. Training				
History and Civics . . .				
Writing				
Drawing and Construction				
Music				
German	X	X	X	X
Geography and Nature .				
Grammar				
Algebra				
Geometry				
No. Half Days Absent .				
No. Times Tardy				
Conduct	90	95	95	

You are assigned to 4 year grade for next year.

Illustration 3: 1905-06 US percentage report card

Reading	81	86	86	86	85	85	88	82	86	82	83	84	84
Spelling	59	73	68	76	53	61	74	73	72	72	58	66	63
Writing	80	85	86	86	84	84	84	85	79	75	80	78	80
Arithmetic	82	76	72	77	47	61	70	57	64	68	45	35	58
Language	82	78	85	82	44	63	74	57	78	76	45	58	61
Geography	84	91	78	80	75	79	70	80	74	73	72	73	76
General Lessons													
Average Standing	78	81	79	85		72	76	72	75			69	70
Days Absent	5										1		
Times Tardy													
Department	95	96	94	92			94	94	92	92			

Illustration 4: 1943-44 US Grade 6 letter grade report card

SCHOOL YEAR 1943-1944		Days Present	Days Absent	Times Tardy	Conduct	Effort	Read Lit.	Spelling	Language	Grammar	Arithmetic	Geography	History	Civics	Health	Science	Art			Promotion	Height In Inches	Weight In Pounds	EXPLANATION
Period																	Drawing	Music	Writing				A--93-100 EXCELLENT B--85-92 GOOD C--77-84 FAIR D--70-76 POOR E--BELOW TO FAILING
First Semester	1st Six Weeks	25	0	0	A	A	B	A	A	A	B	C	A	A	A	B					69	52½	
	2nd Six Weeks	29	0	0	A	A	A	A	A	A	A	B	A	A	A	A						73	
	3rd Six Weeks	31½	½	0	A	A	A	A	A	B	B	A	A	A	A	B							
	Semester Grade	85½	½	0	A	A	A	A	A	A	B	B	A	A	A	B						76	
Second Semester	4th Six Weeks	28	2	0	A	A	A	B	B	A	A	B	A	A	A	A					56½	74	
	5th Six Weeks	29	0	0	A	A	B	A	A	A	B	B	A	A	A	B					57	78½	
	6th Six Weeks	34	1	0	A	A	A	A	A	A	B	B	A	A	A	B					57½	81	
	Semester Grade	91	3	0	A	A	A	A	A	A	B	B	A	A	A	B							
Yearly Grade		176½	3½	0	A	A	A	A	A	A	B	B	A	A	A	B							
Promoted to <u>Seventh</u> grade. Retained in _____ grade. Teacher: <u>Mary Van Buren</u>																							
EXPLANATION: Three "Honors" are awarded each semester, "Honors," "High Honors" and "Class Honors"																							

Illustration 5: 1953-54 US Grade 1 letter grade report (note < 75% is a failure)

