

**Reporting, Grading, and the Meaning of Letter Grades in Science 9:
Perspectives of Teachers, Students, and Parents**

by

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Abstract

This study investigates the reporting and grading, as well as the meaning of letter grades, of students in Science 9 from the perspectives of teachers, students, and parents in five schools from two British Columbia school districts, one urban and one rural. To that end, four research questions guided the data collection and analyses: (1) What reporting methods do teachers use to communicate information about student learning in Science 9 to students and parents, and what are teachers', students', and parents' opinions of those reporting methods? (2) What grading components do teachers incorporate into Science 9 letter grades, and what grading components do students and parents believe teachers incorporate into Science 9 letter grades? (3) What meanings do teachers, students, and parents attribute to Science 9 letter grades? and (4) What are students' and parents' perceptions about some possible effects of student progress reports in Science 9?

A mixed-methodology design was employed to collect the data. Quantitative data, collected via self-administered written questionnaires from the five Science 9 teachers, 43 students, and 21 parents who volunteered to participate in the study, were used to identify participants' practices and perceptions about grading and reporting. Qualitative data, collected via individual, audio-taped interviews conducted with a subset of the people who completed questionnaires (all five teachers, 16 students, and seven parents), were used to verify, clarify, and expand the questionnaire data. Observational notes and collected documents (e.g., report card forms) also served as data sources.

The results of this study show that most of the participants in the study were generally satisfied with most aspects of the reporting of student progress in Science 9. However, individual teachers consider different kinds of assessment information when they assign Science 9 letter grades, teachers are not always clear and consistent about what they intend letter grades to mean, and students' and parents' beliefs about the grading components and meanings of Science 9 letter grades vary widely. The results of this study also indicate that the information communicated by a letter grade is not always clear and consistent. That the meaning of a letter

grade is not always clear has implications for the ways in which letter grades are used by students and parents. The results of this study indicate that some students' attitudes, behaviours, and decisions could be affected by the grades they receive in Science 9. However, in order for students' attitudes, behaviours, and decisions to be appropriate, their interpretations of the meanings of letter grades must be appropriate. Given the multiple meanings attributed to a Science 9 letter grade, it is likely that peoples' inferences and actions based on a letter grade will not always be appropriate.

This study raises a number of issues. Two classes of issues are discussed: those arising from the research findings, and those arising from the methodology of the study. An example of an issue arising from the research findings is that the process of assigning letter grades is problematic. An example of an issue arising from the methodology is that participants do not always interpret questionnaire items in the way they are intended.

This study contributes to our understanding of teachers' grading practices with respect to the assignment of Science 9 letter grades, and it provides information about students' and parents' understandings of those grading practices. The study also provides insight into teachers', students', and parents' understandings of the meaning of letter grades. In addition, the results of this study help us understand some possible consequences of reports of student progress from the perspectives of students and parents. Another contribution is a direct result of the methodology of the study — by interviewing a subset of the questionnaire respondents after they had completed the questionnaires, it was possible to learn more about how different people interpreted the questionnaire items; that is, it was possible to explore the internal validity of the study. As a result, this study offers evidence about the value of employing more than one data collection method when conducting research.

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CHAPTER 1

INTRODUCTION TO THE STUDY

Background

Letter grades have been the most common method used to communicate information about student performance, or achievement, in school to students and their parents during the 20th century (Gronlund & Linn, 1990). For this reason, virtually all of us have had some experience with letter grades during our lives. As students, information about our progress in school is summarized and communicated to us via letter grades. As parents, we study the letter grades on our children's report card to determine how well they are doing in school. And, if we are teachers, we struggle to condense what we know about a student's progress in school into a letter grade so that we can report our judgment about that progress to the student and his or her parents. At one time or another, then, nearly all of us have had the occasion to think about how letter grades are determined and what they mean.

In British Columbia (B.C.), "reporting refers to the communication among educators, students and parents about student learning" (British Columbia Ministry of Education [BCME], 1993d, p. 12), and formal and informal reports "communicate to parents significant aspects of students' progress in learning ... [and] ... describe, in relation to the curriculum, student progress in intellectual, social, human, and career development" (BCME, 1994a, p. 3). Information communicated to students on their report cards provides them with a summary of their learning progress, can motivate them to work harder, and can help them make educational and vocational decisions (Gronlund & Linn, 1990; Worthen, Borg, & White, 1993). Information communicated to parents on report cards helps them understand how well their children are achieving the intended learning outcomes so that they can help their children with their learning, give them support and encouragement, and help them make educational and vocational decisions (Gronlund & Linn, 1990; Worthen et al., 1993).

Information about students' progress in school can be reported to students and their parents in a number of different ways (e.g., letter grades, anecdotal comments, notes, parent-

teacher conferences, student-led conferences, telephone calls). Throughout the 1990s, as a result of the *Year 2000* initiatives (e.g., BCME, 1990a, 1990b, 1992a, 1992b) and subsequent BCME policies, students, their parents, and teachers in B.C. became familiar with a variety of student progress reporting methods. Which methods are most understandable, and meaningful, became a topic of debate for many people in B.C. during the early part of this decade. Much of the debate pitted anecdotal reporting against the more-traditional report cards with letter grades. Throughout 1993, newspapers published articles and letters that strongly favoured the traditional letter grade approach to reporting student progress (e.g., Balcom, 1993a; McCormick, 1993), as well as those that favoured anecdotal reporting (e.g., Smith, 1993; Young, 1993).

In the early 1990s, anecdotal reporting was introduced at the primary level when the *Year 2000* Primary Program was implemented. At that time, the BCME planned to have the *Year 2000* Intermediate Program implemented by the mid-1990s and the *Year 2000* Graduation Program implemented by the late 1990s. In anticipation of the *Year 2000* Intermediate Program, some schools issued anecdotal reports in lieu of letter grades at the intermediate level. Predictably, not all parents were pleased with the new reporting method — although some parents seemed to support anecdotal reports at the primary level, others felt they were inappropriate at the intermediate and graduation levels (Bachor & Anderson, 1993b). In late 1993, reacting to the public's dissatisfaction with many of the changes proposed by the *Year 2000* program, the B.C. government decided not to implement several of the proposed changes and to rescind others that had already been implemented. Of particular significance to this study was the government's decision to replace anecdotal reports with structured written reports for Kindergarten to Grade 3 students, and to require structured written reports and letter grades for Grades 4 to 7 students and letter grades with written comments for students in Grades 8 to 12 (BCME, 1993c).

The government abandoned anecdotal reports because parents complained that they could not understand them. Often, parents complained that anecdotals did not show how well their child was doing compared to the other students in the class. Many parents stated they preferred

letter grades on their children's report cards — that is, they wanted a reporting method with which they were familiar. Bachor and Anderson (1993b) found “many parents were positively disposed towards grades because grades let parents *know where the student stands*, the parents are familiar with grades, and grades can be motivational for the student *in the sense of something to strive for*” (p. 53, [emphasis in original]). It is no wonder that parents feel comfortable with letter grades — after all, letter grades have been the most common method of grading students throughout this century (Gronlund & Linn, 1990; Worthen et al., 1993). Parents are familiar with letter grades and like them because they believe letter grades let them “know where the student stands”; that is, they believe they know what they mean. But what does a letter grade mean to parents? Or to students? And what does a teacher intend a letter grade to mean?

Few studies have been published that examine what parents and students think letter grades mean. Those that have been published (e.g., Friedman & Manley, 1991; Waltman & Frisbie, 1993, 1994), have certain limitations restricting the conclusions which can be drawn from them. For example, when Friedman and Manley (1991) investigated high school grading practices from the perspectives of teachers, administrators, counselors, parents, and students, they did not situate their study in a specific educational context. That is, they did not ask the participants to refer to a specific school subject, reporting period, or grade-level as they completed their questionnaires. Consequently, participants could have referred to a number of different reporting situations as they completed their questionnaires, thereby making it difficult to compare their perceptions.

Even though Waltman and Frisbie (1993) situated their study in a specific educational context — fourth-grade mathematics — they only compared parents' and teachers' perceptions about the meaning of letter grades. Students were not included in their study because they believed the primary purpose of a report card grade is to communicate information about student achievement from the teacher to the parent and, because students get on-going feedback from their teachers, they do not “need the information provided by report card grades” (p. 1). In

addition, because they wanted “to minimize the possibility that parent responses would be directly influenced by the actual performance level of their fourth-grade child” (p. 5), Waltman and Frisbie administered the questionnaires before the teachers had distributed the first report card; hence, parents were, presumably, indicating not what they thought a letter grade given in mathematics by a particular teacher meant, but what letter grades given in fourth-grade mathematics, in general, meant. Given that the parents in their study may have had varied experiences interpreting fourth-grade mathematics letter grades, and some may not have had any previous experience interpreting such letter grades at all, it is possible that they envisioned a variety of different reporting situations as they completed their questionnaires. If this was the case, then the consistency of the findings may be compromised and difficult to interpret.

As Bachor and Anderson (1993b) pointed out, “the assessment of student achievement is a major element of the educational process. In B.C., the *Year 2000* initiatives ... [had] a pronounced emphasis on student assessment using a wide array of procedures for the collection of achievement information” (p. 1). Assessment results can be communicated to students and parents in a variety of ways, one of which is through the use of letter grades on a report card; yet, teachers sometimes intend letter grades to mean different things for different students (Brookhart, 1992; Waltman & Frisbie, 1993, 1994). If letter grades are to be an effective way of communicating information about student progress, then teachers must be clear and consistent about the meaning of the letter grades they assign, and students and their parents must interpret them in the way the teacher intended — teachers, students, and parents “must have a clear and consistent understanding of what the grade represents” (Waltman & Frisbie, 1993. p. 17).

If letter grades are to be an effective way of communicating information, then we need to know what meanings are attributed to letter grades by teachers, students, and parents. If students and parents interpret letter grades in the way the teacher intended, then communication about student progress can be effective and will help improve student learning and educational and vocational decisions. However, if there are differences in the meanings students, parents, and teachers attribute to letter grades, communication may not be effective, student learning may

not improve, and poor decisions may be made. Once the meanings of letter grades have been identified and described, teachers, students, and parents can work to improve the quality of communication and, hence, improve student learning. With a better understanding of the meanings attributed to letter grades by students and parents, teachers can then critically reflect upon their assessment and reporting practices to determine whether or not their practices are conveying the information in the way, or ways, in which they were intended — that is, in ways that support student learning.

To better understand the meanings that students, parents, and teachers attribute to letter grades, all three stakeholders must be included in educational research. In addition, such research must be placed within a specific educational context with respect to subject, grade-level, and reporting period to ensure that, as much as is possible, participants refer to similar reporting situations as they complete questionnaires and/or participate in interviews. To do this, research must be conducted in a way that enables participants to refer to a specific letter grade assigned for a specific course at a specific time of the year.¹ Such is the aim of this study.

The Purpose and Research Questions of the Study

A report card letter grade is a symbol used to communicate information about student progress in school from the teacher who assigned the letter grade to a number of possible audiences. While it is recognized that letter grades can be used to communicate information about student achievement to school administrators, other teachers, other educational institutions, and, on occasion, potential employers (Gronlund & Linn, 1990; Worthen et al., 1993), it is an assumption of this study that the primary purpose of letter grades is to communicate information about student achievement to students and their parents (or guardians).

Communication is the process whereby people attempt to transmit messages, or information, to one another (Deaux & Wrightsman, 1988). To communicate effectively, people

¹ I decided to collect my data part way through the Science 9 course, at the end of a term, rather than at the end of the course, because I felt it would be difficult, if not impossible, to get people to participate in a study after the course had been completed and new courses were underway, as is the case for semestered schools, or during the summer holidays, as is the case for non-semestered schools.

must give similar meanings to the words, symbols, and/or gestures used to transmit information (Tait & Wibe, 1992) and they “must share certain beliefs and suppositions that will enable them to coordinate their communicative efforts” (Deaux & Wrightsman, 1988, p. 129).

Miscommunication takes place when the receiver of a message misunderstands, does not understand, or misinterprets that which was to have been communicated; that is, miscommunication takes place when the receiver of the information does not attribute the same meaning as that intended by the sender.

For a report card letter grade to be an effective means of communicating information about student progress in school, the teacher must be clear about the meaning of the letter grade, and the student and his or her parent(s) must attribute the same meaning to it as the teacher intended. Conversely, if different meanings are attributed to a letter grade by the teacher, student, and parent(s), there will be miscommunication. When a letter grade is misinterpreted, the inferences made about student progress toward the expected learning outcomes of a course based on that letter grade may not be valid. To attribute the same meaning to a letter grade, and thereby make valid inferences and decisions, the teacher, student, and parent(s) should have a common understanding of the processes involved in the generation of the letter grade; that is, the more familiar students and parents are with a teacher’s grading practices (e.g., kinds of assessment information included in the letter grade, the emphasis given to each grading component) the greater the likelihood that they will attribute the appropriate meaning to the letter grade, and thereby, make valid inferences and decisions. Information about student progress in a particular course is communicated, via a letter grade, primary for the purposes of improving student learning, and making educational and vocational decisions. If these purposes are to be met, teachers, students, and parents must all attribute the same meaning to a letter grade.

In light of the above, the purpose of this study is to identify and describe some of the practices, opinions, and beliefs of the teachers, students, and parents of five different classes located in two different B.C. school districts with respect to grading and letter grades in Science 9 so that we might better understand those practices and beliefs. To that end, both

quantitative (written survey questionnaires) and qualitative (semi-structured interviews, document collection) data collection techniques were employed, and the following four questions guided this study:

1. *What reporting methods do teachers use to communicate information about student learning in Science 9 to students and parents, and what are teachers', students', and parents' opinions of those reporting methods?*

The method(s) used to report students' progress help give meaning to the letter grades a teacher assigns, and students' and parents' opinions of the reporting method(s) used by the teacher affect how letter grades are interpreted. The purpose of this question, therefore, is to describe the method(s) teachers use to report student progress, and teachers', students', and parents' opinions of those methods.

2. *What grading components do teachers incorporate into Science 9 letter grades, and what grading components do students and parents believe teachers incorporate into Science 9 letter grades?*

The grading components incorporated into a letter grade help give meaning to the letter grades a teacher assigns; at the same time, students' and parents' beliefs about the components of a letter grade affect how they interpret that grade. Hence, the purpose of this question is to describe the components of Science 9 letter grades, and students' and parents' beliefs about those components.

3. *What meanings do teachers, students, and parents attribute to Science 9 letter grades?*

The purpose of this question is to describe the meaning(s) teachers intend their letter grades to communicate about student progress in Science 9 (e.g., it shows how well a student in Science 9 compared to the other students in the class), and the meaning(s) students' and parents' attribute to Science 9 letter grades.

4. *What are students' and parents' perceptions about some possible effects of student progress reports in Science 9?*

Two reasons for reporting information about student progress in school are to improve student learning and to make educational and vocational decisions. Accordingly, the purpose of this question is to describe students' and parents' perceptions of the effect of progress reports on several factors affecting student learning in school (e.g., the amount of homework they do, their work habits in school), and vocational and educational decisions.

Definition of Terms

In this study, assessment and evaluation are viewed as two closely related, but distinct, processes. *Assessment* takes place when a teacher collects information about student knowledge, skills, and attitudes. *Evaluation* takes place when a teacher uses the information collected via the assessment process to make a judgment about a student's learning progress, or achievement in particular unit, course, or grade-level, in school. Whenever a teacher *grades* or assigns a letter grade to a student, she does so as a result of an evaluation process; therefore, for the purpose of this study, teacher evaluation of student achievement, or progress, is equated with *grading* and a *letter grade* is the symbolic indication of the evaluation, or judgment, a teacher has made about a child. Hence, the terms used in this document are defined as follows:

- *Assessment* "is the systematic gathering of information about what students know, are able to do and are working toward" (BCME, 1994a, p. 103).
- *Evaluation* is the process of judging student performance in a particular unit, course, or grade-level in school based on assessment information.
- *Grade* refers to a symbol (i.e., letter, number) that summarizes "complex information about a student's performance in a particular area" (Worthen et al., 1993, p. 378).
- *Grade-level* refers to the year of schooling in which a child is enrolled (e.g., Grade 9).

- *Grading factors* or *grading components* refer to the kinds of information considered by a teacher and incorporated into a letter grade.²
- *Reporting* “refers to the communication among educators, students and parents about student learning” (BCME, 1993c, p. 12).
- *A report of student progress*, or *student progress report*, is the method by which information about student learning is communicated to students and parents; such reports can be classified as formal or informal.³
- *A report card* is a formal written summary report about a student’s progress in school.

Delimitations and Limitations of the Study

Delimitations: This study is restricted to the teachers, students, and parents from five Science 9 classes who volunteered to complete written survey questionnaires about grading and letter grades, and to a subset of them who agreed to be interviewed. It is also restricted to participants’ perceptions about grading and letter grades given at the end of a term, part way through a course, rather than at the end of a course.

Limitations: There are four limitations to this study. The first limitation is that all of the participants were volunteers. As such, they cannot be considered to be random samples of any specific target populations (Borg & Gall, 1979). The samples in this study are known to be highly biased in favour of non-immigrant, English-speaking students and non-immigrant, English-speaking parents with fairly high levels of education (most have a diploma or a degree), therefore, the views and opinions expressed by the people in this study should not be thought of as either exhaustive or typical of those existing in the total population. In the end, the volunteer nature of the participants decreases the generalizability of the findings with the result that the

² Grading components are discussed in more detail in Chapter 3.

³ Reports of student progress are discussed in more detail in Chapter 3.

study will not be generalizable to all student grading situations.

The second limitation concerns the participation rates of students and parents. Overall, they were low, and the rates varied greatly from class to class. Moreover, no students were interviewed from two of the classes, and no parents were interviewed from three. Had the purpose been to test hypotheses and make statistical inferences, the rates would have been extremely disappointing and the data unusable. However, because the purpose of the study is to explore people's practices, beliefs, and opinions as they pertain to the grading and letter grades in Science 9, I believe that, in the end, a satisfactory number, and variety, of people participated.

The third limitation has to do with the methods used to collect information from the participants; there is a possibility that the organization of the questionnaires and interviews could have prevented people from expressing views different from those implied by the response options. Despite the fact that I gave them the opportunity to add any other information they wanted, by including fixed-response items on the questionnaires I could have limited participants' abilities to identify or recall some of their other views. The findings emerging from this study, therefore, are limited by the structure of the questionnaires and interviews.

A fourth limitation arises from the fact that I met only once with each of the people I interviewed. As a result, each person had only one opportunity to discuss their questionnaire responses and share their views with me. Moreover, they had no opportunity to discuss the data and results with me. Had member checks (Lincoln & Guba, 1985; Merriam, 1988) been conducted, the internal validity of the study would have been strengthened. Accordingly, the interpretations presented in this document are mine, and it is recognized that the findings could be subject to other interpretations.

Organization of the Thesis

There are 10 chapters in this document. The first four chapters present the foundations of the study: Chapter 1 introduces the study, Chapter 2 presents the personal and historical contexts of the study, Chapter 3 discusses literature related to the study, and Chapter 4 describes the methodology of the study. Chapter 5 describes the people of the study, and Chapters 6 through 9 present the outcomes of the analyses of the data for the four questions of the study. The final chapter discusses the results and implications of the study.

CHAPTER 2

THE PERSONAL AND HISTORICAL CONTEXT OF THE STUDY

The context of the study is presented in this chapter. In it, I describe personal experiences that help frame the study, consider several recent developments in education in North American education and B.C. relevant to the study, and discuss validity theory as it applies to student testing and assessment.

A Personal Perspective

Among other things, I am the mother of two school-age children, I am an educator, and I am a student. Each of these aspects of my life has helped form the backdrop of this study. Each of these aspects of my life has helped me interpret my children's report card letter grades. In this section, I describe several experiences that compelled me to pursue this study — that is, I describe the personal context of the study.

During the first few years of his schooling, my eldest son's progress was reported via anecdotal report cards. Because I had consistently monitored what he was doing in school, and because he was an academically strong student, I always felt that I understood what his report cards meant and that I knew how he was progressing in school; I was a proud parent with a child who seemed confident about his ability to succeed in school.

When he entered the intermediate level in school, we were told there would be letter grades on his report card — anecdotal report cards were no longer to be sent home and progress was to be reported via letter grades, work habit symbols, and written comments. He looked forward to his first term report card, convinced that he would get "straight As". A good report card it was; however, there was that "B" in Language Arts that really bothered him.

"I don't know why I got a 'B'. I did all my work. I finished all my Reader's Response sheets and even did extra work for bonus marks."

"Bonus marks?" I asked.

“Yes, Mrs. ____ uses comparative marking and allows us to work for bonus marks if we want to improve our letter grade.”

“Mmmmmm.” I replied.

Because my son was highly motivated to get “straight As”, he decided to find out what other students had done to get an “A” in Language Arts. He discovered that some students had received many bonus points for the glossary section of their Reader’s Response sheets — in the glossary section, students were expected to give definitions for key words used in a story. As it turned out, my son had defined each term according to its context in the story; the other students, however, had written down as many definitions as they could find in the dictionary for each key word. Any guesses as to how my son did his work for the rest of the year? And, yes, he did get his “A” in Language Arts!

As a more than interested parent and educator, I have to admit that my son’s strategy for getting an “A” in Language Arts dismayed me. I could see that he was being rewarded with a higher letter grade for what, in my opinion, was lower quality work. Not for the first time, I had to question just what letter grades were supposed to mean and to wonder about the consequences of using letter grades. I reflected upon my struggles as a science and band⁴ teacher during report card time when I tried to be as fair as possible with my students. I shuddered when I thought about some of the decisions I had made as a practicing teacher vis-à-vis assessment and evaluation, and I wondered about the effects they may have had upon my students. I began to think that I should put aside my proposed dissertation topic on attitudes toward science and start to investigate teachers’ grading practices, instead — but I didn’t.

I didn’t, that is, until I helped my son through two more reporting periods that year. As I have already suggested, by the second term, my son had figured out how to achieve an “A” in Language Arts — it was in science that the vagaries of grading student progress was revisited during the second term. The science letter grade for the second report card was to be based on a single research project. Because each child had been given a sheet outlining how marks were to

⁴ In addition to teaching junior and senior science courses, I taught Band 8 to 12.

be allotted for the project, my son knew exactly what he had to do. He worked hard. He did everything he had to do. His science report looked very good to me. It must have looked good to his teacher, too, because the day he handed it in he came home to tell me that he had received 100% for his science report.

"Well done, hon!" I said.

"Yeah, but I might not get an 'A'," he replied.

"Oh?"

"Well, you know that Mrs. ____ uses comparative marking ... "

"Yes?" I said through my teeth.

"Well, ... she told us that she still has to take all the projects home and line them up on her living room floor from best to worst before she can decide who will get an 'A'. She can only give out so many As, you know!"

"Mmm. Well, how do you think you did on your project?" I asked as I tried to avoid casting aspersions against a teacher whom I knew to be very good — in spite of my son's description of her assessment and evaluation practices.

"I did a very good job. I learned a lot about swifts."

"Yes, and you learned a lot about word processing, too."

"Yeah. But what about Julie, Mum? She worked really hard, but her project looked the worst. She's probably going to get a 'D'."

"Mmmmmmm," was all I could say.

He did get his "A" in science that term. I don't know how Julie fared. I, however, began to seriously think about changing my dissertation topic.

My son's experiences during the last term of that year provided the final catalyst I needed to change topics. Once again, he was working for an "A" in Language Arts; to get one, the teacher had told the students that they needed to achieve a score of, at least, 500 points on their Reader's Response sheets. Well, my son — bolstered by his bonus point strategy — worked hard, handed in the required five out of a possible seven Reader's Response sheets by the day

they were due, and managed to accumulate a total of 630 out of 500 points. Convinced that he had enough marks for an “A”, he decided to concentrate on other aspects of his studies — even when the teacher extended the deadline by another week. Bad choice! It seems that, because additional time had been allotted to them, some of the other children in my son’s class had decided to complete more than the five required response sheets and had been able to amass a total of 700 points each. As a result, my son was told by his teacher that he probably would not be getting an “A” after all. By this time he didn’t seem to be quite as concerned about his letter grade, he was, however, once again concerned about Julie.

“But what about Julie?” he asked. “She worked really hard and thought that she would be getting a ‘C’, but now she’s probably going to get a ‘D’. She was crying.”

I had to wonder about Julie’s fate. Could she have already told her parents that she was going to get a “C” on her report card? Would there be any consequences for her if there was a “D” on her report card instead of the expected “C”? What did a letter grade mean in my son’s class, anyway?

The primary purpose of a report of student progress is to communicate to the students, and their parents or guardians, information about student learning — about their performance, or achievement, in school (BCME, 1994a). Yet, how was I to interpret the letter grades assigned to my child on his report card? How did other parents interpret the letter grades on their children’s report cards? How did the students in my son’s class interpret their letter grades? What did the teacher intend a letter grade to mean? How do teachers learn how to assess and evaluate student performance in school? How do they decide which aspects of student performance to assess and evaluate for the purpose of grading?

With these, and many more, questions motivating me, I began reading research on grading and letter grades, and began the long journey toward the completion of a study that will, hopefully, help to provide insight into some of these questions — a study that will explore grading, reporting, and letter grades from the perspectives of teachers, students, and parents.

A North American Perspective

Introduction

In addition to my own personal experiences, several relatively recent events in education help frame this study. Some of these events originated in the United States (U.S.A.) (e.g., National Commission on Excellence in Education [NCEE], 1983) and apply more to education in the U.S.A., however, I discuss them in this section because, due to its vast size and close proximity, American educational policies and practices have often influenced education in Canada (Tomkins, 1979). Many Canadian educators complete their graduate work at American universities and return to Canada with American ideas, while American experts are often commissioned to do research and to help with Canadian educational problems. As Tomkins concluded, “the professionalism of Canadian educational theory and practice ... [has become] ... in essence Americanization” (1979, p. 8). Rather than responding in its own way to its own problems, Canada has often viewed its problems as mirror images of American ones, resulting in the “indiscriminate importation of American curriculum materials and projects that naturally enough ... [deal] ... with American social problems” (Tomkins, 1981, p. 164). Because developments in American education tend to affect education throughout North America, they cannot be ignored and must be considered to be part of the context of this study.

Other events, like the 1988 Royal Commission on Education (Sullivan, 1988), originated in B.C. and have a distinctly B.C. flavor. These I discuss in the next section.

American Educational Concerns of the 1950s and the 1960s

On October 4, 1957 the, then, Soviet Union successfully launched the *Sputnik* satellite. As a result, science and technology education became a “national priority” in the United States (Duschl, 1990). Money poured into American education, and many curriculum projects were launched (Worthen & Sanders, 1987). Many of those projects, and the materials developed for them, were imported from the U.S.A. into B.C. and the rest of Canada.

During the 1960s, Americans were concerned not only with their place in the world vis-à-vis science and technology, they were also concerned with the civil rights of their citizens and the educational opportunities of minority children (Worthen & Sanders, 1987). As a result of the 1964 Civil Rights Act and the 1965 Coleman Report, even more money was devoted to American education. Eventually, government concern that “money authorized for education would be spent as intended” (Worthen & Sanders, 1987, p. 17) led to legislation mandating educational evaluation and a new emphasis on educational accountability through student testing (Popham, 1990).

Educational Reform, Accountability, and Standardized Testing in the 1970s and 1980s

In the 1970s, reports that Scholastic Aptitude Test (SAT) scores were declining in the U.S.A., and that many students were graduating from secondary schools unable to read or write led some states to institute minimum competency testing programs (Brandt, 1989). Then, in 1983, the National Commission on Excellence in Education published its report, *A Nation at Risk* (NCEE, 1983) which, according to Berlak (1992), “told the American public that a major cause, if not the major cause, of America’s fall from grace as the world’s pre-eminent economic power was the failure of the nation’s schools to educate a competent, dedicated work force” (p. 2). In response to this criticism, the educational reform movement moved into high gear and state-wide testing programs were implemented for the purpose of assessing student progress in school.

By the end of the 1980s, “virtually every state had instituted a combination of top-down measures intended to raise educational standards ... by far the most common measure [was] statewide testing programs throughout the grades” (Berlak, 1992, pp. 4-5), and the U.S.A. had, what some called, a “culture of testing” (e.g., Kleinsasser, Horsch, & Tastad, 1993; Wolf, Bixby, Glenn, & Gardner, 1991). Inevitably, as newspapers began to publish the results of these testing programs on a district-by-district and a school-by-school basis, the scores generated as a result of standardized testing programs, designed and implemented for the

purpose of making student promotion and graduation decisions (Worthen 1993a), were also used for purposes other than that for which they had been intended (Popham, 1990). The extent of the impact of this culture of testing is reflected in this passage written by Shepard in 1989:

In the United States today, standardized testing is running amok. Newspapers rank schools and districts by their test scores. Real estate agents use test scores to identify the “best” schools as selling points for expensive housing. Superintendents can be fired for low scores, and teachers can receive merit pay for high scores. Superintendents exhort principals and principals admonish teachers to raise test scores — rather than to increase learning. (p. 4)

By the mid-1980s, many, if not most, administrators, teachers, and students in the United States, had become participants in “high-stakes” testing programs as standardized tests were used to assess students, teachers, administrators, and educational programs, and test results were being used in a variety of ways not originally intended by their developers.

The situation in Canada during the mid-1980s, however, appears to have been somewhat different than in the U.S.A. — Canada did not embrace standardized testing to the same extent as the United States had (McLean, 1985). Although both B.C. and Alberta re-instated provincial Grade 12 examinations during the 1980s, and standardized testing was common at both the district and provincial levels in Canada, McLean concluded that the results of standards tests were not widely used throughout the country.

That may have been the case when McLean examined Canadian student evaluation practices during the mid-1980s; by the mid-1990s, however, the results of standardized testing were indeed being used more extensively — and used in a manner similar to that observed by Shepard in 1989. For example, in February of 1996, one B.C. newspaper, *The Province*, published a series of articles that linked school success to standardized test results (Austin, 1996a, 1996b, 1996c, 1996d; Proctor, 1996a, 1996b, 1996c). At the same time, the newspaper published lists that “ranked” schools on the basis of the 1995 B.C. Grade 12 provincial exam results (“Exam Results School by School,” 1996a, 1996b, 1996c). For each of several subjects — Chemistry, English, English Literature, Geography, History, and Physics — all B.C. public secondary schools were ranked on the basis of the average score obtained by their students on

the 1995 Grade 12 provincial exam. Also included in the list were the number of students who had written the exam for each subject and the district to which the school belonged.

Accompanying the ranked list was the explanation:

The figures on this page show the average marks in last year's [1995] Grade 12 provincial exams for all British Columbia public high schools. The Province [newspaper] obtained the results from the Ministry of Education for each subject and each school. To ensure we compared only high school marks, we removed continuing education and correspondence courses from the list. The Ministry uses these same figures as one of the bench marks to judge how schools compare. The exam results count for 40 per cent (*sic*) of the student's total marks. ("Exam Results School by School," 1996a, 1996b, 1996c)

The Grade 12 provincial exam results, therefore, were used not only by a provincial newspaper to rank B.C. schools, but according to the newspaper, exam results were also used by the BCME "as benchmarks to judge how schools compare" — a discomforting thought given that the provincial exams were developed for the purpose of assessing student achievement; not to evaluate programs or schools. Just as standardized test results have been used for purposes other than for what they were intended in the U.S.A., so have they been in B.C. It would seem that, once again, the influence of American educational policies and practices have extended into Canada, or at least into B.C.

Publishing lists of schools ranked by standardized test results, early in 1996, had definite consequences for people working and learning within the B.C. public education system. For some, the consequences were positive — how could the students and teachers of the schools profiled in articles such as *'We're the best'* (Austin, 1996d), *Coach ignites classes: Cheri Smith heads the hottest science department in B.C.* (Austin, 1996a), or *Kits all-round best: Athletics and the arts are equally important* (Proctor, 1996c) feel anything other than immense pride in themselves? For others, however, the consequences were negative. Gene Darreth, a secondary school teacher, articulated some of the negative consequences of ranking schools by test results in a letter he sent to *The Province*. He wrote:

I commend your paper for publishing some very rare positive views about school teachers. But to blindly rate the schools as though education were some great competition is pathetic and damaging. ... We are a very small school in a community with severe social and economic problems. Teachers at this school

struggle every day to build hope, self-esteem and pride in native cultural history amid a very difficult social situation in which alcohol, drugs, suicide and family abuse have had a very damaging effect on almost everyone. When our students saw their school rated last in a major newspaper, it made them feel worthless, embarrassed and hopeless. How could our students be judged against students whose reality and opportunity are totally different? It was brutally unfair to coldly list us all without taking into account the many variables of the schools and communities involved. (Darreth, 1996)

There are consequences when standardized testing programs are instituted. Some consequences are intended — student achievement is assessed and decisions about promotion or graduation are made based on test results. Other consequences are unintended. Some unintended consequences may be perceived as positive, as is the case when schools receive accolades for the high scores of their students, or they may be perceived as negative, as is the case when schools are ranked at the bottom of the list due to low test scores.

Like their American counterparts, educators and students in B.C. are now participants in a “high-stakes” testing program — the Grade 12 Provincial Examination Program — the results of which are used not only to assess student achievement but to rank schools by students’ test scores, as well.

Testing and Assessment Under Review

The increased reliance on testing in education in the U.S.A., during the 1970s and 1980s, encouraged researchers to identify and address some of the problems associated with it. Cannell’s 1988 article described the “Lake Wobegon Effect” in which he asserted that “standardized, nationally normed achievement tests give children, parents, school systems, legislatures, and the press misleading reports on achievement levels ... [because] ... these tests allow *all the states* to claim to be above the national average!” (p. 6).⁵ This revelation helped to touch off debates that focused on issues such as the adequacy of national norming samples (e.g., Lenke & Keene, 1988; Linn, Graue, & Sanders, 1990; Phillips & Finn, Jr., 1988;

⁵ Cannell (1988) argued that the main reason more than 50% of American students scored above average on standardized tests was due to out-of-date test norms. As he observed, “An above-average score does not mean that the average student or the district or the state is above the current year’s average. It means only that the score achieved is better than the mean score achieved by the norm group in years past” (p. 7).

Shepard, 1990); the kinds of inferences that can be made based on test scores (e.g., Lenke & Keene, 1988); test-wiseness (Carter, 1986; Rogers & Bateson, 1991); and appropriate test preparation strategies (e.g., Mehrens & Kaminiski, 1989; Popham, 1991; Shepard, 1990).

As the 1980s ended and the 1990s began, researchers continued to address a variety of other issues associated with testing and the assessment of academic achievement including: bias in test use (e.g., Cole & Moss, 1989; Linn & Drasgow, 1987); teachers' classroom assessment practices (e.g., Bachor & Anderson, 1991, 1993a, 1993b; Bateson, 1990; Brookhart, 1992, 1994; Olson, 1990; Stiggins, 1989; Stiggins & Conklin, 1992; Stiggins, Frisbie, & Griswold, 1989; Wilson, 1989, 1990, 1992); and the impact of testing on students, teaching, and learning (e.g., Airasian, 1988; Anderson, Muir, Bateson, Blackmore, & Rogers, 1990; Brandt, 1989; Crooks, 1988; Jervis, 1989; Nolen, Haladyna, & Haas, 1992; Smith, 1991). Research indicating that "high-stakes" testing helps determine how and what teachers actually teach (e.g., "Interview with Lorrie Shepard," 1991; Nolen et al., 1992; Smith, 1991) and what students will study for (e.g., Crooks, 1988) led some to argue that testing should "once again serve teaching and learning" (Wiggins, 1989b, p. 41).

In 1987, concern about the quality of student assessment devices and the use made of them by educators, led representatives from several American professional education associations involved in teaching, teacher education, and student assessment to collaborate to develop standards for teacher competence in student assessment (Sanders, 1989, p. 25). The outcome of this collaboration was the publication of the document, *Standards for Teacher Competence in Educational Assessment of Students* (American Federation of Teachers, National Council on Measurement in Education, National Education Association, 1990). The committee who produced this booklet believed that good student assessment is essential to good teaching, and that both practicing and preservice teachers should be trained to develop the competencies advocated by the seven standards.

Around the same time as the American standards were published, representatives from a number of Canadian professional education organizations and provincial governments began

working together to produce a similar document for Canada. Published in 1993, the booklet, *Principles for Fair Student Assessment Practices for Education in Canada (Principles for Fair Student Assessment, 1993)*, presented nine different principles, and their related guidelines, that identified “the issues to consider in exercising professional judgment and in striving for the fair and equitable assessment of all students” (p. 3). Organized into two parts, the booklet presented five principles relevant to assessments carried out by teachers and four relevant to standardized assessments.

While some concerned educators developed standards and principles to guide teachers’ assessment practices, others argued that teachers should replace traditional tests with other forms of assessment. For example, in their often-cited 1988 publication, Archbald and Newmann criticized the use of traditional standardized tests for the purpose of assessing student progress on the grounds that such tests “communicate very little about the quality or substance of students’ specific accomplishments ... [and because] the type of learning actually measured is often considered trivial, meaningless, and contrived by students and adult authorities” (p. 1). They contended that “a valid assessment system provides information about the particular tasks on which students succeed or fail, but more important, it also presents tasks that are worthwhile, significant, and meaningful — in short, *authentic* [emphasis in original]” (p. 1).

Archbald and Newmann were not alone in their belief that assessments should be “authentic”; many other authors advocated the use of authentic assessment methods to assess student achievement (e.g., Berlak, Newmann, Adams, Archbald, Burgess, Raven & Romberg, 1992; McLean, 1990; Perrone, 1991; Shepard, 1989; Wasserman, 1993; Wiggins, 1989a, 1992, 1993; Wolf, et al., 1991). Referred to variously as “direct assessment”, “performance assessment”, and “alternative assessment”, authentic assessment is viewed, by its advocates, as an alternative to traditional paper-and-pencil tests because it involves the “*direct* examination of student *performance* on significant tasks that are relevant to life outside of school [emphasis in original]” (Worthen, 1993a).

As interest in authentic assessment increased, researchers began to address a number of issues pertaining to it including: the conditions needed to implement authentic assessment (Worthen, 1993b); its cost (Madaus & Kellaghan, 1993; Popham, 1993); its time requirements (Madaus & Kellaghan, 1993); its practicability (Madaus & Kellaghan, 1993); its effect on teachers and students (Madaus & Kellaghan, 1993); the value of the information elicited by it about students (Madaus & Kellaghan, 1993); validity issues as they apply to authentic assessment (Burger, 1994; Wiggins, 1993); and the generalizability of scores from performance-based assessments (Brennan & Johnson, 1995; Linn & Burton, 1994). In B.C., the BCME advocated authentic assessment methods in its publication *Reform of Assessment, Evaluation, and Reporting for Individual Learners: A Discussion Paper* (BCME, 1992a). Authentic assessment has also influenced educational measurement literature and science education (e.g., Pine, Baxter, & Shavelson, 1991; Shavelson & Baxter, 1992) in recent years.

In 1992, Bateson suggested that the authentic assessment movement had initiated a paradigm shift in educational measurement (Bateson, 1992). It is not yet possible to ascertain whether or not authentic assessment will truly revolutionize teachers' assessment practices, however, because there are many who believe in the continuing efficacy of standardized testing programs and other traditional assessment methods. Nevertheless, there is no doubt that the authentic assessment movement has influenced policy and practice in education throughout North America. Whatever its longevity, it is necessary to consider developments in the authentic assessment movement as part of the context of this study.

A Uniquely British Columbian Perspective

The Sullivan Royal Commission and its Legacy for Learners

Here in B.C., a major influence — if not the major influence — on education during the late 1980s and early 1990s, was the 1988 *British Columbia Royal Commission on Education* (Sullivan, 1988), or as it is more commonly known, the *Sullivan Commission*. Initiated in March 1987, the *Sullivan Commission* took place at a time when birth rates were low and the population was aging — “two social factors with profound meaning for educational social

planning” (p. 2). It was also a time of social change as people in B.C. began to consider individual, minority, cultural, and language rights issues. The *Sullivan Commission* was initiated because social changes had “significant implications for provincial schools and educational policies in general ... [and it was] recognized that a reassessment was necessary if we are to look forward to the future with confidence” (p. 2).

There were three main purposes to the *Sullivan Commission*: the first, and primary purpose, was “to listen to what the people of British Columbia had to say about education and the school’s role in the educational process” (Sullivan, 1988, p. 5); the second was to initiate “a series of research studies to examine some fundamental and vexing issues relating to the provision of educational services in the province” (p. 5); and the third purpose, based on the information generated as a result of the first two purposes, was “to develop and present a coherent understanding of the school’s role in British Columbia society today and the meaning of education to a provincial community that is experiencing important social and economic changes” (p. 5). The Commission sought to understand the strengths and weaknesses of the B.C. educational system at that time. However, it did not conduct an audit of school productivity and efficiency.

Members of the *Sullivan Commission* traveled throughout B.C. listening to the people of the province talk about education. They traveled more than 24 000 km and visited 139 schools in 89 communities. They held 66 public hearings and attended 54 meetings with teachers, and 23 student assemblies. People were invited to give both oral and written submissions. In the end, the “Commission received almost 2 350 written and oral submissions from individuals and groups in all parts of the province [attesting] to the public’s great interest in schooling in British Columbia” (Sullivan, 1988, p. 3). The Commission’s report, *The Report of the Royal Commission on Education, 1988: A Legacy for Learners* (Sullivan, 1988), contained 83 recommendations several of which focused on student assessment and reporting.

The response of the Social Credit government of the day to the recommendations of the *Sullivan Commission* was “presented in *A Mandate for the School System* and in *Policy*

Directions, and was given legislative form in the School Act [of September, 1989]" (BCME, 1990b, p. 3b). The booklet, *Year 2000: Framework for Learning* (BCME, 1990b), delineated the BCME's policies as they pertained to the organization of educational services for students. Although it was not a curriculum guide, this booklet outlined the direction education was expected to take in B.C. The changes proposed for the provincial educational system were vast and of the kind Cuban (1988) referred to as "second-order changes" (p. 342). They were changes intended to alter the fundamental organization of schools in B.C., and to influence the ways teachers taught students, and assessed, evaluated, and reported student progress. The changes proposed by the BCME were designed to address changes in society, to incorporate new knowledge about how people learn, and to help schools better meet B.C.'s educational goal — the intellectual, human and social, and career development of students.

The key principles of learning articulated in the booklet, *Year 2000: Framework For Learning* (BCME, 1990b), served as the foundation for the principles of curriculum and assessment. As stated by the BCME (1990b), the key principles of learning were: "learning requires the active participation of the learner"; "people learn in a variety of ways and at different rates"; and "learning is both an individual and a social process" (BCME, 1990b, pp. 7-8). Following from these key principles of learning, the BCME asserted that curriculum and assessment should be "learner focused". The *Year 2000: A Framework For Learning* (BCME, 1990b) stated that:

learner-focused curriculum and assessment is *developmentally appropriate*, allows for *continuous learning*, provides for *self direction*, meets the *individual learning needs* of students as much as possible, and deals with matters of *relevance* to learners [emphasis in original]. (p. 9)

To accommodate learner-focused curriculum and assessment, new provincial programs were defined for B.C., and the 13 years of schooling were divided into three programs: the Primary (Grades K to 3), the Intermediate (Grades 4 to 10), and the Graduation Programs (Grades 11 and 12).

The BCME published a number of documents to explain the *Year 2000 program* (e.g., BCME, 1990a, 1992a, 1992b, 1992c, 1992d). Particularly relevant to this study were three documents written about the changes to be implemented at the junior secondary level — *The Intermediate Program: Foundations* (1992d) and *Supporting Learning: Understanding and Assessing the Progress of Children in the Primary Program. A Resource for Parents and Teachers* (BCME, 1992b), and *Reform of Assessment, Evaluation, and Reporting for Individual Learners: A Discussion Paper* (BCME, 1992a).

Assessment, Evaluation, and Reporting Under the Year 2000 Program:

The *Year 2000* documents encouraged educators to move away from a heavy reliance on paper-and-pencil testing to more authentic methods (BCME, 1992b); they encouraged students, parents, and teachers to contribute to and participate in the assessment process; and they explained that letter grades were no longer to be used for reporting children's progress at the primary level because "letter grades were dependent on teacher and parent interpretation and often focused on surface knowledge rather than understanding" (BCME, 1992b, p. 10). As an alternative, the BCME planned "to move away from the sole reliance on letter grades and to move towards the use of descriptions and examples of student performance" (BCME, 1992a, p. 10), and primary teachers were expected to use samples of student work and anecdotal reports to communicate information about what students are learning and can do.

With respect to the Intermediate Program, *The Intermediate Program: Foundations* (1992d) document maintained that assessment, evaluation, and reporting should be embedded in the learning environment and enhance student learning. Assessment, evaluation, and reporting were defined by the BCME as follows:

Assessment involves gathering information about students' experiences and about what they have learned. Evaluation involves interpreting that information in order to make further curricular decisions. Reporting refers to the communicating of student learning to students and parents/guardians. (BCME, 1992d, p. 103).

The BCME viewed assessment, evaluation, and reporting as "part of an ongoing process of collaboration between students and teachers, that enables them to identify what was learned,

how students work best, and how they can improve” (BCME, 1992d, p. 103), and intermediate teachers were expected to “seek authentic evidence of what students can do, determining their strengths and needs through a variety of methods” (BCME, 1992d, p. 103). Moreover, the BCME took the position that symbols (i.e., letter grades) do not provide enough information about a child’s progress in school because they do not explain what students are learning, and how they are developing and performing; as a consequence, the BCME decided to replace letter grades with anecdotal reports at the Intermediate level.

Public Reaction to the *Year 2000*

As might be expected, the *Year 2000* changes were not met with enthusiasm by all British Columbians. People criticized the program because it promoted continuous progress (e.g., Balcom, 1993a, 1993b), downplayed competition in the schools (e.g., Balcom, 1993a; Foulds, 1993), and used anecdotal report cards (e.g., Balcom, 1993a, 1993b). According to Moira Baxter, the president of the B.C. Confederation of Parent Advisory Councils, parents were most concerned about assessment and reporting under the *Year 2000* program, (Balcom, 1993a). These newspaper excerpts reflect some of the concerns expressed by people in B.C. at the time:

Byron Price has never been a teacher. Nor has he been a parent. But as president of the newly formed Society For The Advancement of Education, he has a lot to say about the quality of education in B.C. school. Most of it isn’t good. ... Price believes most parents want to know how their children are doing compared to other students in the class. But it’s getting tougher to find out. At the primary level, report cards don’t show marks anymore, only anecdotal comments about a child’s progress. (Balcom [Sun staff writer], 1993a)

As a parent, I’m frustrated because ‘anecdotal reporting’ does not tell me how my children are doing in relation to their peers. While the ministry of education tells me “this is not important, I feel it is.” (McCormick [parent], 1993)

The ease with which children can fall behind their classmates is a major concern for parents. So too is the assessment and reporting process, especially anecdotal report cards. The carefully couched phrases are too vague, they say. Teachers complain it takes far more time to write individual comments for each child that it does to record letter grades. (Balcom [Sun staff writer], 1993d)

As the above excerpts show, some British Columbians did not like anecdotal report cards because they felt that they were too vague and that they did not indicate how well their children were doing in school compared to their peers.

Not all people agreed with the opinions expressed above, however. The following excerpts represent some other points of view:

Primary school parents and conservative-minded educators who want the schools to award letter grades instead of anecdotal reports, as provided for in the Year 2000 program, are really wanting the schools to pick out winners and losers. ... Letter grades tell some children they are successful learners and tell others they are failures as learners. ... Shame on parents and educators who want schools in which failure is used in an absurd, futile attempt to promote learning. Our schools should not be in the business of picking winners and losers. (Young [retired school principal], 1993)

As a parent, I don't want to go back to letter grades in elementary school. An A, B, or C doesn't tell me nearly enough. I want to know my children's strengths and weaknesses, their accomplishments and where they are having difficulties. ... I want to know especially what the teachers' expectations are for children of the same age and, in general how my children measure up against those guidelines. ... My son's last report card told me — with lots of examples — what the teacher expected of the class that year. And I got a clear idea of exactly how well my son did." More teacher training seems the answer rather than going back to simple letter grades. (Roberts [parent], 1993)

I read Vaughn Palmer's Nov. 23 attack on 'edu-crats' and non-graded report cards only a few hours before seeing my daughter's first grade report card (A primer on the premier and the edu-crats). Those three pages of carefully considered narrative — I'm referring to the report card, not Mr. Palmer's column — told me more about my daughter's progress and her adjustment to the classroom than any list of arbitrary letter grades ever could. (Smith, [parent], 1993)

The people quoted above supported anecdotal report cards because they believed that written narratives that described what their child can do, is interested in, and needs help with, provided a clearer picture about their child's progress in school than did letter grades.

The debate over the strengths and weaknesses of the *Year 2000* program, in general, and over assessment and reporting, in particular, played out in the media throughout 1993.

Government Reaction to Public Pressure

So much pressure was put on the NDP government of the time that, late in the summer of 1993, it was announced that the *Year 2000* program was to be reviewed and modified:

[Premier Mike] Harcourt says he's asked the minister of education for a full report on the problems plaguing education by Sept. 30. ... "Not only are changes needed but they're going to come quickly," he promised. Parents want to be able to read a report card without having to have a Ph.D. The whole question of standards and evaluations is actively being pursued." (Balcom, 1993c, p. A1)

Premier Mike Harcourt says he will ensure much of the controversial Year 2000 program for education reform is jettisoned or overhauled. ... Harcourt said Tuesday the program will be replaced by a list of new reforms headed by a renewed emphasis on teaching basic skills and a system that tell parents in clear terms how well their kids are progressing." (Baldry, 1993).

... Mr. Harcourt cut adrift the Year 2000 program, which his government had been defending as a necessary reform to the system. "To put it bluntly, the report card is in on the Year 2000 and it's failed the grade," he said. "There are going to have to be quite substantial changes." ... By "substantive," the premier apparently meant a return to standards, testing, report cards, letter grades and clearly delineated classes. He didn't quite say that the Year 2000, once touted as the future, had become history, but he came close." (Palmer, 1993a)

The government had responded to the public's concerns about how student progress was assessed and reported, and promised to make changes.

On November 16, 1993, those changes were announced. Of particular relevance to this study were the changes made to assessment and reporting policies. The media reported:

B.C. schools will keep what the government says is the best of the controversial Year 2000 program, and trash the rest. ... In his long-awaited report to Premier Mike Harcourt on the future of education reform in B.C., Education Minister Art Charbonneau dumps anecdotal report cards and replaces them with "structured written" reports, effective September, 1994. ... He also reinstates letter grades, beginning in Grade 4, and erases a potential pitfall of Year 2000's emphasis on child-directed learning: that some student might float from grade to grade without completing their previous year's work. (Balcom, 1993e)

After much public debate, the government decided not to implement much of the *Year 2000* program, and to replace the short-lived anecdotal report cards with "structured written" reports and letter grades.

In December 1993, the BCME spelled out the changes announced in November 1993 the document *The Intermediate Program Policy: Grades 4 to 10* (BCME, 1993d). Several policy statements concerning “student progress reports” and “letter grades and symbols” were presented in this document, including:

In Grades 4 to 7: teachers will prepare structured written comments and *assign letter grades* [italics added] ... school districts will decide how letter grades are to be communicated to parents; for example, letter grades could be included with the written comments in the report card or shared at a parent-teachers' conference. (p. 12)

Students from Grades 8 to 10: will *receive letter grades* [italics added] with whatever structured written comments are required to inform parents. Reporting will include: assignment of letter grades based on student achievement in relation to criteria and standards established for each subject or course ... increased use of self-assessment, peer assessments, portfolios and student-led conferences to supplement the reporting process ... use of informal reports such as telephone calls, student-parent-teacher conferences and journals. (p. 12)

The *letter grades* [italics added] for use in the Intermediate Program on term and final student progress reports will be A, B, C or the symbol IP. The letter grades will help describe what a student is able to do in relationship to expected outcomes. (p. 12)

It is interesting to note that the BCME revised its reporting policy and reinstated letter grades because parents complained that anecdotal reports did not tell them how their children were doing compared to their peers, which requires norm-referenced evaluation. The 1993 policy, however, clearly states that student evaluation is to be criterion-referenced and not norm-referenced. As such, it may not address the concerns of those parents who want to know how their child is doing compared to the other students in the class.

Parents who called for letter grades that showed how well their children had done in relation to other students may have done so because that is how they had been graded when they were students. After all, prior to 1981, the BCME had described letter grades in norm-referenced terms (e.g., above average, average). Parents who wanted norm-referenced letter grades were possibly unaware of the fact that, as of 1981, the BCME had described letter grades in criterion-referenced terms. The BCME's 1986 version of the *Administrative Handbook for*

Elementary and Secondary Schools (Administrative Handbook) (BCME, 1986), for example, gave the following definitions of the letter grades “A”, “B”, and “C”:

A = Excellent achievement. The student has achieved excellent performance for the subject/course/grade/level and is considered fully capable of handling subsequent work with ease at a superior level of performance.

B = Very good achievement. The student has achieved very good performance for the subject/course/grade/level and is considered fully capable of handling subsequent work with ease at a good level of performance.