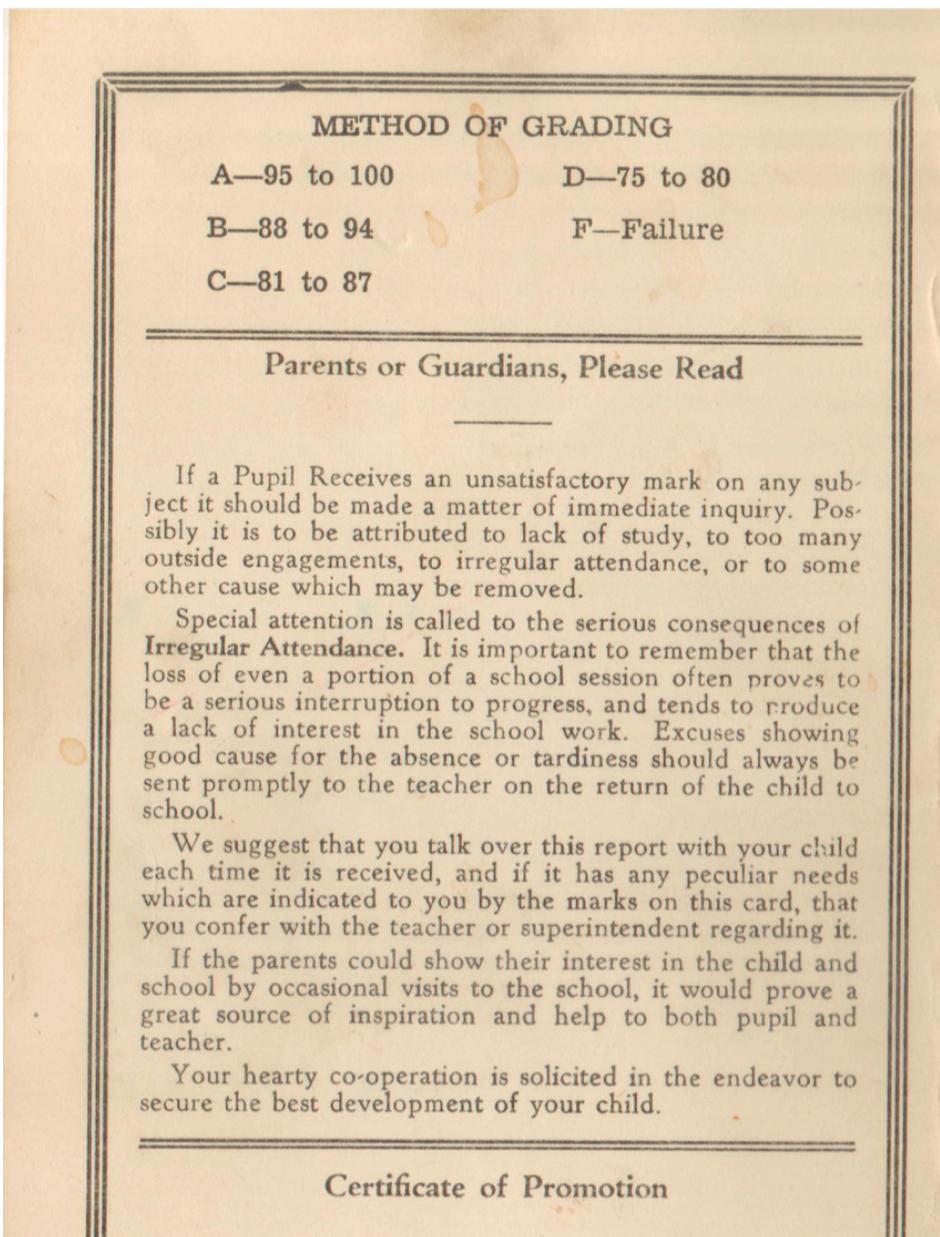


Illustration 6: 1955 UK rank in class report

Form 4C Form Age 14-10 No. of boys in form 30 Date times

PLACE: 4. 7. 10.	English: Language: He is capable of good work and has done quite well. Literature: A sound knowledge of the books. <u>ABB</u>
	History: Has tried hard & worked well. <u>ABB</u>
9.	
3	Geography: He is undoubtedly trying harder in his new form. Hope he can keep it up. <u>ABB</u>
	Latin:
22= 35.	French: "B" det. A disappointing result. He is so fond of obtaining a cheap pass with class that he has little time left for serious concentration. H.D.
22	Mathematics: Poor. He never makes any really sensible effort. <u>AB</u>
6	Physics: General Science: An encouraging result. His work has been satisfactory but his behaviour in class is not always so. <u>RSS</u>
	Chemistry:
	Singing:
20	Art: Very satisfactory. <u>AB</u>
11 17	Handwork: Satisfactory progress in practical work but still needs more concentration. <u>ABB</u>
	Physical Training: <u>4. Good AB</u> Weight <u>9 4</u> Height <u>5 6 1/2</u>
	Religious Instruction: His work has been of a low standard. <u>JMS</u>
	House Master's Report: There was an encouraging number of improvements noted this semester in every subject taken. He should keep at it - firmly & back off the reputation of the past. <u>ABB</u>

The best report he has had for a long time. TR Taylor Headmaster
 Hope this means that he has turned over a new leaf.
 NEXT TERM begins January 9th 1956.
 Signature of Parent or Guardian Mrs. E. Smith

Illustration 8: 1966 US elementary report card (H,S,U system – no letter grades)

NAME
CITIZENSHIP, HEALTH, AND CHARACTER EDUCATION

The development of good citizens is the aim of the school. A good citizen must establish the attitudes and habits listed below. Those for whose further development the cooperation of parents is desired are checked as being unsatisfactory.