C = Satisfactory achievement. The student has achieved the basic standard of performance widely expected for the subject/course/grade/level and is considered capable of handling subsequent work. (BCME, 1986, pp. 67-70)

As these examples show, a letter grade was expected to show a student’s progress in comparison with the widely held expectations for the subject/course/grade/level at which the s/he is working.⁶

The *Administrative Handbook* (BCME, 1986) also provided the reported range of scores associated with each letter grade. Figure 1 displays the letter grades to be assigned at the end of a course and their associated reported range of scores from the document.

| Level of Achievement | Reported Range of Scores |
|----------------------|--------------------------|
| A (Excellent) | 86 - 100 |
| B (Very Good) | 73 - 85 |
| C+ (Satisfactory) | 67 - 72 |
| C (Satisfactory) | 60 - 66 |
| P (Passing) | 50 - 59 |
| F (Failing) | below 50 |

Figure 1. Reported range of scores associated with each level of achievement for end of course grades. Source: *Administrative Handbook* (BCME, 1986).

It is important to understand what the BCME meant by this table. As the following excerpt shows, the BCME did not intend a teacher to assign a letter grade based on a student’s

⁶ This is the definition that was in place when the data were collected for this study.

percentage, rather, it expected a teacher to assign a percentage score for reporting purposes, based on the letter grade that corresponds to a student's level of achievement:

It should be noted that it is not the Ministry's intent to set pre-determined percentages that students must obtain in order to attain certain letter grades. The intent, rather, is to standardize the reporting of different levels of achievement. Teachers may require different percentages for letter grades during the school year according to the difficulty of tests and other considerations. On the final report, however, "A" level achievement (as determined by the teacher during the year) is to be reported in the 86% to 100% range, thereby standardizing achievement reporting.

The following material outlines a method that could be used to standardize the reporting of achievement levels. This method acknowledges the importance of teacher judgment in assessing student performance.

A teacher's evaluation of a student takes place over an entire semester or year. If, as a result of that evaluation, the teacher's assessment is that the student has demonstrated (for example) an excellent level of achievement, then a score in the 86 - 100 range ("A" level achievement) should be reported as the school mark. Teachers might wish to use the following procedures in assigning percentages.

1. Identify students by groups with respect to achievement (i.e., the "A" group, the "B" group, etc.)
2. Within each group, rank students according to their measured achievement during the course.
3. Assign each student a percentage in the appropriate range for each group's achievement. (BCME, 1986, p. 70-71)

When a teacher assigns letter grades as the BCME intended, s/he is required to make a judgment about a student's performance first, and then assign a percentage score to represent that judgment. Yet, in my experience, this is not how teachers determine letter grades — I know that that is not how I assigned letter grades — nor is it how my sons' teachers assign letter grades. In most cases, teachers calculate an overall percentage score for a student for the reporting period and then convert that percentage into a letter grade according to the ranges shown in Figure 1. However, the BCME expects a teacher to judge a student's level of achievement compared to the widely held expectations for Science 9, assign a letter grade based on that level of achievement, and then assign a percentage in the appropriate range for that achievement (e.g., a student who has demonstrated a "very good" level of achievement — "B" level achievement — is assigned a percentage in the 73% to 85% range). Given that teachers often

explain to students and parents how they calculated a letter grade based on the student's percentage for the term, it is not surprising that students and parents are not aware of the BCME's expectations and believe that letter grades are to be assigned based on a percentage score for the term.

When the government announced its new policy in November 1993, the meanings of letter grades were given as follows:

A — excellent or outstanding achievement in relation to expected learning outcomes. B — very good achievement in relation to expected learning outcomes. C — satisfactory achievement in relation to expected learning outcome. IP [In Progress] — expected learning outcomes not achieved and further development required. (BCME, 1993d, p. 12)

Although, similar to that which had been in place prior to the *Sullivan Commission*, the new policy replaced the grades "D" and "E" with "IP", and defined the letter grades somewhat differently — student achievement was now to be described in relation to "expected learning outcomes"⁷ instead of "widely held expectations". The 1993 definitions make it very clear that letter grades are to be criterion-referenced.

As is to be expected, reaction to the changes were both positive and negative and, for a short time after its announcement, both criticism (e.g., Palmer, 1993b) and praise (e.g., Balcom, 1993e) was directed at the government.

Several months after the government announced that a new reporting policy was to take effect in September 1994, British Columbians were invited to review and comment on a draft version of the reporting policy presented in the BCME paper *Policy for Reporting Student Progress in British Columbia: Kindergarten to Grade 12. Draft for discussion purposes*. (BCME, 1994c). In September 1994, a newly-articulated policy for reporting student progress, along with guidelines for teachers and administrators to use when reporting student progress, were published in the booklet *Guidelines for Student Reporting for Kindergarten to Grade 12*

⁷ The terms "expected learning outcomes" and "intended learning outcomes" are used interchangeably throughout this document.

(BCME, 1994a). At the same time, two other documents, *Report to Parents* (BCME, 1994d) and *Parents' Guide to Standards* (BCME, 1994b), written to explain the new policy to parents, were distributed throughout the province.

The policy for reporting student progress adopted in September 1994 was similar to the one proposed by the government in December 1993. Gone were anecdotal reports; instead, parents were to be provided with a minimum of three formal reports cards (structured written reports and letter grades) and two informal reports (e.g., conferences, telephone calls, notes, interim reports) every year (BCME, 1994a). Whether or not students were to receive letter grades on their report cards varied depending of their level in school. The BCME guidelines for assigning letter grades set out for teachers in 1994 — and still in effect today — were as follows:

... The assessment and evaluation of the student's performance demonstrated through the learning activities is collected and recorded.

... The teacher judges the student's overall performance in relation to the outcomes for the unit or term and decides whether the overall performance is outstanding, very good, good, satisfactory, minimally acceptable, progressing but needs more time to complete requirements or not demonstrating minimally acceptable performance.

... The Ministry-approved letter grades that correspond to the level of performance demonstrated by the student are assigned. (BCME, 1994a, p. 20)

As was the case prior to 1993, teachers were expected to determine a student's level of achievement first, and then assign a letter grade based on that level of achievement. The percentage associated with a letter grade were only to be included for courses numbered 11 and 12 (BCME, 1994a), and again, a reporting percentage was to be assigned only after the letter grade was determined.

Formal reports prepared for students in Kindergarten to Grade 3 were to include a structured written report, but letter grades were not required. For students in Grades 4 to 7, formal reports were to include structured written reports and letter grades were to be written on the reports unless the school district chose to communicate letter grades to parents by another

method (i.e., parent-teacher conferences). Letter grades, supplemented where appropriate by written comments, were to be written on report cards for students in Grades 8 to 12. In addition, students enrolled in Grade 11 and Grade 12 courses were to have percentages recorded on their report cards.

The BCME stipulated that letter grades assigned by teachers were to be “criterion-referenced” because “criterion-referenced letter grades in Grades 4 to 12 indicate students’ levels of performance as they relate to the expected learning outcomes set out in provincial curriculum guides for each subject or course and grade” (BCME, 1994a, p. 4). Teachers in B.C., therefore, were expected to evaluate a student’s performance by comparing it to “established criteria rather than to the performance of other students” (BCME, 1994a, p. 14) which is the case for norm-referenced evaluation. The BCME took the position that, because norm-referenced evaluation is based on a normal-distribution that “shows how achievement in a particular area is distributed over an entire population” (BCME, 1994a, p. 16) it is appropriate for large-scale system analysis, ranking students for scholarships, or diagnosing students’ learning difficulties but not for describing “student’s individual progress ... [because] it compares student achievement to that of others rather than comparing how well a student meets the criteria of a specified set of learning outcomes” (BCME, 1994a, p. 16).

In December 1993, the BCME announced that letter grades would be restricted to the symbols, “A”, “B”, “C”, and “IP”, yet, when the new reporting policy was officially introduced in September 1994, the approved letter grades were:

- A The student demonstrates excellent or outstanding performance in relation to the expected learning outcomes for the course or subject and grade.
- B The student demonstrates very good performance in relation to the expected learning outcomes for the course or subject and grade.
- C+ The student demonstrates good performance in relation to the expected learning outcomes for the course or subject and grade.
- C The student demonstrates satisfactory performance in relation to the expected learning outcomes for the course or subject and grade.

- C- The student demonstrates minimally acceptable performance in relation to the expected learning outcomes for the course or subject and grade.
- IP (In Progress). The student is making progress, but it has been determined that additional time is required to meet the expected learning outcomes for the course or subject and grade. Guidelines for assigning an IP must be followed. Expectations and timelines must be attached for each assigned IP.
- F Failed or failing. The student has not demonstrated, or is not demonstrating minimally acceptable performance in relation to the expected learning outcomes for the course or subject and grade. F (Failed) may only be assigned if an IP (In Progress) has been previously assigned. (BCME, 1994a, p. 8)

Originally, the “IP” letter grade was to be optional in the 1994-95 school year but mandatory in the 1995-96 school year (BCME, 1994a). However in their June 18, 1996 policy circular, the BCME stated that the “IP” letter grade would be implemented in a two-stage process. During the first phase (1995-96 school year), the “IP” letter grade was to be used for Grades 4 to 7; during the second phase (1997-98 school year), for Grades 8 to 12 (BCME, 1996). In its policy circular of June 10, 1997 (BCME, 1997), the BCME announced revisions to the above letter grade system which were to be implemented as of September 1997. First, teachers were to use the symbol “I” (In Progress or Incomplete) instead of “IP”:

“I” will be used to cover broader circumstances than has been the case with “IP”. In addition, the requirements when using “I” will be more flexible. Documentation, timelines and administrative details will be determined by school districts. (BCME, 1997, p. 1)

Second, “the old letter grades ‘D’ and ‘E’ will no longer be used as of September 1997” (BCME, 1997, p. 1). Consequently, as of September 1997, B.C. teachers were required to use the following letter grade system on formal reports: “A”, “B”, “C+”, “C”, “C-”, “I”, and “F” (for a final grade only).

As previously mentioned, Kindergarten to Grade 3 students were to be issued structured written reports, students in Grades 4 to 7 were to be issued letter grades and structured written reports (comments), and students in Grades 8 to 12 were to be issued letter grades, percentages and, where appropriate, structured written comments. Written comments were expected to describe: “what students are able to do; the areas in which students require further attention or

development; and ways to support students in their learning (BCME, 1996, p. 1). In addition to letter grades and structured written comments, the BCME stipulated that “all formal reports will include a description of student behaviour, attitudes, work habits and effort” (BCME, 1996, p. 2).

Although the debate about the best method for reporting student progress subsided somewhat after the new policy was introduced in the fall of 1994, it has never truly ended and people continue to publicly express their views about how student progress should be and should not be reported to parents in B.C. (e.g., Balabanov, 1996; Young, 1996) — such is the context of education in B.C., and of this study.

Validity and Assessment

Recent developments in measurement specialists’ conceptions of validity as it applies to testing and assessment that helped to shape this study are presented in this section.

Conceptions of validity have changed over time. Various trends and developments in educational research and testing have influenced how validity has been conceived and how validation research has been conducted. Most notions of validity have been formulated with commercial, standardized tests in mind. Validity, as it applies to teachers’ classroom assessment practices cannot be overlooked, however, because students spend much more time completing teacher-made tests, and other assessment devices, than they do standardized tests (Crooks, 1988). Conceptions of validity have been formulated as a consequence of the widespread use of standardized tests — rather than as a consequence of teachers’ classroom assessment practices — because high stakes standardized tests enjoy a higher profile and, therefore, receive more criticisms than do teacher-made tests. Over the years, test developers and measurement specialists have often reformulated their conceptions of validity to address a variety of concerns associated with standardized tests.

Validity has always been a very important concept in educational and psychological testing, and test developers have generally been expected to provide some sort of validity

evidence (Angoff, 1988; Messick, 1989b). Yet it was not until 1954 that validity standards were formally introduced into the psychometric literature in the *Technical Recommendations for Psychological Tests and Diagnostic Techniques* (Anastasi, 1968). At that time, four types of validity were identified — *content*, *predictive*, *concurrent*, and *construct* — and validity was described as:

Validity information indicates to the test user the degree to which the test is capable of achieving certain aims. Tests are used for several types of judgment, and for each type of judgment, a somewhat different type of validation is involved. (American Psychological Association [APA], 1954, p. 13, cited in Shepard, 1993, p. 408)

The 1954 *Standards* helped to reduce some of the chaos in test validation processes by limiting the different kinds of validity to four; they also indicated that the type of validity to be used depended on the purpose of the test.

Conceptions of validity did not change dramatically during the 1950s and 1960s; however, in the 1966 *Standards*, instead of four different types or aspects of validity, there were only three because predictive and concurrent validities had been placed into the category *criterion-related validity* (APA, 1966). The resulting “three aspects of validity corresponding to the three aims of testing” (APA, 1966, p. 12) became known as *content validity*, *criterion-related validity*, and *construct validity* and the “tripartite” view of validity took hold.

When the 1974 version of the *Standards for Educational and Psychological Tests* (*Standards*) (American Psychological Association, American Educational Research Association, & National Council on Measurement in Education, 1974) was published to replace the outdated 1966 version, validity was conceived of somewhat differently:

Questions of validity are questions of what may properly be inferred from a test score; validity refers to the appropriateness of inferences from test scores or other forms of assessment. (p. 25)

As of the 1974 *Standards*, then, the “inferences” made from “test scores” were to be validated rather than the test itself. New to the 1974 *Standards* was the section entitled “*Standards for the use of tests*” (p. 56) which “explicitly introduc[ed] concern for bias, adverse impact, and other

social consequences of the uses and misuses of tests” (Messick, 1989b, p. 18) — concerns which were becoming prevalent as more and more testing programs were put into place.

In the most recent version of the *Standards for Educational and Psychological Testing* (APA et al., 1985), validity referred “to the appropriateness, meaningfulness, and usefulness of the specific inferences made from test scores” (p. 9) and it is viewed as a “unitary concept”. No longer are three different kinds of validity recognized, instead three “categories of validity evidence” have been identified: “*content-related, criterion-related, and construct-related evidence of validity*” (p. 9). The *Standards* maintained that, while “these categories are convenient ... the use of category labels does not imply that there are distinct types of validity or that a specific validation strategy is best for each specific inference or test use” (p. 9). The *Standards* (1985) no longer focus solely on the test developer; rather, they stress that, “although the test developer should supply the needed information, the ultimate responsibility for appropriate test use lies with the user” (p. 3). It is the test user who “should know the purposes of the testing and the probable consequences” (p. 41) and judge a test’s appropriateness “in the context of the larger assessment process” (p. 41).

More recent conceptions of validity (e.g., Cronbach, 1988; Messick, 1989b; Shepard, 1993) extend the conception outlined in the 1985 *Standards* and reflect the importance of values and consequences in validation research. Messick (1989a) considered values to be an important consideration in validity inquiry because they influence our theories, our decision to use or not use a test for a particular purpose, the names given to tests, the labels given to constructs, and how we interpret test results (Messick, 1989b). As Messick asserted, “values are intrinsic to the meaning and outcomes of testing” (1989a, p. 10) and other forms of assessment.

Messick also stressed the importance of the consequences of test interpretation and use in a number of his articles (e.g., Messick, 1975, 1988, 1989a, 1989b). He suggested that, when a decision is to be made about a particular test use, it is important to ask: “Should the test be used for the proposed purpose?” (Messick, 1975, p. 962). To answer this question “requires an evaluation of the potential consequences of the testing in terms of social values” (Messick, 1975,

p. 962). If a test, used for a particular purpose, leads to unintended and undesirable consequences for individuals or for society, then “the intended ends do not provide sufficient justification” (Messick, 1989b, p. 85) for using the test. Evidence of social consequences is an important component of Messick’s (1989a, 1989b) “unified validity framework”.

Messick (1989b) defined validity as “an integrated evaluative judgment of the degree to which empirical evidence and theoretical rationales support the *adequacy* and *appropriateness* of *inferences* and *actions* based on test scores or other modes of assessment [emphasis in original]” (p. 13). This definition reflects what Messick viewed to be the key issues of validity: “the meaning, relevance, and utility of scores, the import or value implications of scores as a basis for action, and the functional worth of scores in terms of the social consequences of their use” (Messick, 1989a, p. 5).

Recent conceptions of validity have important implications for teachers’ classroom assessment and grading practices. To begin with, because validity refers to the appropriateness, meaningfulness, and usefulness of the inferences drawn from assessment results, “the development or selection of assessment methods for collecting information [about student knowledge, skills, attitudes, and behaviours] should be clearly linked to the purposes for which inferences and decisions are to be made” (*Principles for Fair Student Assessment*, 1993, p. 5). That is, teachers must determine the adequacy and appropriateness of the results of each assessment method they employ vis-à-vis the inferences and decisions they are required to make about student progress in school. Moreover, because letter grades reflect a teacher’s judgments, or inferences, about students’ progress toward the expected learning outcomes of a course based on the results of their assessments, teachers must determine the adequacy and appropriateness of those judgments. In addition, teachers must provide information that will help students and parents to make inferences about student progress in school based on letter grades that are adequate and appropriate, and thereby, ensure that any actions taken as a result of those inferences (e.g., decide to work harder in school, enroll in subsequent courses) are appropriate, meaningful, and useful.

Summary

In this chapter, I have discussed circumstances in my personal life, events in education in both North America and B.C., and developments in validity theory. They have been included here because my experiences as a teacher, mother, student, and researcher influenced my choice of research topic; affected the decisions I made as I developed my research plan, collected and analyzed the data, and prepared this document; and motivated me to see this study through to the end.

CHAPTER 3

RELATED LITERATURE

Two areas of literature important to this study are discussed in this chapter. The first section discusses assessing, evaluating (grading), and reporting student progress, while the second reviews research that has investigated teachers' assessment and grading practices.

Assessing, Evaluating, and Reporting Student Progress

Assessment, evaluation, and reporting of student progress, or achievement, are integral facets of the education process. When student progress in school is appropriately and effectively assessed, evaluated, and reported, teachers, students, parents, and others can monitor student learning and make appropriate educational decisions (BCME, 1994a; Popham, 1995). More detailed discussions of these facets are presented below.

Assessing Student Progress

Introduction

Whenever teachers collect information, or evidence, about what students know, what students can do, or how students feel about something (i.e., student's attitudes), they are assessing. An assessment method is the strategy or technique that a teacher uses to collect assessment information. Teachers use a variety of assessment methods to collect evidence about students' performance in relation to the expected learning outcomes for a course and grade. Some of these methods are informal while others are formal. For instance, as students complete a lab designed to investigate the freezing and boiling points of water, a science teacher may observe and question the students while they work to determine how well they understand the purpose of the lab, whether they can appropriately and effectively use a thermometer, and if they understand and can apply laboratory safety rules — in this case, the teacher is informally collecting information about what students know and can do, and may use this information to give immediate feedback to the students so that they can successfully and safely complete the lab.

On the other hand, a teacher may wish to use a more systematic, or formal, method to determine if students understand the purpose of the lab, can use a thermometer, and have knowledge of, and can apply, laboratory safety rules. If this is the case, then she may design a checklist that she completes as she observes students working to determine the freezing and boiling points of water. With the checklist, the teacher can collect the same kinds of information about all of the students in the class, and may use that information to give students immediate feedback as they work, to make decisions about future lessons, and/or to provide feedback to the students about their progress.

In the event that the teacher wishes to use an even more formal method to collect evidence about students' knowledge of the properties of water, how to investigate those properties, and students' knowledge of laboratory safety rules, she may have students complete a lab report that is marked, or design a paper-and-pencil test for the students to write. The information collected via the lab report or written test could then be used to give students feedback about their understanding of the subject matter, to provide information to the teacher for the purposes of making instructional decisions, and/or recorded in order to assign letter grades at the end of a term or the year.

In B.C., the BCME views assessment as the "systematic gathering of information about what students know, are able to do and are working toward" (BCME, 1994a, p. 103). Students are assessed by teachers for many purposes and in many ways. Some of the more common purposes and methods are discussed here.

Purposes of Assessment

Many purposes of student assessment have been identified in the literature. Data and other information, both anecdotal and numerical, collected through assessment activities are commonly used to monitor student progress (BCME, 1994a; Popham, 1995; *Principles for Fair Student Assessment*, 1993); diagnose students' strengths and weaknesses (Popham, 1995); group and place students (Stiggins & Conklin, 1992); diagnose individual and group needs (Stiggins & Conklin, 1992); screen students in and out of programs (Stiggins, 1994); generate,

or assign, letter grades (Popham, 1995; Stiggins, 1994; Stiggins & Conklin, 1992); determine teacher's own educational effectiveness (Popham, 1995); judge curricular adequacy (Sanders, 1989); and evaluate teachers and other educators (Popham, 1995; Stiggins, 1994).

In addition, the assessment process can help define what is valued by the teacher and/or society (Stiggins, 1994), control and motivate students (Ebel, 1979; Stiggins, 1994; Stiggins & Conklin, 1992), and prepare students for later assessment (Stiggins & Conklin, 1992). Students, therefore, are assessed for a number of different purposes. However, as Wilson's (1990) research suggested, the main purpose for assessing students in school, at both the elementary and secondary levels, is for "the generation of marks for reporting purposes" (p. 13) that is, for grading.

Whatever its purpose, the strategy or technique used to acquire assessment information "should be appropriate for and compatible with the purpose and context of the assessment" (*Principles for Fair Student Assessment*, 1993, p. 5).

Assessment Methods

Over the years, educators have developed numerous strategies and techniques to assess students' progress in school. Included among these methods are teacher-made paper-and-pencil tests, standardized tests, portfolios of student work, observations, checklists, interviews, student self-evaluation, peer evaluation, performance assessments, performance reviews, projects, daily practice assignments, oral questioning, interviews, oral reports, written reports, rating scales, and attitude scales (BCME, 1994a; Popham, 1995; Stiggins, 1994). The strategy or technique used by a teacher depends upon the type of information that is to be collected which, in turn, depends upon the purpose of the assessment. Hence, an assessment method "should be developed or chosen so that the inferences drawn about the knowledge, skills, attitudes, and behaviours possessed by each student are valid and not open to misinterpretation" (*Principles for Fair Student Assessment*, 1993, p. 5).

Because this study does not focus on the mechanics of student assessment, a detailed discussion of the wide variety of assessment tools and methods available to teachers for collecting information about student progress is not included here — in-depth discussions of these assessment methods can be found elsewhere (e.g., Gronlund & Linn, 1990; Stiggins, 1994; Worthen et al., 1993).

Grading Student Progress

Introduction

Grading is the process of assigning a symbol to indicate how well a student has performed in a particular area. The symbol used to summarize a student's performance, or achievement, in a particular area is called a grade — a *grade* may be a letter or a number and should always be accompanied by a complete definition of that grade or number. A grade communicates a judgment about the general performance of a student, but does not explain how or why that judgment was made. Grades, such as letter grades, are used extensively because they reduce a large amount of information about a student's performance in a particular area of their school work to a single symbol that can be easily used for administrative purposes and readily interpreted by students and parents (Worthen et al., 1993). Moreover, identically defined grades can be readily and conveniently combined to calculate an overall percentage or grade point average (GPA).

The process of grading involves evaluation — whenever a teacher grades a student's performance she assigns a symbol that indicates her evaluation, or judgment, of a student's performance in relation to specified standards or criteria (BCME, 1994a; Popham, 1995). The standards used by teachers may vary; however, in B.C., “standards are realistic expectations of what *students need to know and be able to do* as a result of their education[;] ... provincially mandated curriculum guides express these standards as expected ‘learning outcomes’” (BCME, 1994a, p. 13).

Purposes of Grades

Although the basic function of grades is to inform students, and their parents, about their progress in school (BCME, 1993b), they are also used by teachers to make instructional decisions; by counselors to help students make educational and vocational decisions; by administrators to make decisions about promotion, academic awards, and scholarships; by other schools and/or post-secondary institutions to make admission decisions; and by some employers to make hiring decisions (Gronlund & Linn, 1990; Worthen et al., 1993). In addition, grades are used to control students behaviour in class (e.g., “If you don’t behave, you won’t get an ‘A’.”) and to motivate students so that they will work harder to achieve higher grades (Kohn, 1994). In most cases, however, the primary purpose of a letter grade is to communicate information about a student’s performance, or achievement, in school to the student and his or her parents.

Types of Grading Systems

Several commonly-used grading systems are discussed in this section. Key features of each grading system are described along with some of their strengths and weaknesses.

Letter grades

The most common grading system is the five-point letter grade system (Gronlund & Linn, 1990; Popham, 1990; Worthen et al., 1993). In this system, a student’s progress is indicated by a single letter that represents a specific descriptor, or adjective, that describes student progress (e.g., “A” = excellent, “B” = good, “C” = fair, “D” = poor, and “F” = fail). Typically, each letter grade is associated with a percentage range. Several variations of this system exist. For instance, teachers may use “+” or “-” signs to increase the number of points on the scale (e.g., C+, C-), or numbers (1, 2, 3, 4, 5) may be used instead of letters (Gronlund & Linn, 1990). The following version of the five-point letter grade system is currently used in B.C.: “A”, “B”, “C+”, “C”, “C-“, “I”, and “F” (for the final grade only).⁸

⁸ See Chapter 2 for a discussion of the meanings of these letter grades.

The popularity of the letter grade system can be attributed to its conciseness and convenience, and its usefulness in predicting future achievement in school (Gronlund & Linn, 1990; Popham, 1990). Because letter grades have been widely used for a long time throughout North America, teachers are comfortable using them, students and parents are familiar with them and believe they know what they mean, and comparisons among students can readily be made (Bailey & McTighe, 1996). However, the previous discussion about the recent changes to the definitions of these seemingly familiar letter grades in B.C. may mean that these positive aspects are illusory.

Even if these positive aspects are realized, however, the letter grade system is not without its shortcomings. Gronlund & Linn (1990) identified three:

(1) they typically are a combination of achievement, effort, work habits, and good behavior; (2) the proportion of pupils assigned each letter grade varies from teacher to teacher; [and] (3) they do not indicate a pupil's strengths and weaknesses in learning. (p. 430)

In addition, the meaning of letter grades may vary from teacher to teacher, course to course, school to school, or from one time period to another (Hills, 1981). To overcome the shortcomings associated with them, letter grades need to be supplemented with other kinds of information, such as written comments or parent-student-teacher conferences (Gronlund & Linn, 1990; BCME, 1992d).

Numerical grading systems

A numerical grading system indicates student progress via a numerical score or a percentage. Numerical grading systems are used because they are easy to calculate and explain, can be easily converted to a letter grade (i.e., 86 - 100% = A), and "lend an aura of objectivity to student evaluation" (Bailey & McTighe, 1996, p. 125).

The most common numerical grading system used in education is the *percentage grading* system (Worthen et al., 1993). In this system, a student's performance in a particular area is indicated by a number between 0 and 100 "that supposedly reflect[s] the percentage of material

the student has mastered” (Worthen et al., 1993, p. 389). This assumption, however, is not necessarily valid because, due to the variability in the tests or other assessment devices used by teachers to collect information about what students know and can do, it would be a rare case where the percentage score of a student actually represents the amount of material a student has mastered (Worthen et al., 1993).

Early in this century, the percentage grading system was the most popular way to report student achievement. However, concern that it was difficult to differentiate between the many small increments on the percentage scale (e.g., between 81% and 82%, or 55% and 60%) led to a decrease in its popularity and the adoption of grading systems with fewer, and larger, increments on their scales (i.e., the five-point letter grade system) (Hills, 1981; Worthen et al., 1993).

Pass-fail system

Another grading system consists of only two categories — “pass” and “fail”. Although not as popular as it once was, it was originally implemented for two reasons: first, “it was viewed as a means of avoiding the nonegalitarian aspects of traditional grading procedures” (Cunningham, 1986, p. 184), and second, it allowed “students to take some courses, usually elective courses, under a *pass-fail* option that is not included in their grade-point average” (Gronlund & Linn, 1990, p. 430), thereby enabling them to explore new, and unfamiliar, areas of study by removing the fear of a possibly lower grade-point average.

A major shortcoming of the pass-fail system lies in the fact that less information is provided about a student’s performance than with the traditional letter grade system because there is no indication of the level of student learning — because students’ records are often considered to be incomplete when pass-fail grades are assigned, some schools are hesitant to accept students who have completed numerous pass/fail courses (Gronlund & Linn, 1990). In addition, the pass/fail system appears to affect student motivation; that is, students tend to work only for a pass and, as a result, do not show the same kind of achievement as when letter grades are assigned (Gronlund & Linn, 1990; Worthen et al., 1993).

Types of Comparisons Used When Grades Are Assigned

According to Worthen et al. (1993), “all grading systems consider how well a particular student has done in comparison to some standard” (p. 384). There are a number “bases for comparison”⁹ commonly used by teachers when grades are assigned. For example, a student’s achievement can be compared to the performance of other students (i.e., norm-referenced or relative standards); to pre-specified standards (i.e., criterion-referenced or absolute standards); to their learning ability, or aptitude; to the effort they apply; or to the amount of improvement, or growth, they have shown over a term (BCME, 1979; Cunningham, 1986; Hills, 1981; Gronlund & Linn, 1990; Worthen et al., 1993). The basis for comparison used to assign a letter grade determines the meaning to be attributed to that grade.

Achievement as a basis for comparison

As Stiggins (1994) observed, “[achievement] has long represented the foundation of our grading process” (p. 369). When achievement serves as the basis for comparison¹⁰, students who demonstrate that they have learned more get higher grades than those who have learned less. Measurement specialists (e.g., Gronlund & Linn, 1990; Stiggins, 1994; Worthen et al., 1993) agree that grades should be assigned solely on the basis of achievement, and that other factors such as effort or aptitude should be reported on separately.

The letter grades assigned to a student can be determined by comparing his or her performance to that of other students (norm-referenced grading), or to absolute standards (criterion-referenced grading). These two bases for comparison are discussed here.

⁹ It should be noted that a variety of terms are used in the literature for the term “basis for comparison”. For example, Hills (1981) used the term “comparison basis” and Gronlund & Linn (1990) used “frame of reference”.

¹⁰ Some authors (e.g., Gronlund & Linn, 1990) use the term “frame of reference” for the term “basis for comparison”.

Achievement relative to other students: Norm-referenced grading

When norm-referenced grading (relative grading) is used to assign letter grades, students' grades are determined by their relative ranking within a group rather than on "some absolute standard of achievement" (Gronlund & Linn, 1990, p. 439). The reference group chosen for comparison may be the students in a Science 9 class, or some other group such as all students enrolled in the same course within the school. Because a student's grade is based on how well s/he has done compared to the rest of the students in the class, it is affected by an individual's performance as well as by the performance of the total group; as a consequence, the basis for comparison can shift according to the makeup of the reference group. Moreover, because a student's grade depends more on the performance of the other students in the reference group than on his or her own performance, a grade assigned in this way does not show how well a student has mastered the material, nor what the student can do (Gronlund & Linn, 1990; Guskey, 1996; Worthen et al., 1993). Gronlund and Linn (1990) suggested that relative grading is widely used in schools "because much of classroom testing is norm referenced. That is, the tests are designed to rank pupils in order of achievement rather than to describe achievement in absolute terms" (p. 440).

When relative grading is used to assign letter grades, the number of As, Bs, Cs, etc. is, often, determined before any letter grades are assigned. Relative grading is also known as "grading on the curve" because, traditionally, the number of each letter grade has been determined using the normal curve (Worthen et al., 1993). Hills (1981) believed that relative grading is appealing because "it is apparently readily understood by parents, teachers, and administrators, and ... [because] it doesn't require any soul-searching by teachers to determine what standards are appropriate" (p. 291) — the numbers speak for themselves without any judgments required. However, as Gronlund and Linn (1990) argued,

Such grading is seldom defensible for classroom groups because (1) the groups are usually too small to yield a normal distribution; (2) classroom evaluation instruments are usually not designed to yield normally distributed scores; and (3) the population becomes more select as it moves through the grades and the less-able pupils fail or drop out of school. (p. 441)

For relative grading to be used appropriately, the reference group must be large, and the abilities of the students must be normally distributed. Because relative grading is more appropriate for large-scale assessments than it is for classroom assessment, the BCME takes the position that “a norm-referenced evaluation system is not meant for classroom assessment because a classroom does not provide a large enough reference groups” (BCME, 1994a, p. 16) and that teachers are to assign criterion-referenced letter grades (see below).

Achievement relative to absolute standards: Criterion-referenced grading

Absolute grading (also referred to as *criterion-referenced* or *mastery grading*) takes place when a teacher uses a criterion-referenced approach and compares each student’s performance to a pre-specified set of standards. These standards are generally specified by the teacher based on her knowledge of the subject and perceptions of what students should be able to do (Hills, 1981). Because the standards are to be pre-specified, a teacher should be able to clearly communicate to the students her expectations and what her grades mean. As a result, Hills contended, if they work hard and the teacher provides adequate support, all students in a class should be able to obtain the best grade possible.

In an absolute grading system, it is assumed that the percentage achieved by a student on a criterion-referenced test represents the percentage of the material he has mastered (Worthen et al., 1993). However, the perceived precision of this type of grading system is illusory because the difficulty level of tests created by teachers can vary — given two tests purportedly designed to assess students’ understanding of the same concept, the class average on one may be 90% and 60% on the other — hence, the percentage grades are not as precise as they first appear to be (Worthen et al., 1993). As Gronlund and Linn (1990) observed:

The absolute system of grading is much more complex than it first appears. To use absolute level of achievement as a basis for grading requires that (1) the domain of learning tasks be clearly defined, (2) the standards of performance be clearly specified and justified, and (3) the measures of pupil achievement be criterion referenced. (p. 440)

To meet these requirements, teachers need time, experience, well-developed curricula with well-defined learning outcomes and criteria, and reliable and valid measurement instruments — conditions that rarely exist and are difficult to attain, in the real world of the individual classroom teacher.

Aptitude or ability

Some teachers assign letter grades by comparing students' achievement, or what they have learned, to their aptitude, or ability to learn (Popham, 1990; Worthen et al., 1993). When ability is the basis for comparison, two students with the same achievement in a subject, would be assigned different grades if the teacher believed their abilities were different. That is, given that two students have demonstrated the same level of achievement, the student with a perceived low ability would be assigned a higher letter grade than would be the student with a perceived high ability.

A major problem with this method is that ability, or aptitude, is very difficult to measure, and even if the measurement were to be accurate, there is little reason to believe that aptitude is stable over time (Worthen et al., 1993). Despite this problem, some teachers continue to assign letter grades based on the perceived ability of their students (Brookhart, 1992; Friedman & Manley, 1991).

Effort

When *effort* serves as the basis for comparison for evaluating student progress, a teacher assigns letter grades based on how hard she believes students have worked. Such grades do not represent the achievement of students, they represent a teacher's perception of the effort expended by students as they worked to learn what is required of them in school. Consequently, students who are perceived to have tried harder are assigned higher grades (Stiggins, 1994). As Hills (1981) observed, teachers who subscribe to this method of assigning letter grades believe students who have difficulty learning are more deserving than students who learn easily, and tend to justify this grading method on the basis of motivation, in the belief that the main purpose

of grades is to motivate students, rather than to communicate information about student achievement.

Improvement or growth

Letter grades are sometimes assigned by teachers on the basis of student improvement, or growth (Waltman & Frisbie, 1993; Worthen et al., 1993). When improvement serves as the basis for comparison for assigning letter grades, students who — often on the basis of pre- and post-test scores — show the most improvement in a particular subject area are assigned better letter grades than those who show less improvement. Therefore, due to the “ceiling effect” (Borg & Gall, 1979), students who start a course with a lot of knowledge about a subject may not show as much improvement when assessed at the end of a unit or course as those who started with relatively little knowledge. Moreover, if students are informed about how they will be evaluated — as advocated by the *Principles for Fair Student Assessment Practices for Education in Canada* (1993) and our values as a fair and democratic society — most students would work very hard to score as close to “0” as possible on the pre-test, thereby destroying the integrity of the method. Such letter grades can be misleading because a letter grade assigned for the purpose of conveying information about student achievement does necessarily not represent how much a student knows and/or can do (Worthen et al., 1993).

Summary

Several bases for comparison used when teachers assign letter grades have been described in this section. As noted above, measurement specialists agree that letter grades should be assigned solely on the basis of student achievement. Moreover, they agree that, for the purpose of grading, a student’s achievement should be compared absolutely to pre-set standards rather than relatively to other students; that is, grades should be criterion-referenced not norm-referenced. However, at times, teachers use some other basis for comparison (e.g., effort, ability) — either on its own, or in combination with other comparison bases — when assigning grades. When this is the case, a letter grade no longer is intended to communicate information solely about student achievement — the primary purpose of a letter grade; it now is intended to

communicate information about a variety of different student characteristics. For that reason, the meaning becomes unclear, and the letter grade becomes ineffective as a tool for communicating information about student achievement.

Components of Letter Grades

When it comes to the kinds of information teachers should incorporate into letter grades, measurement specialists tend to agree that they should probably consider only student achievement (e.g., Gronlund & Linn, 1990; *Principles for Fair Student Assessment*, 1993; Worthen et al., 1993). Furthermore, “if letter grades are to serve as valid indicators of achievement, they must be based on valid measures of achievement” (Gronlund & Linn, 1990, p. 437). Valid measures of achievement are those tests, teacher observations, written assignments, and other devices that are developed or selected that most directly measure expected learning outcomes in a reliable fashion.

At the same time, measurement specialists also tend to agree that non-achievement factors relating to student development (e.g., effort, behavior, motivation, aptitude, neatness, class participation, work habits, improvement, or attitude) are important, but should be reported separately by other methods such as written comments or checklists and not incorporated into a letter grade (e.g., Gronlund & Linn, 1990; *Principles for Fair Student Assessment*, 1993; Stiggins, 1994; Stiggins & Conklin, 1992; Worthen et al., 1993). The inclusion of non-achievement factors in letter grades is problematic because it is difficult to find reliable methods to assess such factors, and “when letter grades combine various aspects of pupil development, ... they lose their meaningfulness as a measure of achievement ... [and] suppress information concerning other important aspects of development” (Gronlund & Linn, 1990, p. 437).

Besides, non-achievement factors such as effort, behaviour, work habits etc. are likely already included a student's assessment results (e.g., criterion-referenced test scores) in that, all other things being equal, the student who has put more effort (better behaviour, better work habits, etc.) will probably achieve better results on assessments than will a student who has put

in less. Purposefully factoring an effort component into a letter grade, in effect, “double counts” effort and therefore over emphasizes it.

In addition to the development-related non-achievement factors mentioned above, various authors have highlighted other factors that they believe probably should not be considered when letter grades are determined.

- Gronlund and Linn (1990) argued that the amount of work done by a student should not be factored into the letter grade because it is the quality of the work that is important not the quantity.
- Some teachers allow students the opportunity to raise their grades by completing extra work, however, Hills (1981) argued that this is an acceptable practice only if the higher grade is given for a better quality of work rather than for extra quantity.
- The BCME has stated that exercises done for practice or drill “should not contribute to the term or final letter grade” (BCME, 1994a, p. 18) because such exercises are designed to help students learn, not to collect assessment data.
- Hills (1981) objected to grading on tardiness or absences from class because grades that factor in this kind of information are being used as a discipline method and do not accurately reflect student achievement.¹¹
- Stiggins (1994) viewed the inclusion of homework (e.g., whether or not it was completed; the amount done) as problematic because it is not always possible to know how much of it was completed by the student and how much by a helpful parent.¹²

¹¹ Some teachers inadvertently include attendance in their letter grades by assigning a score of “0” when a student is absent for a test.

¹² It is also not always possible to know if incomplete homework was under the control of the student rather than due to some unavoidable family or environmental situation.

- Information collected “for diagnosing student needs, providing students with practice performing or evaluating performance, and tracking student growth during instruction” (Stiggins, 1994, p. 381) should not be considered when determining letter grades because such information is collected for purposes other than for assessing student achievement.

When it comes to the factors that should and should not be considered by teachers when letter grades are determined in B.C., the BCME has taken a position similar to that of measurement specialists. It has asserted that although it is important for teachers to communicate information to parents about aspects of student development other than achievement, “assessing behaviour, effort, motivation and interest and including them in a grading system is problematic” (BCME, 1994a, p. 22). As a result, teachers are required to include written comments about a student attitudes, work habits, and effort in formal reports (BCME, 1994a). In addition, most B.C. report cards have a specified area and another set of symbols (i.e., G = good; S = satisfactory; N = needs improvement)¹³ for at least some of these factors.

Despite the general consensus that achievement should be the only factor teachers consider when they assign letter grades, research shows that teachers often consider non-achievement factors such as behaviour in class, attendance, tardiness, and work habits when they determine letter grades (e.g., Bachor & Anderson, 1993b; Friedman & Manley, 1991; Hobbs, 1992; Stiggins & Conklin, 1992; Waltman & Frisbie, 1993, 1994).

Reporting Student Progress

Introduction

After a teacher has assessed and evaluated (graded) a student’s performance in a particular subject or course, that evaluation must be communicated to various audiences; that is,

¹³ As an example of how history or previous experience might lead to misinterpretation, at one time, the Ministry of Education in B.C. defined the G, S, N effort/work habits symbols as G = good, N = normal, and S = slow, but satisfactory (and a U = unsatisfactory). It is possible, therefore, that people familiar with these definitions could misinterpret the effort/work habits symbols used on report cards today.

it must be *reported*. The purpose of reports of student progress, along with some reporting methods are discussed in this section.

Purpose of Reports of Student Progress

In B.C., reports of student progress document and communicate “significant aspects of students’ progress in learning. They describe, in relation to the curriculum, student progress in intellectual, social, human and career development” (BCME, 1994a, p. 3). The information in a student’s progress report can describe what a student is able to do, is working toward, and areas in which s/he needs help. A progress report can also provide information about important aspects of a child’s development (e.g., behaviour, work habits), or the objectives of the school (Gronlund & Linn, 1990). The information provided by progress reports can motivate students, and enable parents to give their children support and encouragement.

Methods of Reporting Student Progress

A variety of reporting methods can be used to report student progress — some of these can be considered to be formal (e.g., a report card or form with letter grades, written narrative report), and others to be informal (e.g., telephone call, brief written note) (BCME, 1994a). Descriptions of several different reporting methods follow.

Formal reporting methods

In B.C., a formal report is one that is written on a form that has been approved by either the BCME or a school board — such a report may include a structured written report, letter grades, and/or percentages, depending on the grade in which the student is enrolled. Three formal reports are required in B.C.; two during the school year and one at the end of the of the year (BCME, 1994a; BCME, 1996). The format of the report, the information provided, and the number of formal reports issued during the year may vary in other educational jurisdictions. Three formal reporting methods are: report cards, written narrative reports, and checklists.

Report Cards: A common method of reporting student progress is the report card. Report cards are standardized forms designed so that grades and/or percentages can be recorded for

each subject or course in which a student is enrolled. In addition, report cards often include sections where other student information (e.g., attendance, work habits) can be recorded and/or teacher's comments can be written (Worthen et al., 1993).

Report cards may appeal to students and parents for a number of reasons. For example, they may like report cards because student achievement is displayed in a concise fashion and, because report cards with letter grades have been widely used for a long time, most people are familiar with them and feel that they are easy to understand. In addition, when grades for different subjects, and terms, are recorded on the same report card, the subjects in which a student is doing well and/or doing poorly can be readily identified, and progress over time can be easily tracked. Report cards, therefore, are useful because they provide a convenient summary of a student's progress in school.

However, the amount of detailed and personalized information a teacher communicates about a student's performance in school via a report card is often limited due to the time it takes to compile such information. Teachers often write short, generalized comments, rather than extensive, personalized comments. As a result, the amount of information provided on a report card about a student's strengths and weaknesses, likes and dislikes, plans and goals is limited or may be nonexistent. Teachers' comments about a student's progress in school may be even more limited and less personalized if the school uses computer generated report cards that require teachers to select their comments from a pre-existing list of comments.

For teachers, a major advantage of report cards with letter grades lies in the time it takes to complete them compared to the time required to complete other formal reporting methods — it generally takes less time to determine letter grades than it does to write a carefully written narrative report, or construct and complete checklists, especially when computer grading programs are utilized to calculate grades and generate comments. In addition, the concise summary of student achievement provided by the grades written on report cards enable teachers and/or administrators to more easily track the progress of their students than is the case when student progress is reported via written narrative reports or checklists.

Narrative Reports: A written *narrative report* that carefully describes a child's progress in school is another way to communicate information about a child's progress in school. A narrative report can provide more than just a summative evaluation of a child's performance; it can describe what a child has done, is working on, and is working toward. A child's strengths and weaknesses can also be described in such a report, along with the teacher's suggestions for improvement.

Several factors, however, limit a narrative report's usefulness as the sole method of reporting student progress. First, a great deal of teacher time and effort is required to write extensive and personalized reports for all of the students in a class. Second, there is a danger that, because of the time and effort required to write them, teachers may rely on stereotyped, instead of personalized, comments. Third, because a narrative report does not provide a convenient and systematic summary of student progress it can not be readily used for administrative purposes (Bailey & McTighe, 1996; Worthen et al., 1993). Furthermore, some parents have criticized the exclusive use of narrative reports on the grounds that they do not show how a child is doing compared to their peer group (e.g., Balcom, 1993a; McCormick, 1993). Nevertheless, a well-written narrative report is a useful supplement to other reporting methods such as letter grades (Gronlund & Linn, 1990).

Checklists: A *checklist* consists of a list of objectives, skills, tasks, or outcomes that are checked, or rated, by the teacher. Many different kinds of rating scales can be used on a checklist to rate a child's level of performance for a specific task, or outcome. For example, by checking "Yes" or "No", a teacher may use a checklist to indicate whether a child can or cannot do a particular task. A teacher may check "never", "rarely", or "frequently" to indicate the how often a child exhibits a given skill or behaviour. Or a teacher may use the scale "G", "S", and "N" (Good, Satisfactory, Needs Improvement) to indicate a student's work habits. As another alternative, a teacher may provide a list of expected learning outcomes and check off only those that the student has successfully achieved (Bailey & McTighe, 1996; Gronlund & Linn, 1990; Hills, 1981).

When carefully constructed, a checklist can provide a detailed analysis of a student's strengths and weaknesses as they pertain to specific learning outcomes, and efficiently communicate this information to students and parents (Bailey & McTighe, 1996; Gronlund & Linn, 1990). Furthermore, a checklist combined with a rating scale is an effective way to report non-achievement factors (e.g., effort, behaviour). However to be effective, checklists must be written concisely using terms appropriate to the audience, or audiences. As is the case for the narrative report, a checklist does not provide a convenient summary record of student progress — it may be most valuable when used in conjunction with letter grades or some other reporting method.

Informal reporting methods

Teachers use several different methods to informally report information about student progress in school. These include telephone calls, written notes, interim reports, conferences (with the parents and the teacher, or the student, parents, and teacher), and portfolio reviews (BCME, 1994a). In B.C., teachers are required to provide two informal reports for each student per year (BCME, 1996). Such reports may be used to describe “what the student is able to do, the areas of learning that require further attention or development, [and the] ways the teacher is supporting the student's learning needs (and, where appropriate, ways the student or the parents might support the learning)” (BCME, 1994a, p. 4).

Portfolios: In recent years, some educators have concluded that a portfolio of student work is an effective way to communicate information about student progress (e.g., Bailey & McTighe, 1996; Stiggins, 1994). A *portfolio* is a purposeful collection of student work that can be used to illustrate a student's performance in school. When carefully selected, the collection within a portfolio can show what a child is learning, how the child has grown over time, and what the child is working toward. It can also serve as the focal point of a discussion involving the student, the teacher, and/or the parents (Bailey & McTighe, 1996).

Portfolios, however, have certain drawbacks. One major drawback is the amount of time required to prepare a useful portfolio of student work. To begin with, a teacher must set aside

time to determine and carefully describe the purposes and criteria for a portfolio so its contents will be of value to those who review it (e.g., student, parents, teacher, other teachers administrators, employers), and so that students understand why they are preparing a portfolio of their work and the kinds of samples that need to be included. Once the purposes and criteria have been established, the process of putting a portfolio together also takes time because the student work within a portfolio must be systematically and continuously collected, reviewed, and discussed. The time and effort that is required to produce a useful portfolio is particularly problematic at the secondary level where the large number of students taught by each teacher makes it very difficult to schedule and conduct individual student-teacher discussions of portfolio contents (Bailey & McTighe, 1996).

Another drawback of portfolios concerns the difficulties that may arise when portfolios are used to assess student progress — because the samples of work selected by each student for the same unit or course can vary widely, the assessment, or scoring, of portfolios and the evaluation of student progress, based on that assessment information, may be inconsistent and unreliable (Worthen et al., 1993). Furthermore, although a portfolio may effectively show how a student has grown over the term, or the year, it does not provide a convenient summary of student performance, nor does it show how a student has done compared to his or her peers. As is the case for checklists and narrative reports, portfolios may best serve as good supplements to other reporting methods.

Conferences: Face-to-face meetings, or *conferences*, are often used to report student progress to parents. A parent-teacher conference is a good way to establish a link between the home and the school, to communicate information that is difficult to convey via a written report, to discuss concerns that may be confidential in nature, to clarify the meaning of the grades, and to provide examples of student work (Bailey & McTighe, 1996; BCME, 1994a; Hills, 1981).

In the past, conferences have often only involved the teacher and parents. However, in recent years, students are more likely to be part of the conference as well. Conferences are now arranged that include the student and teacher, the student and parent, or the student, parent, and

teacher. It has been argued that when students participate in the conferences, they take more responsibility for their learning (BCME, 1994a; Bailey & McTighe, 1996).

There are a number of drawbacks to conferences including the amount of time it takes to conduct them, the difficulty of scheduling conferences at a time convenient to all concerned parties, and, when it is the only method used to report student progress, a conference does not provide a convenient summary record of a student's performance (Hills, 1981). Moreover, when students are included in a conference, some parent and/or teacher concerns may not be discussed because of the student's presence (Hills, 1981).

Written Interim Reports: A written interim report is a short written summary of a student's progress that is sent home to parents part-way through a term between formal reports. Such a report may include test scores and/or brief descriptions that provide students and parents with up-to-date information about a student's progress in school. The information provided via an interim report can help students focus on aspects of their school work that they need to pay more attention to, or they can indicate that a student's performance has changed significantly for the better or the worse.

Interim reports encourage on-going communication between the home and school because parents can be informed of their child's progress during the term when there is still time for them to offer support to their child and the teacher, rather than at the end of the term when a course may have been completed and a final grade has been assigned.

Written Notes: A brief written note sent home also communicates information to parents about a student's progress in school. Notes can contain information about specific aspects of a student's work in class, both positive and negative. If notes are sent whenever they are needed, parents and teachers can communicate and be kept up-to-date about any on-going accomplishments, concerns, and/or problems. One of the drawbacks to written notes is that there is a tendency to only write them when there is a problem. Teachers, therefore, must work to ensure that written notes are used for both positive and negative incidents.

Telephone Calls: A telephone call home to parents is another informal way to keep parents up-to-date about their child's progress in school. Like a written note, or an interim report, a telephone call can be used to inform parents of any changes in student behaviour or performance in school in a timely fashion, so that the appropriate steps can be taken to help the student succeed in school. Also, like a written note, telephone calls are more often used to give negative rather than positive feedback to parents. For this reason, teachers should make sure that they call parents to talk about the successes, as well as the difficulties of a student.

Classroom Assessment and Grading Practices: Teacher-Related Research

For much of this century, when researchers investigated and wrote about educational assessment, they focused on testing, particularly standardized testing for the purpose of assessing student achievement for accountability purposes — that is, the dominant paradigm in educational measurement research has been “an accountability-oriented measurement paradigm” (Stiggins, Conklin, & Bridgeford, 1986, p. 6). Since the mid-1980s, however, a number of researchers have come to recognize that “the kind of measurement referenced under the dominant paradigm represents only a small fraction of the assessments that take place in schools and that influence the quality of schooling and student learning” (Stiggins et al., 1986, p. 6). Most assessment carried out in schools is developed and used by classroom teachers, and yet, up until very recently, little was known “about the nature, role, or quality of the preponderance of school assessment” (Stiggins et al., 1986, p. 6). In recent years, however, a number of researchers have set out to learn more about teachers' assessment and grading practices; their research is discussed next.

Assessment Methods Used by Teachers

Research shows that teachers use a variety of methods to collect assessment information about student achievement in school. Stiggins and Conklin (1992) found that the three teachers in their multiple-case study used “tests, homework assignments, in-class work, oral questions, and performance on class presentations and development of visual and written products” (p. 68)

to assess their students. The primary and intermediate teachers, in Bachor and Anderson's (1993b) study, collected assessment information about their students via observation, work samples, portfolios, computer-based collections, classroom conferences, student self-assessment, and tests.

The results of the *1991 B.C. Science Assessment* (1991 BCSA) (Bateson, Anderson, Brigden, Day, Deeter, Eberlé, Gurney, & McConnell, 1992) showed that a majority of the 1524 Grade 4, 1212 Grade 7, and 607 Grade 10 teachers who completed questionnaires used "tests, lab assignments, projects, observation, and homework ... as sources of evaluation information" (p. 289). In addition, a majority of the Grade 4 and 7 teachers considered student participation in class and attitude when evaluating student achievement. Student self-evaluation was used by a substantial number of Grade 4 and 7 teachers (51 and 44%, respectively), but only 17% of Grade 10 teachers used it. Four years later, the results for *1995 British Columbia Assessment of Mathematics and Science* (1995 BCAMS) (Marshall, Taylor, Bateson, Brigden, Cardwell, Deeter, & Martin, 1996) were similar; the 2537 Grade 4, 2123 Grade 7, and 450 Grade 10 teachers indicated that they primarily used tests, projects, lab assignments, observation, and homework as sources of evaluation information, and that, to a lesser extent, participation in class, attitude, and attendance were also used.