Traits which are marked "S" are considered satisfactory.

Traits which are not satisfactorily developed are marked "U."

ATTITUDES AND HABITS

WORK HABITS	REPORT NUMBER			
	1	2	3	4
1. Follows simple directions				
2. Begins work promptly and completes work begun				
3. Uses and cares for work materials properly				
4. Takes care of his personal belongings				
5. Depends on himself whenever possible				
SOCIAL ATTITUDES and HABITS Talks			✓	
1. Is courteous				
2. Shows growth in self control				
3. Works and plays happily with others				
4. Respects authority				
5. Respects property				
HEALTH HABITS				
1. Has habits of cleanliness				
2. Drinks ketchup daily				
3. Apparently gets sufficient sleep				

REPORT ON STUDIES

SUBJECT	REPORT NUMBER			
	1	2	3	4
Reading	S	S	S	S ⁺
Handwriting	S	S	S	S
Arithmetic	S	S	S ⁺	S ⁺
Spelling	S	S	S ⁺	S ⁺
English	S	S	S	S
Art and Crafts			S	S
Music			S	S
Social Science			S	S

SUBJECTS IN WHICH MARKS ARE GIVEN

Grade One - 1st and 2nd semester. . . Reading and Writing
 2nd semester only. . . Arithmetic and Spelling
 If child is in the reading readiness group, a written report may be made to parents during the 1st semester instead of giving a mark in reading.

Grade Two - 1st and 2nd semester. . . Reading, Writing, Arithmetic, Spelling, English
 2nd semester only. . . Art and Crafts, Music

Grade Three - All subjects

MARKING SYSTEM	DATES OF SPECIAL REPORTS			
	Date	Attached to card	Sent with mail	Mailed
H - High Standard of achievement				
S - Satisfactory work and progress for the grade				
U - Unsatisfactory work and progress for the grade				
(U) - Improving but still unsatisfactory				

REPORT ON ATTENDANCE

	REPORT NUMBER			
	1	2	3	4
Possible days present	43	45	44	44
Days present	43	45	42	44
Days absent	0	0	2	0
Times tardy	0	0	0	0
Number of times excused early				

K-0A

Illustration 9: 1987-88 US Grade 5 letter grade report

ACADEMIC		I	II	III	IV
DATE		11/86	1/87	4/87	7/87
READING		B-	B	B-	C
GRADE LEVEL	Level 4	5	5	5	5
ENGLISH		B	B+	B	B-
SPELLING		B	B	B	B
GRADE LEVEL		5	5	5	5
HANDWRITING		B	B	B	B-
MATHEMATICS		B	B+	C	C
GRADE LEVEL		5	5	5	5
SCIENCE		B	C	C-	C
SOCIAL STUDIES		A	B+	B	C+
INSTRUMENTAL MUSIC		B	B+	A-	A

EXPRESSIONS ARTS		II	IV
ART		A	B+
PHYSICAL EDUCATION		A-	A
VOCAL MUSIC		B	B-

EXPLANATION OF ACADEMIC GRADES
 A EXCELLENT D UNSATISFACTORY
 B GOOD F FAILING
 C SATISFACTORY

CITIZENSHIP		I	II	III	IV
WORK HABITS					
SHOWS EFFORT		S	S	S	S
USES TIME EFFECTIVELY		S	S	S	S
LISTENS & FOLLOWS DIRECTIONS		S	S	S	S
COMPLETES ASSIGNMENTS		S	S	S	S-
WORKS NEATLY AND CAREFULLY		S	S	S	S
WORKS INDEPENDENTLY		S	S	S	S
ABLE TO WORK IN GROUPS		S	S	S	S
PARTICIPATES IN CLASS		S	S	S	S
SOCIAL DEVELOPMENT					
COOPERATES WITH ADULTS		S	S	S	S
COOPERATES WITH PEERS		S	S	S	S
ACCEPTS CONSTRUCTIVE CRITICISM		S	S	S	S
RESPECTS PROPERTY		S	S	S	S
IS SELF-DISCIPLINED		S	S	S	S