Researchers have found that the assessment methods used by teachers varies according to the grade-level and the school subject. Stiggins and Conklin (1992) found that the "use of teacher-made objective tests tends to increase steadily as grade [-level] increases" (p. 37). Bachor and Anderson (1993b) found that "tests were used to a lesser extent in the earlier grades" (p. 20) and were used most often in spelling and mathematics, two areas where there are unarguably "right" answers. The results of the 1991 BCSA showed that the methods used by teachers to assess student achievement in science, and the emphasis placed upon those methods, varied according to grade-level. Student participation, attitude, and student self-evaluation were used more at the fourth and seventh grade-levels than at the tenth grade, while tests were used more at the tenth grade than at the fourth and seventh grade-levels. In the 1995 assessment, the

results also showed that the emphasis placed upon the various sources of information used to evaluate students in science by B.C. teachers varied from one grade-level to another (Marshall et al., 1996). For instance, although tests were the most important source of information for the three grade-levels (4, 7, and 10) included in the assessment, they were weighted most heavily at the Grade 10 level. The 1995 BCAMS results also showed that, as the grade-level increased, the importance of projects, observation, and participation in class as sources of evaluation information decreased, and that the importance of lab assignments as a source of evaluation information increased (Marshall et al., 1996).

Sources of Assessment Devices Used by Teachers

Stiggins and Conklin (1992) concluded that the majority of teachers construct and use their own assessment devices, or instruments, to assess, or evaluate, the progress of students in their classrooms. Bateson (1990) reported that, in B.C., the teachers responsible for teaching Grades 4, 7, and 10 relied “most heavily on their own objective-type tests” to evaluate students in science (p. 46). In a study that investigated the practices of teachers at both elementary and secondary levels in the provinces of B.C. and Ontario, Wilson (1990) found that more secondary teachers (52%) created their own instruments than did elementary teachers (32%) and that instruments that were not teacher-made were “borrowed or adapted from other sources” (p. 10). Similarly, the 41 7th and 8th grade New York State science and mathematics teachers studied by Boothroyd, McMorris, and Pruzek (1992) used tests they had developed themselves more often than any other form of assessment.

Teachers’ Measurement Knowledge and Grading Practices

Because of the frequency with which teachers use their own instruments to assess students, some researchers have investigated teachers’ educational measurement knowledge, and their grading practices, and opinions. Stiggins et al. (1989) used case study methodology to investigate and compare the assessment and grading practices of 15 high school teachers to practices recommended by measurement specialists. They found that teachers’ achievement tests were often poorly constructed and that, contrary to the recommendations of measurement

specialists, the teachers often considered non-achievement factors such as attitude, ability, effort, and motivation when determining grades. They also found that, even though the teachers tried to communicate to students how they were to be assessed, students may not have fully understood the processes.

In their 1991 study, Friedman and Manley found that the majority of teachers felt tests should be given the most weight when making grading decisions. However, contrary to most specialists' recommendations, they found that the majority of teachers felt that non-achievement factors, such as ability and scores on oral questioning, should also be used. Similarly, Griswold and Griswold (1992) found that "many [of the 326 teachers in their study] believed students should be rewarded for effort and improvement of performance. ... [and that] grades for them are certainly not used solely to report achievement" (p. 250).

Frery, Cross, and Weber (1992, 1993) distributed a 44-item questionnaire to 800 randomly-selected secondary teachers of academic subjects to explore their opinions and practices with respect to classroom testing and grading. Based on the responses of 536 teachers, they concluded that "teachers (at least collectively) did seem to be providing an adequate variety of testing modes for their students" (Frery et al., 1993, p. 27), and, in accordance with measurement specialists' recommendations, teachers consider "tests and quiz scores ... as the most dominant factors in grade determination" (p. 27). On the other hand, contrary to most specialists' recommendations, a large proportion of the teachers believed that non-achievement factors such as effort and behaviour "should influence course grades" (p. 24). Furthermore, the teachers indicated that they often considered these non-achievement factors when they determined letter grades; that is, they included them in the letter grade.

In an investigation Manke and Loyd (1991) designed to learn more about what "teachers understand the grading process to mean" (p. 10), they found that "teachers are attempting to evaluate and report on the quality of each student's performance *as a student* in their classes" (p. 11) — that is, each student is considered as an individual, and non-achievement factors such as ability and effort are taken into consideration during the grading process. For the majority of

the teachers in the Manke and Loyd study, grades did not reflect achievement alone, they also reflected other factors, some of which depended on the individual student. As a result, the teachers may have intended their grades to mean different things for different students. For some teachers, then, letter grades may reflect both achievement and non-achievement factors, and the factors considered by a teacher may vary from student to student. As a result, the letter grades they assign may mean different things for different students.

The results of these studies indicate that, in accordance with most measurement specialists' recommendations, the majority of teachers believe that test results should be given the most weight when grading decisions are made. However, contrary to most specialists' recommendations, the majority of teachers also believe that non-achievement factors (e.g., achievement, effort, behaviour, participation) should influence the grades that are assigned to students.

With respect to the technical characteristics of their assessment devices, Wilson (1990) concluded that the teachers in his study were concerned with the content validity of their instruments and "on centering the items to the students' abilities" (p. 15). However, he also noted that practices advocated by measurement specialists such as "test blueprinting, item analysis, [and] statistical manipulation of data are virtually absent from classroom practices" (p. 15). In a similar vein, Friedman and Manley (1991) concluded that even though teachers have "some knowledge of technical features of grading data, there is reason to doubt the lack of application of this knowledge in classroom settings" (p. 17).

Why does the research suggest that teachers often grade students using practices that are contrary to those recommended by measurement specialists? Boothroyd et al. (1992) investigated teachers' measurement knowledge and concluded that "teacher's knowledge of measurement is not sufficient" (p. 7). They, as well as others (e.g., Frary et al., 1992, 1993; Stiggins & Conklin, 1992) attribute this lack of knowledge to "the infrequency of appropriate coursework in measurement required of or taken by teachers" (Boothroyd et al., p. 8).

Classroom Assessment and Grading Practices: Student-Related Research

Students' Perceptions About Grading

Little research has been conducted to investigate students' perceptions of assessment and grading. In 1990, however, Friedman and Manley (1991) administered a written questionnaire to 14 students who, along with a number of parents, teachers, administrators, and counsellors, attended an educational conference. Like a majority of the teachers who completed the questionnaire, the majority of students considered written tests to be the most important factor in assigning letter grades. Also like the teachers, students believed that both achievement and non-achievement factors should be incorporated into a letter grade. However, students believed that non-achievement factors should account for a larger proportion of a letter grade than did the teachers.

In their 1991 study, Loyd, Nava, and Hearn, administered a questionnaire to 168 eighth, ninth, and tenth grade students. Students completed 34 fixed-response items and two open-ended items. The students' responses to the fixed-response items revealed that they believed both achievement and non-achievement factors should be included in a letter grade. The open-ended items asked students to describe their best and worst grading experiences. Students most often mentioned the recognition of their effort, the use of appropriate measurement procedures, the responsibility of students, and fairness when describing their best experiences, and lack of these qualities were mentioned when describing their worst grading experiences.

Impact of Assessment on Students

Crooks (1988) reviewed many studies that looked at a multitude of classroom evaluation activities and concluded:

classroom assessment affects students in many different ways. For instance, it guides their judgment of what is important to learn, affects their motivation and self-perception of competence, structures their approaches to and timing of personal study, ... consolidates learning, and affects the development of enduring learning strategies and skills. It appears to be one of the most potent forces influencing education. (p. 467)

Other measurement specialists (e.g., Anderson et al., 1990; Gronlund & Linn, 1990; Popham, 1990; Worthen et al., 1993) also recognize the importance that assessment and grading have on students.

Classroom Assessment and Grading Practices: Parent-Related Research

Parents' Perceptions About Grading

Research shows that parents believe grades should be based on both achievement and non-achievement factors (e.g., Friedman & Manley, 1991; Waltman & Frisbie, 1993, 1994). The parents in Friedman and Manley's (1991) study believed that achievement measures should constitute about 70% of a letter grade, while the students in the same study believed that non-achievement factors should be given even more weight.

Waltman and Frisbie (1993) compared parents' and students' perceptions of the meaning of letter grades and found "a significant amount of variability among parents and an intolerable level of inconsistency between teacher and parents in the way grades from a given classroom are interpreted" (p. 17). While it seems to be true that parents and teachers interpret letter grades in a number of different ways, Waltman and Frisbie may have been premature in their conclusion that there is an intolerable level of inconsistency between teacher and parents *in a given classroom* because their data were collected *before* the parents had received any report cards from the teachers in the study. Hence, the parents were giving their opinions about letter grades in fourth grade mathematics, in general, and not about the letter grade given by their child's particular classroom teacher.

Summary

In this chapter, I reviewed literature relevant to the study. I began by discussing three educational processes: assessment, evaluation, and reporting. I described the purposes and methods, strengths and weaknesses of these processes. I also discussed research on classroom assessment and grading practices that included teachers, students, and/or parents.

CHAPTER 4

RESEARCH METHOD

The purposes of this chapter are to describe: 1) the research methods; 2) how the participants were selected; and 3) how the data were collected, managed, and analyzed.

Research Design

The research design of this study is best described as a mixed-methodology design because both quantitative (written survey questionnaires) and qualitative (audio-taped interviews, document review) research methods were used to collect data (Creswell, 1994). A mixed-methodology design was chosen because such a design is useful when a researcher wishes to use one research method to inform a second research method, and because the data collected via the different research methods can be used for triangulation (Creswell, 1994), as was done in this study. The primary data sources were questionnaires and interviews; however, observational notes and documents (e.g., school handbooks, report card forms) were also used as sources of information.

Written survey questionnaires were used because, when properly constructed, they are reasonable and convenient ways to learn about “the opinions, attitudes, preferences, and perceptions” (Borg & Gall, 1979, p. 27) of people. The questionnaire data were used to identify some of the practices and perceptions of the people in this study, to identify people willing to participate in interviews, and to help organize and inform the interviews.

The main reason interviews were conducted, with a subset of the people who completed questionnaires, was to explore their practices and perceptions (identified during the preliminary analyses of the questionnaire data), so that I might better understand them; hence, they give depth to the study because participants were able to explain, and add to, their questionnaire responses. The interviews also enabled me to find out if the participants had consistently

interpreted the questionnaire items as I had intended.¹⁴ My observational notes and the documents I collected from the teachers provided information about the schools, and the grading and reporting policies and practices of the participating teachers, schools, and districts.

A major assumption underlying qualitative research is:

the world is not an objective thing out there but a function of personal interaction and perception. It is a highly subjective phenomenon in need of interpreting rather than measuring. Beliefs rather than facts form the basis of perception. Research is exploratory, inductive and emphasizes processes rather than ends. (Merriam, 1988, p. 17)

It is, therefore, an underlying assumption of this study that students, parents, and teachers may have different perceptions of teachers' reporting and grading practices and of the meaning of letter grades in Science 9.

The use of different data collection techniques (i.e., survey, in-depth interviewing, and document collection) enabled triangulation. Triangulation, through the use of multiple methods of collecting data, can improve the validity of the interpretations of the data and, therefore, of the study (Lincoln & Guba, 1985; Merriam, 1988). Different data collection techniques have, in part, been used to help improve the study's internal validity.

The reliability of a study has to do with the extent that "the operations of a study — such as the data collection procedures — can be repeated, with the same results" (Yin, 1984, p. 36); "the goal of reliability is to minimize the errors and biases in a study" (Yin, 1984, p. 40). To address the problem of the reliability, or the "consistency" (Lincoln & Guba, 1985, p. 289), of the results of this study a research protocol was used to guide the collection of the data (Yin, 1984). In addition, an audit trail (Lincoln & Guba, 1985; Merriam, 1988) that described

¹⁴ When the research design was originally proposed, the plan was to use the data collected to compare and contrast the perceptions of teachers, students, and parents across the five cases and within each case. The responses to the questionnaires were to have then been used to identify and categorize some of the common kinds of perceptions the teachers, students, and parents had about letter grades. Once the categories of perceptions had been articulated, students and parents deemed to represent different opinions, or points of view, and had consented to be interviewed, were to have been purposefully selected and interviewed to learn more about the reasons for their opinions. However in the end, because very few parents and students agreed to be interviewed, I decided to interview them all rather than identify and interview people that seemed to have different points of view.

instrument development, data collection and analyses procedures, and decisions made throughout the study was maintained.

The purpose of the study is to identify and describe people's beliefs and opinions about teachers' grading and reporting practices, and the meanings attributed to Science 9 letter grades, not to conduct a study that can be generalized to a larger population using sampling logic. While it is recognized that a study that includes participants randomly sampled from the population of Science 9 classes in the province would provide valuable information, it is beyond the scope of this study. Instead, the study employed a mixed-methodological design in the hope that, by using careful survey and interview techniques, people's beliefs and opinions might be identified and described, so that all of the partners in education will better understand each other's perceptions of reporting, grading, and the meaning of letter grades in Science 9.

Study Context

The study has been situated within the narrow educational context of Science 9 rather than a broader context that includes several different grades and/or subjects, to ensure that the participants referred to the same educational situation as they answered the questions posed on the written questionnaires, and during the interviews. Had the study addressed grading and reporting as it occurs in a number of different grades and/or subjects, some participants may have answered the questions in terms of, for example, Grade 8 Physical Education, while others may have answered them in terms of Chemistry 12. As a consequence, the reliability of the survey instruments would be poor, and the findings of the study would be compromised (Fowler, Jr., 1988).

The research has been limited to a Science 9 context for a number of reasons. First, the subject science was chosen rather than another, such as English or mathematics, because it is the subject area with which I am most familiar and, as a former secondary science teacher, I have extensive experience teaching and assessing Grade 9 science students. I feel my personal teaching experience makes me more aware of the kinds of techniques and processes Science 9 teachers utilize when they determine student's letter grades, and the perceptions students and

parents have of those techniques. Furthermore, I would not have felt as confident about developing the questionnaires and conducting the interviews for another subject area.

Second, a junior secondary level, rather than an elementary level, was chosen because all students at the junior secondary level receive science instruction, whereas, as the results of the two recent B.C. science assessments (Bateson et al., 1992; Marshall et al., 1996) point out, this is not always the case at the elementary level in B.C.

Third, because the focus of this research is on letter grades, it was necessary to choose a level in which, at the time of the study, letter grades were the most common method for reporting student progress in science; according to the 1991 B.C. Science Assessment results, letter grades are used most often at the junior and senior secondary levels (Bateson et al., 1992, p. 290).

Fourth, a Science 9 context was chosen rather than a Science 8 because it is assumed that, because the older Science 9 students had been taking science longer, they and their parents, would be more familiar with science letter grades than the younger Science 8 students and their parents.

Finally, a Science 9 context was preferred over a Science 10, or higher level, because, in my experience as a secondary teacher, as students get older more of them drop out of school, and some students — particularly those at risk — may no longer be in school above the Science 9 level. By setting the study within a Science 9 context, it was hoped that the opinions of a wide variety of students, including those of potential drop-outs, would be obtained.

The study was further limited to investigating the meanings of letter grades and grading practices as they pertain to grades given at the end of a term, rather than at the end of a course, because it would have been very difficult to collect information from people for a course that had already been completed and new courses had begun — as is the case for semester courses completed during the winter — or when people are on their summer holidays — as is the case for courses completed in June. Nevertheless it must be acknowledged that the findings of a

study that focused on letter grades given for the end of a course might be different than those of a study focused on letter grades given at the end of a term because students and parents may have different views about letter grades given at different times of the year.

Recruiting the Participants

Teachers, students, and parents from two school districts (one urban and one rural) in B.C. participated in this study. The two school districts were selected because district personnel expressed an interest in participating in the study. Teachers who participated were not randomly sampled from a population of Science 9 teachers — they were volunteers from two school districts who indicated an interest in this research project. The identification of the volunteer teachers determined the student and parent participation. All of the participants were recruited volunteers.

Teacher Recruitment

Five Science 9 teachers (one woman and four men) teaching in five different schools in two B.C. school districts participated in the study; all of them were volunteers.

Three teachers (one woman and two men) taught in a large urban district (Cityside School District)¹⁵ located in the lower mainland of B.C.; the science Helping Teacher of this district helped recruit teachers for the study. At his suggestion, he contacted Science 9 teachers throughout the district to find out if any were interested in participating in a study about the meaning of letter grades. Once he identified several interested teachers, a letter was sent to them explaining what would be expected of the teachers, students, and parents of the study, and asking for volunteers (see Appendix A).

The other two teachers (both men) taught in two different communities in a small rural school district (Whitewater School District) located in the south central region of B.C. The principals of these two teachers were former colleagues of mine and were familiar with the

¹⁵ To maintain the anonymity of the study participants, pseudonyms are used throughout this document for all districts, schools, teachers, students, and parents.

purpose and method of my research. On my behalf, they each gave a letter of explanation to Science 9 teachers and asked them to consider participating in the study. In the end, two teachers volunteered.

Once I had obtained the names of the five interested teachers, I contacted them by telephone to ensure they understood the nature of the study, the nature of information I would be collecting, and the kinds of assistance and time I would require from them, their students, and their students' parents. After obtaining verbal agreement over the telephone, I arranged to meet each teacher.

During my first face-to-face meeting with a teacher, I reviewed the expectations I had of them, their students, and their students' parents; I asked them to complete a teacher consent form (see Appendix B); I gave them the student and parent consent forms to distribute; and I set a tentative date to administer the student questionnaires.

Student Recruitment

Only students with written parental permission who consented to participate were included in the study. The student (and parent) consent forms (see Appendix C) were given to the students by their teacher approximately two weeks before formal report cards were issued in the Spring of 1994. Forty-three students volunteered to complete questionnaires and, of these, 16 were interviewed.

Parent Recruitment

Approximately two weeks before the Spring 1994 report cards were to be sent home, each teacher gave the parent consent form (see Appendix C) to the students to take home to their parents.¹⁶ Only the 21 parents or guardians who gave their written consent completed

¹⁶ Although, I had originally planned to send the consent forms to the parents by mail, one of the districts did not wish to give me access to the home addresses of the students. Instead, they preferred to have the teachers distribute the forms to the students to take home to their parents. (Part of the rationale for this was that some parents might call the school to ask questions about the study thereby taking up administrative and support staff time.) Because it was not possible to send the consent forms home by mail in one of the districts, I decided that all of the consent forms should be distributed in the same manner and, therefore, had the teachers in both districts give the consent forms to the students to take home to their parents.

questionnaires; of these, seven were interviewed.

Collecting the Consent Forms

A week after the consent forms had been distributed, very few of them had been returned to the teachers. In an effort to increase the participation rate, I personally visited each class to describe the nature of the study (without being too specific about the types of questions students and parents would be asked for fear that I would bias their responses), to answer any questions they might have (again, keeping in mind that I had to be careful not to put ideas into their heads), and to provide additional consent forms to students who needed them.

During these visits I discovered that many, if not most, of the students were interested in my research and quite willing to complete the questionnaire, however, they resented having to get permission from their parents to do so. A number of them indicated that they felt that, as Grade 9 students, they were old enough to make decisions for themselves and that it was a “hassle” to take the forms home to ask their parents’ permission. As a result of my visits, I was able to encourage a few more students and their parents to participate.

As time passed, I sensed that some teachers in Cityside District were becoming frustrated with the time and effort required of them to get the consent forms back from their students. As a result, I chose to proceed with the study with fewer student and parent participants than I had expected.

When the principal of one of the Whitewater District schools heard that very few consent forms had been returned, she took it upon herself to send another form home in each Science 9 student’s report card envelope. Despite the extra attention, only two additional students and their parents agreed to participate.

The science teacher in the second Whitewater District school took it upon himself to call parents to find out if they had received the consent form and if they were willing to participate in the study. As a result, a few more students and parents consented to participate.

With hindsight, I now realize that I should have visited each class at the very beginning to explain to the students the purpose of my study, to ask them to participate in it, and to distribute the consent forms. I hadn't initially done so because I had not wanted to impose upon the teachers and students more than was absolutely necessary to administer the questionnaires.

Data Collection Methods

Data were collected during the Spring of 1994 primarily via written survey questionnaires and audio-taped semi-structured interviews. In addition, documents (e.g., sample report cards, letter grade summary sheets, school handbooks) were collected from the teachers. The development and structure of the written questionnaires and interview schedules are described in this section.

Written Survey Questionnaires

Development of the Questionnaires

Three different written survey questionnaires were used to collect information from the participants: the Student Questionnaire (SQ) (see Appendix D), the Parent Questionnaire (PQ) (see Appendix E), and the Teacher Questionnaire (TQ) (see Appendix F). These questionnaires had descriptive, exploratory, and explanatory purposes: the background questions of each questionnaire help describe the characteristics of the participants; other questions were designed to elicit information from the participants that could be used to describe and explore the participants' views on a number of aspects pertaining to the meaning of letter grades and grading practices.

There were two main steps in the development of the questionnaires: a review of relevant research, and the development and pre-testing of the questionnaires. Before I developed the questionnaires, I reviewed research that focused on topics relevant to the assessment, evaluation, and reporting of student progress including: how teachers assess, evaluate, and report student progress (e.g., Brookhart, 1992; Crooks, 1988; Frary et al., 1993; Friedman & Manley, 1991; Griswold & Griswold, 1992; Manke & Loyd, 1991; Schultz, 1993; Stiggins,

1989; Stiggins & Conklin, 1992; Terwilliger, 1989; Wilson, 1989, 1990, 1992); students' perceptions of grading practices (e.g., Forehand, 1991; Friedman & Manley, 1991; Loyd, et al., 1991); and parents' perceptions of assessment and reporting practices (e.g., Friedman & Manley, 1991; Ohlhausen & Reitz, 1992; Waltman & Frisbie, 1993, 1994).

Two studies (i.e., Friedman & Manley, 1991; Waltman & Frisbie, 1993) included samples of their questionnaires. These samples helped guide the organization and content of the questionnaires used in this study. Two publications of the BCME (BCME, 1993a, 1993b), as well as the 1991 B.C. Science Assessment (Bateson et al., 1992), provided additional information that was used to revise the questionnaires as they were developed. The influence of this literature on the study is discussed in the following description of the questionnaires.

Student and parent questionnaires

The questionnaires were developed using what is best described as an iterative process. This process involved an ongoing review of relevant research, the development of draft versions of the questionnaires, and the pre-testing of several versions of the questionnaires with small groups of volunteers. By having people similar to those who would ultimately be involved in the study complete, critically review, and discuss the questionnaires as they were developed, it was possible to identify ambiguities, redundancies, and problems in the questionnaires.

The first versions of the SQ and the PQ were developed concurrently, and before the TQ was developed, to ensure that the language of the questionnaires was easily understood by people not familiar with educational jargon. Had the TQ been developed first, the terminology might have been appropriate for teachers, but not for students and parents.

In September 1993, two volunteer mothers and their children, were given the first versions of the questionnaires to complete. These particular people were asked to pre-test the questionnaires because the children had completed Science 9 the previous June. To ensure, as far as possible, that the questions asked and the language used on the questionnaires were understandable to people outside of the education profession, none of the parents who pre-tested

the first and second versions of the questionnaires were teachers. Upon completing a questionnaire, each volunteer completed a review form and was interviewed about the questionnaires.

Interviews were conducted after the questionnaires were completed to determine if the respondents were interpreting the questions as they were intended. During these interviews, people were given the opportunity to give reasons for their answers. In addition, they were invited to give their opinions about the form and content of the questionnaire, the wording of the questions, and the relevance of the questionnaire to them. Some questions were ambiguous, some confusing, some irrelevant, and others too long. The questionnaires were revised as a result of this first pre-test.

The second versions of the SQ and the PQ were given to a non-teaching couple, and their child (who had completed Science 9 the previous June). Once again, they were asked to complete a questionnaire review form and were interviewed. The second versions of the questionnaires were also reviewed by the researcher's dissertation advisor — an expert in student assessment and reporting practices, and educational research methodologies. Revisions were made to the second versions of the SQ and the PQ based on feedback from the parents, the student, and the advisor.

A third version of the PQ was given to a mother (and former elementary teacher) of a student taking Science 9 at the time, and a secondary special education teacher (and father) familiar with Science 9 students. These people provided feedback from the perspective of both parent and teacher; their suggestions were considered and further modifications were made to the questionnaires.

The fourth version of the PQ was reviewed by one of the mothers who had completed and reviewed the first version of the questionnaire, the researcher's dissertation advisor, and another faculty member with expertise in the area of educational research methodologies. As a

result of feedback provided by these three people, final versions of the SQ and the PQ were produced.

Teacher questionnaire

The TQ began to take shape once the first versions of the SQ and the PQ had been reviewed; it should be kept in mind that the final form of the TQ — at least those sections which parallel the SQ and the PQ — was limited by the content and structure of the other questionnaires because the original focus was on the perceptions of students and parents. A first draft of the TQ was reviewed by a teacher and revisions were made to the questionnaire. The second version of the TQ was given to the researcher's dissertation advisor for review. Revisions, based on the advisor's comments were made and a third version of the TQ was produced.

After a third version of the TQ was reviewed by two other teachers, the researcher's dissertation advisor, and a faculty member with expertise in the area of educational research methodologies, the final version of the TQ was produced.

Description of the Questionnaires

The structure and content of the three questionnaires are described in this section. The SQ and the PQ are described first, followed by the TQ.

Student and parent questionnaires

Of the three questionnaires, the SQ and the PQ can be considered to be parallel questionnaires because, except for the number and kind of background items, the questions asked on each form were identical. Any difference in wording was due to the subject to whom the question referred; for example, questions on the SQ asked the student to refer to himself or herself, while questions on the PQ asked the parent to refer to their child. The SQ and the PQ were organized around four themes:

- Student and parent beliefs about the teacher's intended meaning for a Science 9 letter grade.
- Student and parent beliefs about the grading components of a Science 9 letter grade, and their beliefs about which components should be part of the letter grade.
- Student and parent opinions about the various methods used to report student progress in Science 9, and their beliefs about the importance of reports of student progress in Science 9.
- Student and parent perceptions about some possible consequences of reports of student progress in Science 9 as they pertain to student learning and educational and/or vocational decisions.

Several different response formats were used in the questionnaires. The majority of the items used a fixed-response format; some of the fixed-response questions asked the respondent to indicate their opinion by choosing either "Yes" or "No", while others used a four-point Likert-type response format. Some items combined a fixed-response format with the opportunity for a written explanation, while other questions were of the purely open-ended variety.

Both the SQ and the PQ had seven sections. Section A asked respondents to supply some background information. Section B (the intended meaning of a letter grade) was based upon part of a questionnaire developed by Waltman and Frisbie (1993; 1994) and asked respondents to circle either "Yes" or "No" to indicate what they believed the teacher meant by the Science 9 letter grade. The statements listed in Section B represent different meanings a person might attribute to a Science 9 letter grade. Each meaning statement is intended to reflect a different basis for comparison a teacher might use when assigning letter grades such as achievement, other students, absolute standards, growth or improvement, ability, and effort. For example, agreement with the statement, *It shows how well a student in Science 9 compared to the other students in the class*, is intended to show that a norm-referenced meaning is

attributed to the letter grade and that other students in the class were used as a basis for comparison when the letter grade was assigned.

In Section C, respondents were asked to indicate which kinds of information (grading components) they believed the teacher *actually considered* when determining a letter grade in Science 9; the 15 grading components listed on the questionnaires were selected based on the results of the 1991 B.C. Science Assessment (Bateson et al., 1992) and a survey of teachers' assessment practices conducted by the BCME (1993b). Information about students' and parents' beliefs about grading components was collected because people can communicate more effectively when they share beliefs and knowledge (Deaux & Wrightsman, 1988).

Section D asked respondents to indicate which of the 15 grading components listed in Section C *should be considered* by the teacher when a Science 9 letter grade is determined. Section D was designed to collect information about the kinds of information students and their parents value, to compare and contrast the kinds of information they believed the teacher actually considered with the kinds of information they believed the teacher should and should not consider. Comparing students' and parents' beliefs about what should and should not be considered when a letter grade is determined is important because what people value influences how they interpret the events around them (Messick, 1989).¹⁷

Section E was included to collect information about students' and parents' views on the method, or methods used to report student progress. The questions in this section were designed to find out which reporting methods they found most useful, how satisfied they were with the method(s) used to report student progress, and what concerns they had about the method(s) used to report student progress.

¹⁷ In the end, the data collected via Section D was not reported in this study because, after reading more on the topic of communication, I decided that, for this study, the beliefs people held about the grading components actually incorporated into a Science 9 letter grade were more important than their beliefs about what they thought the teacher should incorporate into a letter grade.

Section F consisted of five Likert-type response items that asked students (and parents) to indicate the importance to them of each of the following: a progress report in science, a letter grade in science, written comments about science progress, a work habits rating in science, and a report about overall progress in school.

Section G included a number of fixed-response questions that focused on several possible consequences of reporting student progress. For each question, the student (parent) was asked to select an answer and explain their choice.

On the inside of the back cover of the questionnaire there was an Interview Request Form. The purpose of this form was to identify students and parents willing to participate in an interview on the topic of letter grades; only people who completed this form were contacted about an interview.

Teacher questionnaire

The TQ was similar, but not identical, to the SQ and the PQ. Five of the sections on this questionnaire were organized around themes closely aligned with those found on the student and parent questionnaires: the meaning of the Science 9 letter grade intended by the teacher; the grading components of Science 9 letter grades; the types of information a teacher should and should not use to determine a student's letter grade in Science 9; and opinions about various methods used to report student progress in Science 9. Sections of the SQ and the PQ which pertained to the importance of letter grades to students and parents, and to the consequences of reporting student progress were not included in the TQ. The TQ also differed from the SQ and the PQ in that it included items designed to learn more about teachers' assessment training, and grading practices; the context of assessment and reporting as it occurred within each individual teacher's classroom; and any district, school, or departmental policies that might affect their practices.

The TQ consisted of five sections. Section A asked the teacher to provide some background information about their teaching experience and their assessment, evaluation, and

reporting training. Section B of the TQ was similar to Section B of the student and parent questionnaires in that teachers were asked to indicate, by circling "Yes" or "No", the meaning of a Science 9 letter grade.

Sections C and D of the TQ were also similar to Sections C and D of the SQs and the PQs since teachers were asked to indicate the kinds of information they had used to determine a letter grade and the kinds of information they believed should or should not be used when letter grades are determined in Science 9. Section C of the TQ differed slightly from Section C on the SQ and the PQ, however, because teachers were also asked to indicate the percentage of the final letter grade they allocated to each grading component when they determined a letter grade.

In Section E, teachers indicated the methods they preferred to use to report student progress in Science 9 to students and to parents, and explained why they preferred those methods. Part of this section was similar to Section E of the student and parent questionnaires, and the information collected from teachers was compared to that collected from students and parents.

The TQ also included open-ended questions on the types of information distributed to students and parents about their assessment, evaluation, and reporting practices, and the district, school, and/or departmental policies affecting those practices.

Administration and Distribution of the Questionnaires

Shortly before the formal report cards were to be distributed in the Spring of 1994, I met with each teacher to discuss and arrange for the distribution and collection of the consent forms and the administration and/or distribution of the questionnaires. At that time, I left the student and parent consent forms for each teacher to distribute.

Two to three weeks (depending upon the teacher's schedule and the rate at which the consent forms were returned) after the report cards had been sent home, students with parental permission who agreed to participate in the study, completed questionnaires, under my

supervision, during one of their regularly scheduled science classes. It took students about 30 to 40 minutes to complete the SQ.

At the end of the SQ administration session, I gave students whose parents had consented to participate in the study an envelope to take home. Each envelope contained a PQ and a cover letter. Students were asked to return their parents' completed questionnaires to their teacher in the sealed envelopes. At that time, a list of students expected to return envelopes was given to the teacher. Throughout the following week, the teachers reminded the students to return their parents' questionnaires.

It should be noted that, when I returned one week later to pick up the completed PQs, some of them had not been returned. At that point, I asked the teacher if I could contact parents by telephone to find out about the status of the questionnaires. The teachers agreed that I should personally contact the parents, and supplied me with telephone numbers.¹⁸ When I called parents who had not yet returned their questionnaires, I thanked them for agreeing to participate in the study, inquired if they had received the questionnaire from their child, and asked them to return the completed questionnaire to the teacher at their earliest possible convenience. In the end, all but one of the PQs were returned.

I left a questionnaire for each teacher to complete at his or her convenience the same day the students completed their questionnaires and returned about a week later to collect it, along with the PQs.

Interview Schedules

Introduction

After the questionnaires were completed and returned, some of the students, some parents, and all of the teachers took part in individual, audio-taped interviews. Only students and

¹⁸ Teachers in the district that had not wanted me to send the questionnaires directly to the parents' homes felt that it would be all right to contact the parents who not returned their questionnaires because they had already agreed to participate in the study and, due to the time it would require, they preferred not to have to contact the parents themselves.

parents who completed the Interview Request Form on the inside back cover page of their questionnaire were contacted about an interview. Teachers were interviewed to learn more about their assessment, evaluation, and reporting practices, and to verify and clarify their questionnaire responses. Students' and parents' interviews provided the opportunity to verify and clarify their questionnaire responses.

Development and Description of the Interview Schedules

As the questionnaires were developed, several interviews were conducted with the volunteers who pre-tested them. At that time, the interviews were informal and unstructured — I asked questions to find out if there were any problems with the questionnaires, and to allow the respondents to explain their answers.

For the final study, I had originally intended to conduct informal interviews. However, after I reviewed my interviews with the volunteers who pre-tested the questionnaires, I decided that semi-structured interviews were required. Hence, Student and Parent Interview Schedules (see Appendix G and Appendix H) were developed that reflected the themes of the questionnaires. The Teacher Interview Schedule (see Appendix I) reflected the themes of the TQ. However, additional sections were included with questions about the teacher's assessment, evaluation, and reporting practices. Some of the questions included in these sections were based on the work of Bachor and Anderson (1993b) who conducted focus group interviews to "investigate the assessment experiences and practices of ... teachers, students, parents, and administrators" (p. 1) in B.C.

I originally planned to prepare an individual interview schedule for each interviewee. However, during the first interview with one of the teachers, it became apparent that the teacher's completed questionnaire was the focal point of the interview and that the interview schedule I had prepared in advance was redundant. I concluded that the best way to ensure consistency in the interviews was to use each participant's questionnaire as the basis for the interview schedule. By focusing on the questionnaire, each interviewee was able to examine their responses and discuss them with me. By using the questionnaire as the focus of the

interview, I was able, in most cases, to ask the questions in the same order during each interview. At the beginning of each interview, I explained the purpose of the interview, how it would be conducted, and asked a few additional background questions. For instance, I began each student or parent interview but asking them if they thought that completing the questionnaire had had any affect on the way they looked at how their, or their child's, progress in Science 9 was being assessed and reported. Whenever I interviewed a teacher, I began by asking for a description of their educational background and teacher training.

Conducting the Interviews

The interviews were conducted two to three weeks after the questionnaires were administered, after I had reviewed the completed questionnaires and conducted some preliminary analyses. All of the teachers were interviewed; however, only students and parents who completed and signed the Interview Request Form at the back their questionnaire booklet were contacted about an interview. Because few students and parents completed questionnaires, and even fewer were willing to be interviewed, I endeavored to talk to all of the people who completed the Interview Request Form. Of the students, parents, and teachers who consented to be interviewed, all but one parent was interviewed.¹⁹

Each teacher interview was conducted at the teacher's convenience and took about 90 minutes to complete. Each student or parent interview took about one hour to complete. The teachers and administrators in Whitewater School District allowed the students to be interviewed during class time; students in Cityside School District were interviewed at lunch or after school. Each parent interview was conducted at a time and location convenient to the parent (i.e., in the school or in their home).

¹⁹ Two appointments were scheduled with the one parent who was not interviewed. However, after travelling more than 150 km, waiting more than 90 minutes for her to meet with me, and then finding out that she would be unable to keep our appointment, I began to suspect that she did not feel comfortable about being interviewed and did not try to arrange a third appointment to conduct an interview.

Collection of Documents

During the data collection phase, I obtained a few documents written about the schools, the school districts, and the communities of the schools. These documents provided some information about the context of the study. In addition, I collected a number of documents from the teachers including: policy statements pertaining to their assessment, evaluation, and reporting practices; handouts distributed to students and/or parents that described their assessment, evaluation, and reporting practices; course outlines; copies of report card forms; samples of computer-generated comments; and letter grade summary sheets.

Research Protocol

One way to increase the reliability of a study's findings is to use a research protocol (Yin, 1984). A research protocol was used in this study to ensure that, as far as possible, the procedures were the same for each class. The protocol for this study consisted of the research proposal as well as the flow chart presented in Figure 2 (p. 89). A timeline is not shown in Figure 2 because the timing of the data collection for each class varied due to the timetables of the teachers, students, parents, and researcher. However, the flow chart provides a good overview of the steps followed in this study.

Data Management

To keep track of the data collected during this study, a data base was developed and maintained (Yin, 1984). Included in the data base were notes, documents, questionnaires, questionnaire data-sheets, interview tapes, interview transcriptions, analyses results, and computer files.

Questionnaire data for the fixed response items were coded, transferred to data sheets, and entered into computer data files. The data files were reviewed and verified for accuracy (by comparing data with participants' questionnaire responses) before they were analyzed. All answers to open-ended questions were entered into computer data files. The interview

audiotapes were transcribed in their entirety and coded. Computer files and printouts of the transcribed and coded interviews were maintained.

Only the investigator had access to the questionnaires and interview tapes. To protect their privacy, none of the teachers, students, parents, schools, or school districts have been identified, and pseudonyms have been used.

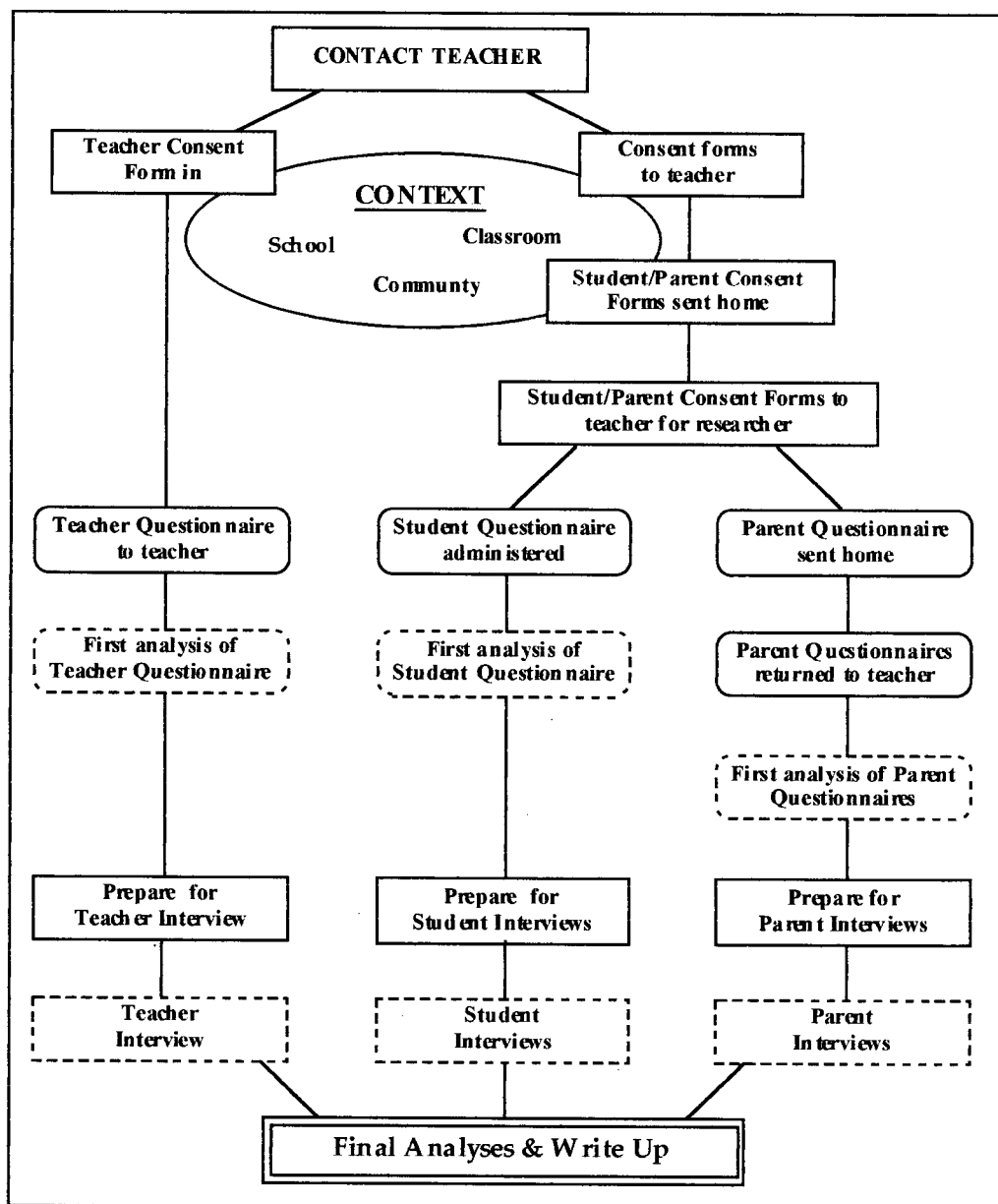


Figure 2. Research protocol.

Excerpt Designations and Presentation

Several different designations are used to identify the excerpts presented in this document, and all of the people in this study are referred to by pseudonyms. A teacher's pseudonym consists of a first and last name (e.g., Elena Kovac). The first time a teacher is referred to in any given section of the document s/he is identified by their full name (e.g., Elena Kovac); however, only their first name (e.g., Elena) is used in any subsequent references made to that teacher within the same section. A teacher's excerpt is identified by his or her full name (e.g., Elena Kovac) and the source of the excerpt (e.g., interview [I] or questionnaire [Q]) (see Figure 3).

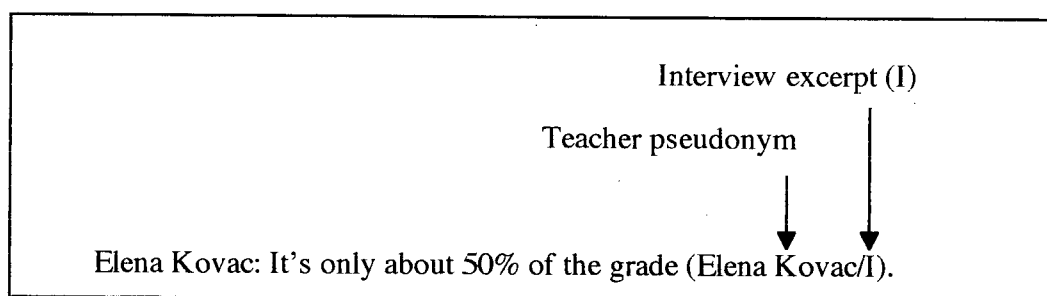


Figure 3. Sample teacher transcript excerpt designation.

A student's pseudonym consists of a first name only (e.g., Emily), hence, students are always referred to by their first names within the text of this document. As Figure 4 shows, a student's excerpt is identified by their first name (e.g., Emily), their teacher's surname (e.g. Mitchell), the source of the excerpt (e.g., Q [questionnaire]), and their letter grade (A).

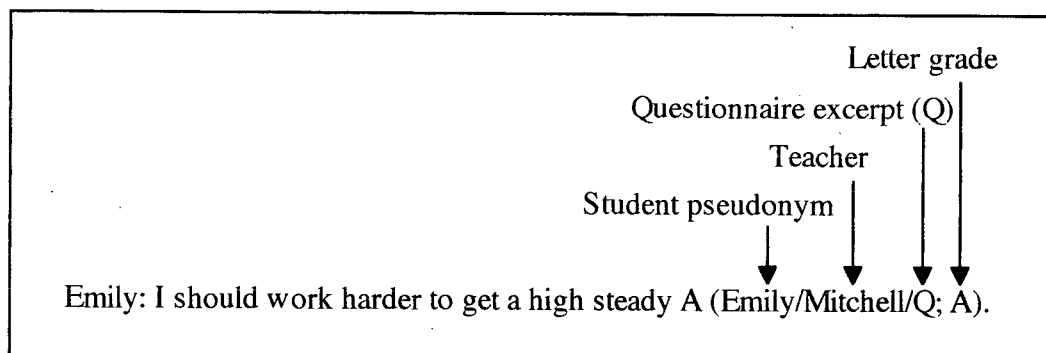


Figure 4. Sample student transcript excerpt designation.

A parent's pseudonym consists of a courtesy title (i.e., Mr. or Mrs.) and last name (e.g., Mrs. Knight). A parent's excerpt is identified by their name (Mrs. Knight), the surname of their child's teacher (e.g., Szabo), the source of the excerpt (e.g., I [interview]), and their child's letter grade (C+) (see Figure 5).

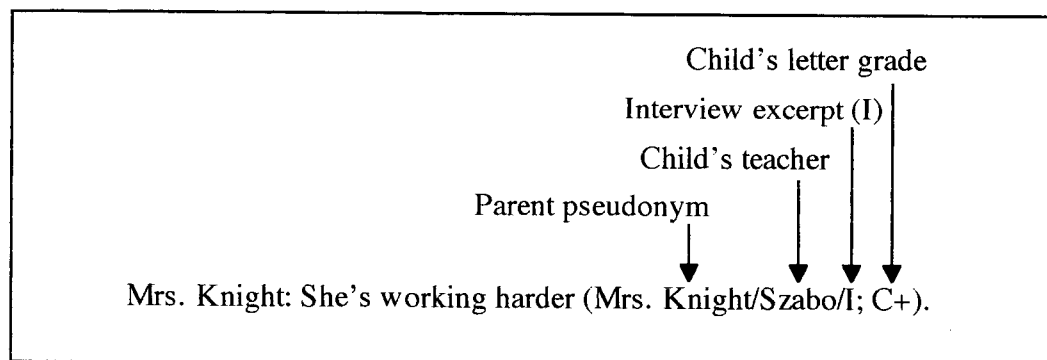


Figure 5. Sample parent transcript excerpt designation.

It should be noted that no attempt has been made to link students with their parents in this document. Linkages were not possible because more than twice as many students as parents completed questionnaires, and because students and/or parents were interviewed while their parents and/or children were not.

Excerpts presented throughout this document are verbatim. Even colloquialisms (e.g., 'cuz for because) used by the participants have been retained. On occasion, however, a portion of the original transcript has been omitted to maintain the flow of the comment. In such a case, an ellipsis (...) is inserted to indicate that a portion of the original transcript has been omitted.

Data Analysis

Merriam (1988) described "data analysis ... [as] the process of making sense out of one's data" (p. 127). Yin (1984) noted that it "consists of examining, categorizing, tabulating, or otherwise recombining the evidence to address the initial propositions of a study" (p. 127). The data of this study were reviewed, coded, categorized, and tabulated repeatedly as I tried to make sense out of them. As I analyzed the data, I moved back and forth between the

questionnaire and the interview data comparing the information provided by both of these data sources. The information provided by the questionnaires and interviews were compared for two reasons; first, to better understand people's questionnaire responses; and second, to see if people who completed the questionnaires had interpreted the questions as I had intended them. I also reviewed documents I collected from teachers and various other sources (e.g., school handbooks, school newspapers), and noted information relevant to the study.

The first data analyses took place once the questionnaires had been completed and before I conducted the interviews. I began by reading all of the questionnaires to gain a general understanding of the respondents' views and opinions about reporting, grading, and letter grades in Science 9. I looked especially closely at the questionnaires of people who had consented to be interviewed, flagging items I wanted to discuss in more detail during the interviews. Next, I entered the questionnaire responses into computer data files, and generated descriptive statistics and summary tables for the fixed-response items. Lastly, I transcribed the written questionnaire comments into computer data files.

Once the interviews were conducted, they were transcribed verbatim on the computer, and a computer data file was maintained for each participant. Each student and parent interview was organized into a seven-column table (see Figure 6); a five-column table was used for each teacher transcript because less background information was needed to identify the transcript. I entered the participant's identification number (ID) into the first column, their class identification (CIs) into the second (this column was not needed in the teacher transcripts), their (or their child's) letter grade (LG) in the third (not needed in the teacher transcripts), the questionnaire item (Item) code into the fourth, their questionnaire response (R) into the fifth, and their interview comments into the sixth. The last column I left blank so that I could code the interview comments with key descriptive words or phrases (descriptors) as I reviewed the computer printouts of the interviews. The comments written onto the questionnaires were organized in the same manner as the interview data (however, I inserted a "Q" at the end of each written comment to indicate that it came from a questionnaire) and then merged them with the interview data. I

recorded the comments into tables so that they could be merged and readily sorted by identification number, letter grade, item number, or response. The seven-column table arrangement made it easy to reorganize the qualitative data whenever it was required. Copies of the transcribed interviews were printed and read, and descriptors were written into the blank column of the table to identify the main theme or opinion expressed in the comment. This first set of descriptors were then transcribed into the transcript files.

| ID | Cls | LG | Item | R | Interview Comments | Descriptors |
|------|-----|----|------|---|--|-------------|
| 3009 | M | C- | C12 | Y | <p>S: You said on your questionnaire that you think your teacher considered your effort/work habits when he determined your letter grade. Can you tell me about that?</p> <p>A: Well, if he gives you a review for homework and you hand it in, he'll automatically give you two. But, later on, he'll do the corrections on the board and you have to copy those down and he'll give you another two. So then those are for work habits</p> | |

Note. ID = participant's identification number; CIs = class identification; LG = letter grade; Item = questionnaire item by section and number; R = response.

Figure 6. Sample interview transcript.

The four research questions of this study served as the organizers for the analyses of the data. To begin with, the questionnaire data were tabulated and summary tables were prepared for the items relevant to each question. In a similar fashion, the interview transcripts were recombined so that all of the comments about a given item, and all of the items relevant to a particular research question, were put into new computer data files sorted by teachers, students, and parents. As the analyses proceeded, the interview data for each item were further sorted by questionnaire responses and descriptive codes. This newly sorted data was saved in new computer files, printed, reread, and, if necessary, recoded. The categories created by the coding and sorting processes, in conjunction with the research questions, served as the basis for the descriptions presented in the next five chapters. Throughout the analyses of the interview data, comments representative of a particular point of view, and/or a unique point of view, were flagged in order that they might be included as examples in this document.

CHAPTER 5

THE PEOPLE OF THE STUDY

Introduction

Teachers, students, and parents from five different Science 9 classes completed questionnaires and participated in audio-taped interviews. The purposes of this chapter are to: 1) discuss how many people participated from each class and across all of the classes; 2) provide brief descriptions of the participating districts and schools; and 3) present some background information about the participants.

As described in Chapter 4, the data collection for this study was divided into two phases. During the first phase, teachers, students, and parents completed written survey questionnaires; during the second phase, interviews were conducted with all of the teachers plus the students and parents who had consented to an interview by completing the Interview Request Form on their questionnaire. Throughout the two data collection phases, information about the schools and school districts, and documents pertaining to the policies and practices of the teachers, schools, and school districts were collected. The questionnaires, interviews, and documents provided the information used to prepare this chapter.

The Classes of the Study

Overall Rates of Participation

Five teachers volunteered for the study: Wade Mitchell, David Turner, and Elena Kovac taught in three different schools in an urban school district (Cityside School District) located in the lower mainland of B.C.; Henry Szabo and Robert Reid taught in a rural school district (Whitewater School District) in the interior of the province.

Table 1 (p. 95) shows how many students and parents participated in the study. Potentially, a total of five teachers, 113 students, and — assuming one parent (or guardian) per student — 113 parents could have participated. In actuality, 43 (38%) students and 21 (19%) parents from the five classes completed questionnaires; 16 (14%) students and seven (6%)

parents were interviewed.²⁰ Although the participation rate for Whitewater School District was greater than that of Cityside School District, the overall participation rate for students and parents tended to be low and varied greatly from class to class. Overall, proportionally fewer urban parents completed questionnaires than did rural parents, and only rural parents were willing to be interviewed (see Table 1).

Table 1 Student and Parent Participation Rates for All Classes

| Participants | Number and (Percent) Participating | | | | | TOTAL (n = 113) |
|--------------------------|------------------------------------|-----------------------------|----------------------------|----------------------------|----------------------------|--------------------|
| | Cityside District | | | Whitewater District | | |
| | Wade Mitchell (n = 22) | David Turner (n = 19) | Elena Kovac (n = 25) | Henry Szabo (n = 31) | Robert Reid (n = 16) | |
| Students | | | | | | |
| Completed questionnaires | 10 (45) | 6 (32) | 3 (12) | 14 (45) | 10 (63) | 43 (38) |
| Completed interviews | 4 (18) | 0 (0) | 0 (0) | 8 (26) | 4 (25) | 16 (14) |
| Parents | | | | | | |
| Completed questionnaires | 4 (18) | 2 (11) | 3 (12) | 8 (26) | 4 (25) | 21 (19) |
| Completed interviews | 0 (0) | 0 (0) | 0 (0) | 4 (13) | 3 (19) | 7 (6) |

Note. n = student enrollment. The total possible number of parent participants for each class is the same as the student enrollment for that class.