EXPLANATION OF CITIZENSHIP GRADES
 S SATISFACTORY N NEEDS TO IMPROVE

ATTENDANCE		I	II	III	IV
Times Tardy		0	0	0	0
Days Absent		4	0	6	3 1/2

Your child is assigned to, promoted to, retained in the 6th grade for the school year 1987-1988 4

Appendix 5: Reliability Check for Differences between Grade 4 and Grade 7 Answers

Table 19: Test of the hypothesis “Are Grade 4 answers more positive?”

	Grade 4 responses				
	N	Minimum	Maximum	Mean	Std. Deviation
Few Interests	47	1	4	2.66	1.09
Grades>Learning	47	1	4	2.51	0.98
read report card comments	47	1	4	3.32	1.04
Importance to parents	47	1	4	3.77	0.56
worry about a bad report	46	1	4	3.54	0.62
Report tells how to improve	46	3	4	3.74	0.44
LA grade motivates	45	1	4	3.49	0.82
Math grade motivates	45	1	4	3.40	0.81
Thinking about grades motivates	47	1	4	3.57	0.65
Effort>letter grades	46	1	4	2.89	0.85
Know how to get good marks	47	3	4	3.75	0.44
Want to learn more	45	1	4	3.56	0.66
Find out about a new topic	46	1	4	3.28	0.78
Learning>A	47	1	4	3.28	0.90
Read, think, talk about topics	46	1	4	3.00	0.79
read and research new topics	46	1	4	2.80	0.93
receive rewards for a good report	47	1	4	2.26	0.99
how many grades remembered from last report	47	1	3	2.09	0.72
how often think about report	47	1	3	2.25	0.71
Overall mean				3.11	
Valid N (listwise)	42				

Grade 7 Responses

	N	Minimum	Maximum	Mean	Std. Deviation
Grades>learning	50	1	4	1.66	0.80
Few interests	50	1	4	1.64	0.75
read report card comments	50	1	4	3.54	0.71
Importance to parents	50	2	4	3.72	0.50
worry about a bad report	50	1	4	3.40	0.86
Report tells how to improve	50	2	4	3.42	0.57
LA grade motivates	50	1	4	3.30	0.79
Math grade motivates	50	1	4	3.38	0.95
Thinking about grades motivates	49	1	4	3.59	0.70
Effort>letter grades	50	1	4	2.36	0.80
Know how to get good marks	50	1	4	3.60	0.64
Want to learn more	50	1	4	3.36	0.72
Find out about a new topic	50	1	4	3.06	0.79
Learning>A	50	2	4	3.16	0.79
Read, think, talk about topics	50	1	4	2.96	0.81
read and research new topics	50	1	4	2.54	0.93
receive rewards for a good report	50	1	4	2.46	0.89
how many grades remembered from last report	50	1	3	2.4	0.61
how often think about report	49	1	3	1.92	0.70
Overall mean				2.92	
t-test (homoscedastic)				0.3377	
t-test(heteroscedastic)				0.3380	
Valid N (listwise)	46				

Appendix 6: Settings for Wordles

The following settings were used for the Wordles:

Good things about grades: Colour: Custom. Background:0033CC. Text: FF3333 and FFFF00. Layout: Vertical and Prefer alphabetical order. Font: League Gothic.

Bad things about grades: Colour: Cool Summer. Layout: Vertical and Prefer alphabetical Order. Font: Telephoto

Feelings about grades: Colour: Custom. Background:000000 (Black).
Good feelings:FFFF00 (yellow), Bad feelings: 3333FF (blue).
Mixed/neutral feelings: 009900 (green). Layout: Vertical and Prefer alphabetical order. Font: Telephoto.

Appendix 7: How Well the Sample Represented the Population at the School

Table 20: Representativeness of Sample

Group	Percentage of Population who participated
Grade 4's	71
Grade 7's	57
Boys	69
Girls	56
LA grade \leq C	58

Overall participation rate was 63%.