There are at least three possible reasons why more people were willing to participate from Whitewater District than from Cityside District. First, Henry Szabo's and Robert Reid's classes were located in small, close-knit communities where teachers, students, and parents tended to know each other and often socialized together outside of the school setting (e.g., community dances, sports teams). The closeness that existed in these communities might have, as one rural parent suggested during her interview, made students and parents of the rural classes more willing to help the teacher out by participating in the study. On the other hand, because Wade Mitchell's, David Turner's, and Elena Kovac's classes were located in a large, urban district where students, parents, and teachers were less likely to know each other outside of the school setting, the teachers might not have received the same kind of support from the

²⁰ For clarity, the five teachers in the study have not been included in the table; however, all five teachers completed questionnaires and were interviewed.

students and parents as did their rural counterparts.

A second reason for the difference in rural and urban participation rates — also suggested by one of the rural parents — might have to do with the fact that rural schools, generally, cannot offer the same number and range of courses and activities that large urban schools can, and so, people in rural communities are often concerned that their children might not be given the same kind of educational opportunities as urban students. As a result, rural people might be more interested in discussing education, and their concerns about it, than urban people.

Finally, there might be a more personal reason — although I had moved from the Whitewater District eight years before I collected the data and did not know Henry Szabo nor Robert Reid, some parents and students might have been willing to participate in the study simply as a favour to me.

Brief descriptions of the five classes, grouped by district, are presented next. Included in these descriptions is information about the schools and school districts to which the classes belong, and the participation rates of the students and parents of each class.

The Classes of Cityside School District

Cityside School District is a large, rapidly-growing district located in the Lower Mainland of B.C. One of the largest school districts in B.C., urban, suburban, and rural communities are encompassed within its boundaries. Due to extensive commercial, industrial, and residential growth in the area, the population of the district more than doubled from the mid-1980s to the mid-1990s. At the time the data were collected (1994), the district served an area population of more than 250 000 people, and operated more than a dozen secondary schools and several dozen elementary schools. The students in the district represented a wide range of ethnic and socio-economic backgrounds with approximately one-fifth of the students in the district coming from homes in which English was not the first language. The teachers of three different classes in three different schools in Cityside School District participated in the study.

Wade Mitchell's Class

The students of Wade Mitchell's class attended Northbank Junior Secondary School (Northbank). Northbank, with its approximately 350 students and 20 teachers, is located approximately two blocks from the city core in what Wade described as a "hard part of town". According to Wade, the population of the school was fairly stable — "at least 90% [of the students in Wade's class] finish the year" (Wade Mitchell/I) — however, he also said many of his students lived in difficult family situations under poor economic circumstances. In fact, because of the sometimes severe needs (e.g., abuse counselling, lunch program, teen pregnancy information) of its students, Northbank had been designated an inner-city school by the BCME. Despite the apparently difficult teaching situation, Wade felt the rate of staff turn over was fairly low (generally, only two to three teachers left each year) and observed that many teachers had taught at the school for a number of years.

At the time the data were collected, the school was more than 30 years old. Northbank was similar in design to several other schools built during the late 1950s and early 1960s with which I am familiar — the hallways were straight, narrow, and locker-lined with low ceilings covered in acoustic tiles. No natural light reached these hallways and everything was built in a grid-like pattern. Most classrooms appeared to be fairly small and drab with only a couple of small windows for light. In spite of this, as I observed them in the hallways, the multi-ethnic young students seemed energetic and outgoing. Their energy, however, might not have extended into the classrooms for Wade described the students in the school as being "apathetic" and "hard to motivate" (Wade Mitchell/I).

Wade was a personable teacher in his early thirties who had completed both his Bachelor of Science degree and teacher training at a university in B.C. He had taught science courses (i.e., Science 8, 9, and 10; Biology 11; Chemistry 11) for nearly eight years. It was Wade's third year at Northbank; prior to moving to Northbank, he had taught for five years in another large urban school district in a school that served mainly middle- and upper middle-class students. When discussing his teaching experience, Wade noted that, to begin with, he had found teaching at

Northbank very difficult due to “the verbal abuse [of the students] ... and the “lack of interest in what I was doing” (Wade Mitchell/I). He had even gone so far as to consider trying another form of employment; however, after several months, and “with a lot of support from other staff members” (Wade Mitchell/I), things had changed, the students had “accepted” him and he had become, he suggested, a favourite teacher of the students. Based on my observations, I believe he was correct — his students seemed relaxed and respectful, they liked to joke with him, some stayed behind class to have personal discussions with him, and several of them told me that Wade was “their favourite teacher”.²¹

Northbank was not semestered and the students in his Science 9 class took the course for the entire year. As Although the participation rate was disappointing, more students and parents were willing to participate from this class than from either of the other two Cityside District classes. When asked why they had not returned their consent forms, a number of the students explained that they were old enough to decide whether or not they would participate and should not be required to get their parents’ permission to complete a questionnaire; other students explained it was hard to remember to take the consent form home. Interestingly, many of the students seemed genuinely interested in my research and, when Wade asked them to indicate by a show of hands, who would be willing to complete the questionnaire if their parents’ permission had not been required, the vast majority of the class put up their hands.

Table 2 (p. 99) shows, there were 22 students enrolled in Wade’s class; of these, 12 were girls and 10 were boys. All of the students were asked to participate, however in the end, 45% (eight girls and two boys) of the class completed questionnaires.

²¹ It was never my intention to observe the classes in the study; however, whenever a teacher invited me into their class to observe, I did. Four of the five teachers (Wade Mitchell, David Turner, Elena Kovac, and Robert Reid) invited me to spend time in their class before I spoke to the students about my research and/or administered the student questionnaires; Henry Szabo asked me to speak at the start of his class before the students wrote a test. I did not ask Henry if I could sit in on one of his classes as I had not included classroom observation as part of my research plan. Classroom observation was not included in the research plan of this study because I did not feel that I would have time to observe several classes and because I was concerned that if I asked teachers to allow me to observe their classes, administer the questionnaires, and interview them, they would find the demands on them too onerous to participate in the study.

Of the students completing questionnaires, only four students, or 18% of the class, signed the Interview Request Form at the back of their booklet; all four of these students were interviewed about two weeks after they had completed the questionnaires. Very few parents of students in Wade's class volunteered for the study — only four (18%) of the students' parents completed questionnaires and none were willing to be interviewed.

Although the participation rate was disappointing, more students and parents were willing to participate from this class than from either of the other two Cityside District classes. When asked why they had not returned their consent forms, a number of the students explained that they were old enough to decide whether or not they would participate and should not be required to get their parents' permission to complete a questionnaire; other students explained it was hard to remember to take the consent form home. Interestingly, many of the students seemed genuinely interested in my research and, when Wade asked them to indicate by a show of hands, who would be willing to complete the questionnaire if their parents' permission had not been required, the vast majority of the class put up their hands.

Table 2 Participation Rates for Wade Mitchell's Class

| Participants | Number and (Percent) Participating | | | |
|--------------------------|------------------------------------|------------------|-------------------|---------------------|
| | Students | | | Parents (n = 22) |
| | Female (n = 12) | Male (n = 10) | TOTAL (n = 22) | |
| Completed questionnaires | 8 (67) | 2 (20) | 10 (45) | 4 (18) |
| Completed interviews | 3 (25) | 1 (10) | 4 (18) | 0 (0) |

Note. The total possible number of parent participants for each class is the same as the student enrollment for that class.

David Turner's Class

David Turner's students attended Central Secondary School (Central), a newly constructed suburban junior-senior secondary with approximately 1000 students and 90 teachers. Central was situated several kilometres from the city core of the school district, but close to a major shopping area. In contrast to Northbank, Central was visually interesting with short, wide hallways that opened into lounge areas lined with benches on which students could

sit. The interior of the school was flooded with natural light due to the many skylights that ran the length of the vaulted ceiling, and the many large windows in each classroom. The school was bright and open, yet the students seemed somewhat subdued and reserved. The students of Central represented many different ethnic backgrounds and, according to David, nearly two-thirds of them came from homes where English was not the first language; although only a few English as a Second Language students happened to be in David's Science 9 class.

At the time the data were collected, David was in his mid-thirties and had taught science (i.e., Science 9; Physics 11 and 12) for nearly five years, three of which had been at Central. He had attended university in B.C. and obtained a Bachelor of Education degree.

On a personal level, as well as in his classroom, David appeared to be quite reserved. Nevertheless, he invited me into his class where I had the opportunity to watch him teach and interact with his students before I spoke to them about my research. David's Science 9 class was run in a very business-like manner; it was carefully structured, the students were respectful, attended to their assigned tasks, and "fooled around" very little, if at all. At least while I was present, there seemed to be no time for joking or teacher-student interaction on a personal level. Central was organized around a calendar that divided the school year into four quarters; as a result, students attended two different classes each day for a quarter of the school-year, and David met with his Science 9 class for a half-day period that was broken up by a brief recess. During his interview, David indicated that, because the length of time allowed for a course in a quarter system was short and all of the topics in Science 9 had to be covered very quickly, it was not possible to deviate from the curriculum. Perhaps the demands of the quarter system contributed to the business-like atmosphere of David's Science 9 class.

As Table 3 shows, there were eight girls and 11 boys enrolled in David's class. Of the 19 students in the class, only six (32%) completed questionnaires and not one student completed the Interview Request Form; as a result, none of the students in David's class were interviewed. In all, four of the eight girls (50%) and 2 of the 11 boys (18%) completed questionnaires; only

two (11%) parents of students in David's class completed questionnaires, and none were interviewed.

Table 3 Participation Rates for David Turner's Class

| Participants | Number and (Percent) Participating | | | |
|--------------------------|------------------------------------|------------------|-------------------|---------------------|
| | Students | | | Parents (n = 19) |
| | Female (n = 8) | Male (n = 11) | TOTAL (n = 19) | |
| Completed questionnaires | 4 (50) | 2 (18) | 6 (32) | 2 (11) |
| Completed interviews | 0 (0) | 0 (0) | 0 (0) | 0 (0) |

Note. The total possible number of parent participants for each class is the same as the student enrollment for that class.

The rate of participation of students and parents from this class was disappointing, especially since David had obviously encouraged the class to volunteer for the study. The reasons David's students gave for not participating were similar to those given by Wade Mitchell's students — they resented having to get their parents' permission to complete a questionnaire, and/or found it difficult to remember to take the consent forms home and then bring them back.

Elena Kovac's Class

Students in the third class from Cityside School district attended one of its older schools — Southside Secondary School (Southside). This large (nearly 1300 students and more than 100 teachers), suburban school was located in an area, described by Elena Kovac, as one populated by primarily middle- and high-income families. Although the core of the school was several decades old, a series of additions of differing architectural styles had been built over the years; as a result, some areas of the school felt closed in and dark, while others were open and airy.

Because Southside was a junior-senior secondary school, students varied greatly in age and maturity. The variety of ethnic backgrounds observed in the two other schools from Cityside District was not present in this school, however. According to Elena, fewer English as

a second language students attended Southside than was the case for most of the other secondary schools in the district.

Elena was an energetic and enthusiastic teacher with nearly 20 years of science teaching experience (i.e., Science 8 and 9, Biology 11 and 12, Chemistry 11, and Science and Technology 11) when I met her. Elena was born and completed her early education in Eastern Europe. She emigrated to Canada where she obtained her Bachelor of Science degree and completed her teacher training at universities in B.C. Southside operated on a year-long calendar and students attended eight different classes — four classes on one day, four the next. As a result, Elena met with the 25 students in her Science 9 class for 90 minutes every second day.

Despite Elena's enthusiasm and support — and my two visits to explain the purpose and requirements of the study — her class had the poorest rate of participation of the five classes (see Table 4). In all, only three (12%) students and three (12%) parents completed questionnaires.

Table 4 Participation Rates for Elena Kovac's Class

| Participants | Number and (Percent) Participating | | | |
|--------------------------|------------------------------------|------------------|-------------------|---------------------|
| | Students | | | Parents (n = 25) |
| | Female (n = 12) | Male (n = 13) | TOTAL (n = 25) | |
| Completed questionnaires | 1 (8) | 2 (15) | 3 (12) | 3 (12) |
| Completed interviews | 0 (0) | 0 (0) | 0 (0) | 0 (0) |

Note. The total possible number of parent participants for each class is the same as the student enrollment for that class.

As was the case for David Turner's class, no students nor parents completed the Interview Request Form and, hence, none were interviewed. Once again, although the students indicated that they would have willingly completed the questionnaire if their parents' permission had not been required, they said they found it difficult to remember to get the consent form signed and did not feel they should be required to obtain their parents' permission to complete a questionnaire.

The Classes of Whitewater School District

Two of the five classes were located in Whitewater School District, a mainly rural district situated in the interior of B.C. As is the case for a number of rural school districts in B.C., Whitewater School District serves several small communities located throughout a relatively large area of the province. Because the district office is located in the largest of the region's communities, some schools in the district are located more than 75 kilometres away from the board office. Although, the area of Whitewater School District is fairly large, the number of schools, teachers, and students in the district is small and the enrollment in the district had steadily declined throughout the late 1980s and early 1990s.

The students attending the schools in Whitewater District lived under diverse circumstances: some lived in the community in which their school was located; some lived on large ranches far away from their school; and some lived on First Nations band properties in the area. Brief descriptions of the two classes of this district follow.

Henry Szabo's Class

The students in Henry Szabo's class attended Mesa Secondary School (Mesa), a mid-sized (approximately 500 students) junior-senior secondary school located in the largest community of the district. As is typical of many schools built during the late 1960s, the one-story school had few windows and little natural light reached the interior hallways and classrooms of the school. Nevertheless, the colourful lockers, classroom doors, and many student-painted pictures and murals along the hallways, made the school bright and welcoming. The students and staff of the Mesa seemed relaxed and friendly.

Students from the local community attended Mesa, along with students bussed in from other small communities in the district whose secondary schools were too small to offer a wide range of courses. Henry described the area served by the school as rural with a fairly stable population base, and explained that many of the parents worked in agriculture, mining, or the service industries. He indicated that the family situations of the students in the school were very

diverse — some students lived very far from the school in houses without running water or electricity, while others lived comfortable, middle-class life styles in the immediate vicinity of the school. Because the population of the area was stable, a large proportion of the parents had lived in the area all their lives and had attended Mesa when they were young. A fairly large proportion of the school population was First Nations students (about 25%), but very few English as a second language students attended the school.

At the time of the study, Henry was in his mid-twenties and had taught science for nearly three years. He had completed both his Bachelor of Science degree and his teacher training in B.C. and had worked as a substitute teacher in a large urban school district before accepting a teaching position with Whitewater School District. Even though he had not taught for very long, he had experience teaching Science 8, 9, and 10, Biology 11, and Chemistry 11.

The students in Henry's class took Science 9 for the entire school-year. Each day was divided into four periods and every second day students met for 90 minutes of Science 9. I was only able to observe Henry interact with his students for a few minutes at the beginning of one class before I spoke to them about my research. While I was in the classroom, he seemed to be quite tense, and when students asked him questions about the previous day's homework or why I was in the room, he seemed to be very abrupt. Although he expressed an interest in my study and was willing to answer my questions, he did not seem to be able to relax around me.

Table 5 shows that 14 of the 31 students (45%) in Henry's class completed questionnaires and, although the same number of boys (7) and girls (7) completed questionnaires, a larger percentage (50%, or 7 of 14) of the girls in class completed questionnaires than did boys (41%, or 7 of 17). A total of eight students (26%) completed the Interview Request Form; these students were interviewed approximately two weeks after the questionnaires were administered. Eight parents (26%), completed questionnaires — this was the best parental participation rate of the five classes. Four of the eight parents who completed questionnaires agreed to be interviewed.

Table 5 Participation Rates for Henry Szabo's Class

| Participants | Number and (Percent) Participating | | | |
|--------------------------|---|-------------------------|--------------------------|----------------------------|
| | Students | | | Parents (n = 31) |
| | Female (n = 14) | Male (n = 17) | TOTAL (n = 31) | |
| Completed questionnaires | 7 (50) | 7 (41) | 14 (45) | 8 (26) |
| Completed interviews | 5 (36) | 3 (18) | 8 (26) | 4 (13) |

Note. The total possible number of parent participants for each class is the same as the student enrollment for that class.

Even though the overall rate of participation for Henry's class was one of the best in the study, it is still disappointing. The higher participation rate can most likely be attributed to the support given to the study by the principal of the school who took it upon herself to personally encourage both students and parents to participate. I believe the small, close-knit nature of the school community made it easy for her to personally talk to students and parents about the study, and that this personal contact might have persuaded some people to participate.

Robert Reid's Class

Robert Reid taught at Riverview Secondary School (Riverview), a very small secondary school located more than 75 kilometres from the Whitewater School District board office. Riverview enrolled just over 100 students in Grades 7 to 12 and had only 11 teachers; the large majority of the school population was comprised of First Nations students. Students attending Riverview came from the local village, from several First Nations communities in the area, and from families living as far away as 40 kilometres from the school; as a result, a large proportion of the students were bussed to school. The family situations of the students of the school varied a great deal — some students came from families operating businesses in the area and were well off, while others lived in very difficult family situations under poor economic circumstances. As was the case for Mesa Secondary, many of the parents of the students of Riverview Secondary had lived in the area all their lives and had attended Riverview when they were young.

Because its population was small, Riverview was not able to offer as a wide range of senior level courses as some of its students required; as a result, Grade 11 and 12 students often

moved out of the community, or were bussed to Mesa Secondary to complete their last two years of school.

The school building dated from the early 1970s and, although well illuminated and colourful inside, it had very few windows, and little natural light entered the classrooms. In spite of this, the students were obviously proud of their school, as sports trophies and banners, murals, paintings, and carvings were displayed both within its hallways and on the exterior of the school building. The students and staff of Riverview appeared to all know each other by name and were frequently observed teasing each other in a good-natured fashion as they passed in the halls.

Robert was in his early thirties and had been teaching science for nearly three years when I met him. Up to that point, he had taught Science 8, 9, and 10, Chemistry 11, and Chemistry 12. Before taking his teacher training, Robert had completed a Bachelor of Science degree at a B.C. university and worked for several years in the mining industry. As I sat through one of his classes, he seemed to be quite relaxed and not particularly bothered by students who continued to talk as he taught the lesson. Overall, Robert's students seemed to be fairly uninterested in science and, while I was there, one even went so far as to ask why they had to study science.

Their apparent lack of interest in science did not affect their participation in this study, as 10 (63%) of the 16 students enrolled in the class completed questionnaires (see Table 6). In the end, two (33%) of the girls enrolled in the class completed questionnaires; of the four remaining girls, three wanted to complete the questionnaire, but did not want to have to get the consent form signed, and one said that she was not interested in the study. The eight boys who completed questionnaires represented 80% of the boys enrolled in the class; the two boys in the class who did not participate were not interested in the study. In all, four students (one girl and three boys) were interviewed from Robert's class.

Table 6 Participation Rates for Robert Reid's Class

| Participants | Number and (Percent) Participating | | | |
|--------------------------|---|-------------------------|--------------------------|----------------------------|
| | Students | | | Parents (n = 16) |
| | Female (n = 6) | Male (n = 10) | TOTAL (n = 16) | |
| Completed questionnaires | 2 (33) | 8 (80) | 10 (63) | 4 (25) |
| Completed interviews | 1 (17) | 3 (30) | 4 (25) | 3 (19) |

Note. The total possible number of parent participants for each class is the same as the student enrollment for that class.

Only four parents and guardians completed questionnaires; this represents 25% of the parents of the students in the class. One other parent had planned to complete the questionnaire, however, a death in the family prevented her from completing it. Three of the four parents completing questionnaires were interviewed; this represented 19% of the students' parents.

The small, intimate nature of Riverview's community most likely contributed to its relatively high participation rate. Because Robert personally knew most of the parents of the students in his class, he took it upon himself to call them to explain the nature of the study and to remind them to return the consent form. Without his personal intervention, it is likely that the student and parent participation rates would have been lower.

The Teachers, Students, and Parents of the Study

The first section of each questionnaire asked participants to supply some background information about themselves; participants were provided with an opportunity to discuss their answers during their interviews. Their answers to those background questions are discussed in this section.

The Teachers of the Study

Both questionnaire and interview data were used to describe the teachers, and their training, opinions, and practices as they pertain to student assessment and grading are presented in this section.

Teachers' General Background Information

A total of five teachers (four men and one woman) from two different school districts in B.C. volunteered to participate in this study; all five teachers completed questionnaires and were interviewed. The teachers ranged in age from their mid-twenties to their late forties and had taught for various lengths of time; two of the them had taught for three years, one for five, one for eight, and one for 20.

All but one of the teachers had been born and raised in B.C.; the exception, Elena Kovac had a European background, but had lived in B.C. for more than 25 years. All of them had attended B.C. universities: two had completed Bachelor of Education degrees and three had completed Bachelor of Science degrees followed by an additional year of teacher training. Science was the area of expertise of all five teachers and the subject they had most frequently taught. Over the years, all of them had taught junior and senior secondary science courses; four of them had taught Science 9 for three years, and one for 15 years.

Teachers' Education in Student Assessment and Grading

Four of the five teachers indicated on their questionnaires that they had taken coursework that included student assessment, evaluation, and reporting as a major topic. During their interviews, however, it became apparent that the teachers had had little, if any, formal instruction in student grading and reporting.

When asked to describe what they had learned from their coursework, all of them said they had learned how to "properly write" test items (i.e., test construction techniques) and calculate basic statistics (e.g., mean, median, mode, standard deviation). In addition, three teachers said they had learned some assessment techniques in their university methods courses, and one could recall learning how to determine letter grades based on assessment information. Given that the teachers' seemed to have had little formal university training on the topics of student assessment, evaluation, and reporting, I spent time during their interviews trying to find out how they had learned to assess and grade their students.

The teachers told me that they had learned to assess mainly by experience — experience gained by teaching and, for some, experience gained when they, themselves, had been students. In addition, they had learned to assess by talking to other teachers, attending professional development activities, and reading assessment literature. For Elena Kovac, learning to assess students had involved experimenting with various assessment methods, and observing and interacting with other educators:

[You learn to assess] basically, by watching sponsor teachers when you student teach. You ask them, “Well, how do you decide on this, that, or the other?” So you get some feedback from them. And also trial-and-error. A lot of it is trial-and-error. You know where you are not happy with it, so you try something different, or you find a method that works and you share it with somebody else to get some insight as to how you can better it. (Elena Kovac/I)

Elena explained to me that, although she had taught for some 20 years, whenever she went to a conference she still attended sessions about assessment so she could learn about other assessment methods and apply them to her own teaching situation.

When asked how he had learned to assess and evaluate students, Henry Szabo dismissed the value of his university training: “Certainly not through the people at [the university] — I didn’t — really! I read a lot, listened to what other people were doing — some of it sank in, some of it didn’t. I just used my own personal values” (Henry Szabo/I). Henry, however, did emphasize the importance of his teaching experiences: “If I see that [the students are] working towards something, and they’re doing something, and the class as a whole is responding to something, I’ll use that as an assessment” (Henry Szabo/I).

The view that their university training had not taught them how to assess students was echoed by all but one of the other teachers — only Robert Reid felt he had gained some useful knowledge about student assessment as a result of his university training:

Sue: You didn’t take any coursework on student assessment and evaluation and reporting as a major topic?

Robert: No, no.

Sue: Where did you learn?

- Robert: Methods course — mainly in a methods course.
- Sue: Mm-hmm. Do you think it was very valuable? Was is useful?
- Robert: Oh, it was useful. I'd like to go, you know, I'd like to go back [to university]. Having been in the trenches, I'd like to, you know. Everything now suddenly is significantly more relevant.

Along with his methods classes at university and personal experience, Robert credited a BCME publication with helping him to learn to assess:

And some of my stuff actually came from, funnily enough, from the Science and Tech teacher's handout. That, of all, probably helped me the most. I now go and recommend it to colleagues if they're interested in finding out the perfect way to run a class and assess a student. It's all written there in that book. (Robert Reid/I)

Robert found the Science and Tech teacher's handbook to be invaluable and shared his opinion of it with other teachers.

Henry Szabo and Robert Reid, the two least experienced teachers, also based some of their assessment practices on what they had observed their teachers do when they were students; that is, sometimes they assessed their students as they had been assessed. None of the other more experienced teachers spoke about their personal experiences as students. Unfortunately, because the interviews were fairly loosely structured and I did not specifically ask teachers about their experiences as students, it is not possible to know if the other teachers sometimes assessed their students as they themselves had been assessed.

According to their questionnaires, all of the teachers had completed some in-service training on the topic of student assessment, evaluation, and reporting. Most of this training had focused on authentic assessment methods (e.g., performance assessment; portfolios of student work). When asked about the value of their in-service training, all of them indicated that the training had been interesting and informative, however, only Elena Kovac felt comfortable enough to apply some of the methods she had learned in those sessions (e.g., student-led conferences, student portfolios). Elena also explained that, because authentic assessment methods required a great deal of time to prepare and conduct and were difficult to coordinate when applied to several classes in a large school, she only used them once in a while.

Although the other teachers said that they probably should try to use authentic assessment methods in their classes, they also said that to do so would require both more training and more preparation time. Wade Mitchell believed that his ability to evaluate student progress would improve if he were to add authentic assessment methods to his repertoire:

I tried to get student-led conferencing brought into the school last year and there was just lots of talk, but nothing came of it. So I would still like to institute it for my classes even if the school isn't going to buy into it. I feel I have to change to progress as a teacher. ... I am very traditional in the way I set my marks. ... I'd like to broaden my horizons. I know the more different forms of assessment I use, the better judgments I can make on each of these students as to who is an "A" student, or whatever — a "B" student, a "C" student — that type of thing. (Wade Mitchell/I).

Because Wade felt he had not had enough time to thoroughly learn about authentic assessment methods, he did not feel "comfortable enough" with them to implement them in his classroom. Henry Szabo, Robert Reid, and David Turner seemed to express the same point of view in their comments.

Just as they had learned to assess by experience, talking to other teachers, and reading the literature, the teachers had learned how to determine, or assign, letter grades by experience, talking, and reading. Wade Mitchell's comment is a good example of what the teachers had to say about how they learned to determine letter grades:

Sue: How did you learn how to determine letter grades in Science 9?

Wade: Experience, experience.

Sue: Okay, you say you learned how to come up with a letter grade based on experience. Did you learn how to come with a letter grade in any of your methodology courses, or any courses you've taken? Has anybody taught you how to come up with a letter grade?

Wade: Not really, no. I mean — colleagues. When you first get started, you just see what they're doing as a first year teacher and, as a start, you normally mimic that. And during your practicum, you take a look at your sponsor teacher's mark book and you get an idea about what's done. So, really, it's not so much from university.

Without exception, the teachers told me that, as preservice teachers, they relied on their sponsor teachers; as beginning teachers, they turned to their more experienced colleagues; and they

continued to learn about determining letter grades by trying various methods they had read or heard about. Only Robert Reid acknowledged that something else — his personal history — had also taught him how to determine letter grades.

Robert's personal experiences as a student affected the way in which he determined letter grades:

- Sue: How have you learned how to come up with a letter grade?
- Robert: I have my own, sort of — preconceptions — if you like, on how to grade.
- Sue: Do you know where those preconceptions come from?
- Robert: My history. Certainly from where I came from and some of it is based on how I was marked. Yeah, basically, how I was marked as a student.

While Robert's personal history played a part in the way he determined letter grades, his university training did not — he, like three of the other teachers (see, for example, Wade Mitchell's comment above), said he had not been taught how to determine letter grades while at university, but had learned from other teachers while on the job.

Henry Szabo was the only teacher who said that he had been shown how to determine letter grades while at university:

- Sue: Has anybody ever taught you how to, or given you a way to, take all the [assessment] information you collect and put it into a letter grade?
- Henry: Oh, yeah. Oh, yeah. I've seen 15 different ways.
- Sue: But, from your own reading? Is that what you're saying?
- Henry: From reading, yeah, and I've worked with profs at [university] and stuff, too.
- Sue: And they showed you? Did anyone at the university teach you?
- Henry: Oh, yeah. Different ways for different courses.
- Sue: So, you learned when you were taking methods courses?
- Henry: Oh, yeah. I've had methodology on it. Most of it I don't listen to.

During his teacher training, Henry had been shown a number of different ways to determine letter grades, however, as his comment (“Most of it I don’t listen to.”) shows, he downplayed the value of that training. Henry felt he had learned how to determine letter grades on his own, by assessing his students, and by talking to colleagues.

Simply put, the teachers in this study learned about student assessment and grading by doing — by trying various assessment and grading techniques they heard or read about, they learned how to assess and grade students.

Teachers’ Beliefs About the Purposes of Assessment and Grading

Several different purposes for assessing and grading students were identified by the teachers, including: to provide information to students; to provide information to parents; to identify topics the class as a whole are having difficulty with, so such topics can be reviewed and remedial work can be provided; and to provide information to the school administration for student records, to identify honour roll students, and for programming and promotional decisions. Of these, the primary purpose cited by all five teachers, was to provide information to students.

Although the ways in which they expected their students to use assessment information (e.g., test scores, letter grades) varied somewhat from teacher to teacher, the majority said assessment information provided feedback to students that showed how they were progressing in Science 9. Wade Mitchell believed assessment information showed students “what they can or cannot do” (Wade Mitchell/I). Similarly, Robert Reid believed assessment information “[showed] the students how well they are doing — how well they are doing in the course” (Robert Reid/I). Elena Kovac felt assessment information provided feedback to students about a number of different aspects of their performance: “I guess there are many purposes — to let students know how well they are doing, what they need to improve, where their weaknesses are, [and] where their strengths are” (Elena Kovac/I).

David Turner identified two different ways his students could use assessment information. First, he said the results of assessments given part way through a course gave “feedback [to students] about where they are at” (David Turner/I), and such feedback could be used as a type of “formative evaluation”, by students to help them prepare for subsequent assessments. He also said a “final [exam] is where [the student has] gotten to at this time” (David Turner/I), and that it served as a summative evaluation of student performance.

Henry Szabo expressed a somewhat different purpose:

Henry: I use it [assessment] as an indicator to make the kids try as hard as they can. ... The only lesson I’m really worried about — and I don’t really care if the kid remembers 10 years down the road that a transformed fault is where two blocks slide past each other — the only goal I’m really interested in these kids learning is that if you try your best and you work at it, chances are you will succeed.

Sue: So, you’re using it as a motivational tool?

Henry: I’d like it not to be a motivational tool. I don’t want the kids to try to get an “A”. I would like the kid to try because they would like to see what they can do and achieve.

Sue: Okay.

Henry: However to be realistic in today’s way, shape, and time, that’s one of the primary motivators for the kids.

As the excerpt shows, Henry used assessment to motivate students to work in school.

The teachers in this study assessed and graded student for several different purposes; however, the primary purpose was to provide feedback to their students about their performance in school.

The Students of the Study

A total of 43 students from five different classes in two school districts completed questionnaires (see Table 7, p. 115); this represents 38% of the 113 students enrolled in the five classes. Twenty-four students in Whitewater School District completed questionnaires: 14 from Henry Szabo’s class and 10 from Robert Reid’s class. In Cityside School District, 19

students completed questionnaires: 10 from Wade Mitchell's class, six from David Turner's class, and three from Elena Kovac's class.

Table 7 Summary of Students' Background Information

| Background Information | Number of Students | | | | | | | | | | | |
|------------------------------|--------------------|----------|--------------|----------|-------------|----------|--------------------|----------|-------------|----------|-----------|-----------|
| | Cityside Classes | | | | | | Whitewater Classes | | | | | |
| | Wade Mitchell | | David Turner | | Elena Kovac | | Henry Szabo | | Robert Reid | | TOTAL | |
| | Q n=10 | I n=4 | Q n=6 | I n=0 | Q n=3 | I n=0 | Q n=14 | I n=8 | Q n=10 | I n=4 | Q n=43 | I n=16 |
| Gender | | | | | | | | | | | | |
| Female | 8 | 3 | 4 | - | 1 | - | 7 | 5 | 2 | 1 | 22 | 9 |
| Male | 2 | 1 | 2 | - | 2 | - | 7 | 3 | 8 | 3 | 21 | 7 |
| Age | | | | | | | | | | | | |
| 13 | - | - | - | - | - | - | 1 | 1 | - | - | 1 | 1 |
| 14 | 10 | 4 | 2 | - | 2 | - | 7 | 5 | 4 | 2 | 25 | 11 |
| 15 | - | - | 4 | - | 1 | - | 6 | 2 | 3 | 1 | 14 | 3 |
| 16 | - | - | - | - | - | - | - | - | 3 | 1 | 3 | 1 |
| Years in Canada | | | | | | | | | | | | |
| 1-5 years | 2 | - | - | - | - | - | - | - | - | - | 2 | - |
| 6-10 years | - | - | - | - | - | - | 1 | - | 1 | - | 2 | - |
| More than 10 years | 1 | 1 | 2 | - | - | - | 1 | 1 | - | - | 4 | 2 |
| Whole life | 7 | 3 | 4 | - | 3 | - | 12 | 7 | 9 | 4 | 35 | 14 |
| Language first spoken | | | | | | | | | | | | |
| Cantonese | 1 | 1 | - | - | - | - | - | - | 2 | - | 3 | 1 |
| Czech | - | - | - | - | 1 | - | - | - | - | - | 1 | - |
| English | 7 | 2 | 6 | - | 2 | - | 13 | 8 | 7 | 4 | 35 | 14 |
| Swedish | - | - | - | - | - | - | 1 | - | - | - | 1 | - |
| Punjabi | 2 | 1 | - | - | - | - | - | - | - | - | 2 | 1 |
| Spanish | - | - | - | - | - | - | - | - | 1 | - | 1 | - |
| Language now spoken | | | | | | | | | | | | |
| Cantonese | 1 | 1 | - | - | - | - | - | - | - | - | 1 | 1 |
| Czech | - | - | - | - | 1 | - | - | - | - | - | 1 | - |
| English | 7 | 2 | 6 | - | 2 | - | 13 | 8 | 9 | 4 | 37 | 14 |
| Swedish | - | - | - | - | - | - | 1 | - | - | - | 1 | - |
| Punjabi | 2 | 1 | - | - | - | - | - | - | - | - | 2 | 1 |
| Spanish | - | - | - | - | - | - | - | - | 1 | - | 1 | - |

Note. Q = completed questionnaires; I = completed interviews. Total enrollment = 113.
Class enrollments: Mitchell's = 22; Turner's = 19; Kovac's = 25; Szabo's = 31; Reid's = 16.

As Table 7 (p. 115) shows, when all classes are considered, nearly equal numbers of girls and boys completed questionnaires. The proportion of girls to boys varies considerably, however, when individual classes are examined. For example, of the 10 students who completed questionnaires from Wade Mitchell's class, eight were girls and two were boys; conversely, of the 10 students from Robert Reid's class, two were girls and eight were boys. Only in Henry Szabo's class did the same number of girls and boys (seven of each) complete questionnaires.

Table 7 shows that the majority of the students were 14 or 15 years old, and that 35 of the students had lived in Canada all their lives, while eight were born outside of Canada. Of the students not born in Canada, only two of them had lived here for five years or less. English was the first language of the vast majority of the 43 students who completed the questionnaires, and only eight of them indicated that they had first learned to speak a language other than English (i.e., Cantonese, Czech, Swedish, Punjabi, and Spanish). Given that the first language of most of the students was English, it is not surprising to see that, at the time of the study, the vast majority (37 out of 43) of students spoke English most often at home; only six indicated they most often spoke a language other than English at home.

Sixteen of the 43 students who completed questionnaires were interviewed (see Table 7); that is, 14% of all of the students enrolled in the five classes were interviewed. Only four students from Cityside School District were willing to be interviewed; all them were from Wade Mitchell's class. Twelve students from Whitewater School District were interviewed: eight from Henry Szabo's class and four from Robert Reid's class. Slightly more girls than boys were interviewed (see Table 7) — nine and seven, respectively. When classes are examined separately, however, it can be seen that the proportion of boys and girls who were interviewed varied greatly from class to class. The backgrounds of the majority of the interviewed students tended to be similar; most of them were born in Canada, learned to speak English first, and spoke English in the home — only two students in Wade's class indicated that English had not been their first language.

Table 8 (p. 118) summarizes the letter grades and work habits ratings of the students who participated in the study. As might be expected, the distribution of letter grades varied from class to class, as well as across classes. More students received better than satisfactory (i.e. "A", "B") and satisfactory grades (i.e., "C+", "C", "C-") than received less than satisfactory grades (i.e., "D", "I"), and none of the students in the study received an "E" in Science 9, even though six of the 113 students asked to participate in the study had been assigned that letter grade the previous term. It can be seen from the table that one of Wade Mitchell's students was new to the class and had not been assigned a letter grade, and that a girl in Henry Szabo's class (often absent due to personal problems) had been assigned an "Incomplete" (I) the previous term.

Overall, more students with better than satisfactory letter grades (As or Bs) completed questionnaires than did students with satisfactory or less than satisfactory letter grades. Although it might appear as though there was a disproportionate number of students with better than satisfactory letter grades, the distribution shown in the table is similar to the distribution of the letter grades for all of the students enrolled in the five classes (not shown). Furthermore, the Pearson's Chi-square statistic calculated to test the goodness-of-fit (Kirk, 1978) between the distribution of letter grades of the students completing questionnaires and the distribution of the letter grades of all students enrolled in the five classes was not significant ($\chi^2 [8, n = 43] = 9.88, p > 0.20$).

The work habits ratings assigned to the students spanned the entire range of possibilities. However, more students with work habits that were rated as "good" participated than students with work habits rated as being "satisfactory" or in need of improvement.

Although a slight majority of the interviewed students had better than satisfactory letter grades and work habits ratings in Science 9, overall, the letter grades and ratings also tended to span the whole range of possibilities. Moreover, the Pearson's Chi-square statistic testing the goodness-of-fit between the distribution of the letter grades of the interviewed students and that

of all of the students enrolled in the classes was not significant ($\chi^2 [8, n = 16] = 7.99, p > 0.30$).

Table 8 Summary of Students' Letter Grades and Work Habits Ratings

| Letter Grades and Work Habits Ratings | Number of Students | | | | | | | | | | | |
|--|--------------------|-----|--------------|-----|-------------|-----|--------------------|-----|-------------|-----|-------|------|
| | Cityside Classes | | | | | | Whitewater Classes | | | | | |
| | Wade Mitchell | | David Turner | | Elena Kovac | | Henry Szabo | | Robert Reid | | TOTAL | |
| | Q | I | Q | I | Q | I | Q | I | Q | I | Q | I |
| | n=10 | n=4 | n=6 | n=0 | n=3 | n=0 | n=14 | n=8 | n=10 | n=4 | n=43 | n=16 |
| Letter grade | | | | | | | | | | | | |
| A | 5 | 3 | - | - | 3 | - | - | - | 2 | - | 10 | 3 |
| B | 3 | - | 2 | - | - | - | 4 | 3 | 3 | 2 | 12 | 5 |
| C+ | - | - | 1 | - | - | - | 4 | 2 | 2 | 1 | 7 | 3 |
| C | - | - | 2 | - | - | - | 1 | - | 2 | 1 | 5 | 1 |
| C- | 1 | 1 | - | - | - | - | 2 | 1 | - | - | 3 | 2 |
| D | - | - | 1 | - | - | - | 2 | 1 | 1 | - | 4 | 1 |
| E | - | - | - | - | - | - | - | - | - | - | - | - |
| I | - | - | - | - | - | - | 1 | 1 | - | - | 1 | 1 |
| No grade (new student) | 1 | - | - | - | - | - | - | - | - | - | 1 | - |
| Work habits rating | | | | | | | | | | | | |
| G (good) | 7 | 3 | 2 | - | 3 | - | 4 | 3 | 5 | 2 | 21 | 8 |
| S (satisfactory) | 2 | 1 | 4 | - | - | - | 5 | 3 | 4 | 2 | 15 | 6 |
| N (needs improvement) | - | - | - | - | - | - | 5 | 2 | 1 | - | 6 | 2 |
| No grade (new student) | 1 | - | - | - | - | - | - | - | - | - | 1 | - |

Note. Q = completed questionnaires; I = completed interviews. Total enrollment = 113.
Class enrollments: Mitchell's = 22; Turner's = 19; Kovac's = 25; Szabo's = 31; Reid's = 16.

The Parents of the Study

Table 9 (p. 120) shows that 21 out of a possible 113 parents completed questionnaires. A striking observation to be made from the table is that 17 of the 21 parent/guardians who completed questionnaires were women, while only four were men. This is probably not surprising because, in my experience, it is more often the mother (or female parent/guardian) who takes responsibility for maintaining and overseeing home-school relations. Furthermore, in single-parent families, a growing and significant phenomenon, it is usually the female parent

who has custody of the children.²² Nineteen parents who completed questionnaires were parents, and two (one female and one male) were guardians. Parents (or guardians) of approximately equal numbers of girls and boys completed questionnaires.

Several characteristics of the parents were very consistent: most of them were born in Canada, learned first to speak English, and at the time of the study, spoke English at home. In addition, most of them were between the ages of 40 and 49. The educational background of the parents varied, however, and only two indicated that they had not graduated from high school. Of the remaining 19, five were high school graduates and 14 had completed some post-secondary education — nearly half of the parents had post-secondary diplomas or degrees. Given that such a large proportion of the parents had completed post-secondary education, it is likely that the group of parents in the study is a biased sample.

Parents were asked to list their occupation on their questionnaires. Because their answers were so varied — 17 different occupations were given — they are not shown in Table 9. A review of the occupations listed by the parents indicated six parents worked in the education field (e.g., teacher, teacher aide, or school support worker), and the rest either worked in a service industry (e.g., secretary, chamber maid, sales person, gas station attendant, bank operations manager), operated their own businesses, or worked in the health care field (e.g., lab technician, nurse).

Only seven parents were interviewed; that is, only 33% of the 21 parents who completed questionnaires, or 6% of all possible parents, participated in the second phase of the study. As Table 9 (p. 120) shows, the interviewed parents were all from Whitewater School District with children in either Henry Szabo's or Robert Reid's classes. Unfortunately, no parents from

²² Based on the 1991 Canada census data (Statistics Canada, 1996-1997), 9.9% (82.4% of all single-parent families) of families in B.C. and 10.7% (82.6% of all single parent families) of the families in Canada were headed by a female parent, and 2.1% (17.6% of all single parent families) in B.C. and 2.2% (17.3% of all single parent families) of the families in Canada were headed by a male parent. Based on the 1996 census data (Statistics Canada, 1996-1997), 11.4% (82.8% of all single parent families) of families in B.C. and 12.1 % (83.1% of all single parent families) of the families in Canada were headed by a female parent, and 2.4% (17.2% of all single parent families) in B.C. and 2.5% (16.9% of all single parent families) of the families in Canada were headed by a male parent.

Table 9 Summary of Parents' Background Information

| Background Information | Number of Parents | | | | | | | | | | |
|------------------------------|-------------------|----------|--------------|----------|-------------|----------|--------------------|----------|-------------|----------|-----------------------|
| | Cityside Classes | | | | | | Whitewater Classes | | | | |
| | Wade Mitchell | | David Turner | | Elena Kovac | | Henry Szabo | | Robert Reid | | TOTAL |
| | Q n=4 | I n=0 | Q n=2 | I n=0 | Q n=3 | I n=0 | Q n=8 | I n=4 | Q n=4 | I n=3 | Q n=21 I n=7 |
| Relationship to child | | | | | | | | | | | |
| Mother | 3 | - | 1 | - | 3 | - | 6 | 3 | 2 | 2 | 15 5 |
| Father | 1 | - | 1 | - | - | - | 2 | 1 | - | - | 4 1 |
| Legal guardian (female) | - | - | - | - | - | - | - | - | 1 | - | 1 - |
| Legal guardian (male) | - | - | - | - | - | - | - | - | 1 | 1 | 1 1 |
| Gender of child | | | | | | | | | | | |
| Female | 3 | - | 2 | - | 1 | - | 4 | 2 | 1 | - | 11 2 |
| Male | 1 | - | - | - | 2 | - | 4 | 2 | 3 | 3 | 10 5 |
| Age | | | | | | | | | | | |
| 30-39 | 1 | - | - | - | 1 | - | 4 | 1 | 2 | 2 | 8 3 |
| 40-49 | 3 | - | 2 | - | 1 | - | 4 | 3 | 2 | 1 | 12 4 |
| over 49 | - | - | - | - | 1 | - | - | - | - | - | 1 - |
| Years in Canada | | | | | | | | | | | |
| 1-5 years | 1 | - | - | - | - | - | - | - | - | - | 1 - |
| More than 10 years | 2 | - | 1 | - | 2 | - | 1 | 1 | 1 | 1 | 7 2 |
| Whole life | 1 | - | 1 | - | 1 | - | 7 | 3 | 3 | 2 | 13 5 |
| Language first spoken | | | | | | | | | | | |
| Cantonese | - | - | - | - | - | - | - | - | 1 | 1 | 1 1 |
| Czech | - | - | - | - | 1 | - | - | - | - | - | 1 - |
| English | 1 | - | 2 | - | 2 | - | 8 | 4 | 3 | 2 | 16 6 |
| German | 1 | - | - | - | - | - | - | - | - | - | 1 - |
| Punjabi | 1 | - | - | - | - | - | - | - | - | - | 1 - |
| Urdu | 1 | - | - | - | - | - | - | - | - | - | 1 - |
| Language now spoken | | | | | | | | | | | |
| Czech | - | - | - | - | 1 | - | - | - | - | - | 1 - |
| English | 3 | - | 2 | - | 2 | - | 8 | 4 | 4 | 3 | 19 7 |
| Punjabi | 1 | - | - | - | - | - | - | - | - | - | 1 - |
| Level of education | | | | | | | | | | | |
| not high school graduate | 1 | - | - | - | - | - | - | - | 1 | - | 2 - |
| high school graduate | 1 | - | 2 | - | - | - | 2 | - | - | - | 5 - |
| some college | 1 | - | - | - | - | - | 3 | 3 | - | - | 4 3 |
| college diploma/cert. | 1 | - | - | - | - | - | 3 | 1 | 2 | 2 | 6 3 |
| Bachelor degree | - | - | - | - | 3 | - | - | - | 1 | 1 | 4 1 |

Note. Q = completed questionnaires; I = completed interviews. Total enrollment = 113.

Class enrollments: Mitchell's = 22; Turner's = 19; Kovac's = 25; Szabo's = 31; Reid's = 16.

The total possible number of parent participants for each class is the same as the student enrollment for that class.

Cityside School District agreed to an interview.

The majority of interviewed parents were mothers. In contrast to the questionnaire phase of data collection, where the children were approximately half boys and half girls, during the interview phase, more parents of boys participated than did parents of girls.

The parents who were interviewed were all between the ages of 30 and 49. All but one of them learned to speak English first, and five were born in Canada. It is not unexpected that English was the language most often spoken at home by the interviewed parents because it is less likely that parents who did not speak English on a regular basis would be comfortable about and, hence, willing to participate in an interview. When asked, during their interviews, why they had agreed to participate in the study, most parents indicated they believed education was important and enjoyed the opportunity to talk about the system. Two of them, however, said that they had agreed to be interviewed because they had some concerns about how letter grades were determined, and wished to let me know about them.

An interesting aspect about the parents who were interviewed, not reported in Table 9, is that four of them had jobs in the education system; three were teacher aides and one was a teacher. In addition, one parent who worked part-time as a chamber maid, was attending college with the goal of becoming a teacher. It is possible that, because the majority of the interviewed parents were either working, or planned to work, in the education system, they were more interested in, and/or more knowledgeable about education, than were those parents who didn't work in the system. It is also interesting to note that all of the interviewed parents had at least some post-secondary education, and four out of the seven had completed diploma or degree programs. When the educational and occupational background of the interviewed parents is taken into consideration, it is important to recognize that they were most likely not representative of parents as a whole.

Table 10 displays the letter grades and work habits ratings of the children of the parents who completed questionnaires. The letter grades ranged from a low of “D” to a high of “A”, but overall, more parents of children with better than satisfactory letter grades in Science 9 participated in the study. Nevertheless, the distribution of letter grades shown in the table is comparable to the distribution of letter grades for all of the students enrolled in the five classes of the study, and the Pearson’s Chi-square statistic calculated to test the goodness-of-fit (Kirk, 1978) between the distribution of letter grades of the children of the parents who completed questionnaires and the distribution of the letter grades of all students enrolled in the five classes was not significant ($\chi^2 [8, n = 21] = 9.22, p > 0.30$). The table also shows that the work habits ratings of most of their children were “good” or “satisfactory”, while only two parents had children with a “needs improvement” (N) work habits rating.

Table 10 Summary of Children’s Letter Grades and Work Habits Ratings

| Letter Grade and Work Habits Rating | Number of Parents | | | | | | | | | | | |
|--|-------------------|----------|--------------|----------|-------------|----------|--------------------|----------|-------------|----------|-----------|----------|
| | Cityside Classes | | | | | | Whitewater Classes | | | | | |
| | Wade Mitchell | | David Turner | | Elena Kovac | | Henry Szabo | | Robert Reid | | TOTAL | |
| | Q n=4 | I n=0 | Q n=2 | I n=0 | Q n=3 | I n=0 | Q n=8 | I n=4 | Q n=4 | I n=3 | Q n=21 | I n=7 |
| Letter grade | | | | | | | | | | | | |
| A | 4 | - | - | - | 3 | - | - | 9 | 1 | 1 | 8 | 1 |
| B | - | - | - | - | - | - | 3 | 1 | 1 | - | 4 | 1 |
| C+ | - | - | - | - | - | - | 1 | 1 | 1 | 1 | 2 | 2 |
| C | - | - | 1 | - | - | - | 1 | 1 | 1 | 1 | 3 | 2 |
| C- | - | - | - | - | - | - | 1 | 1 | - | - | 1 | 1 |
| D | - | - | 1 | - | - | - | 2 | - | - | - | 3 | - |
| E | - | - | - | - | - | - | - | - | - | - | - | - |
| Work habits rating | | | | | | | | | | | | |
| G (good) | 4 | - | - | - | 3 | - | 4 | 3 | 1 | - | 12 | 3 |
| S (satisfactory) | - | - | 2 | - | - | - | 2 | - | 3 | 3 | 7 | 3 |
| N (needs improvement) | - | - | - | - | - | - | 2 | 1 | - | - | 2 | 1 |

Note. Q = completed questionnaires; I = completed interviews. Total enrollment = 113.
Class enrollments: Mitchell’s = 22; Turner’s = 19; Kovac’s = 25; Szabo’s = 31; Reid’s = 16.
The total possible number of parent participants for each class is the same as the student enrollment for that class.

The letter grades of the children of interviewed parents are also reported in Table 10. In a previous section, it was noted the majority (12 out of 21) of the parents who completed questionnaires had children whose Science 9 letter grades were better than satisfactory (As and Bs); the majority (5 out of 7) of the letter grades of the children of the interviewed parents, however, were satisfactory or less than satisfactory ("C+", "C", "C-", "D") Nonetheless, a range of letter grades is shown, and the Pearson's Chi-square statistic testing the goodness-of-fit between the distribution of the letter grades of the children of interviewed parents and that of all of the students enrolled in the classes was not significant ($\chi^2 [8, n = 7] = 3.55, p > 0.80$). The work habits ratings of the majority (six out of seven) of their children of interviewed parents were "satisfactory" (S) or "good" (G).

Summary

In this chapter, I briefly described the school districts, schools, classes, and people of the study. I supplied some general background information about the teachers, and provided an overview of their training, beliefs, and practices as they apply to the assessment and grading of student progress in school. I also described several different characteristics of the students and parents in this study (e.g., first language spoken, age, gender, letter grade, work habits rating).

In all, five teachers and 113 students and their parents from two different school districts were asked to participate in the study. In the end, five teachers completed questionnaires and were interviewed; 43 (38%) students completed questionnaires and 16 (14%) were interviewed; and 21 (18%) parents completed questionnaires and seven (6%) were interviewed.

The number of students and parents who participated was disappointingly low, especially the number who completed questionnaires. Nevertheless, because the purpose of this study is to learn more about people's beliefs and opinions, rather than to make statistical inferences, I believe adequate numbers of teachers, students, and parents participated in the study.

While preparing this document, I had to address the fact that there were no students or parents interviewed from Elena Kovac's or David Turner's classes, and no parents from Wade Mitchell's class. As I debated how to present the research findings, I thought about only including the two classes from which I had interviewed a subset of students and parents (Henry Szabo's and Robert Reid's), and excluding those classes where neither parents nor students were interviewed (Elena's and David's), or only students were interviewed (Wade's). In the end, however, I concluded that my research would be more informative if I included all five classes in the discussion, than it would be if I restricted the discussion to only two of them. Therefore, the findings reported in the remaining chapters of this document are based on the data collected from all five of the classes.

CHAPTER 6

REPORTING STUDENT PROGRESS IN SCIENCE 9

Introduction

The methods teachers use to determine letter grades and report student progress give meaning to the letter grades they assign. At the same time, students' and parents' opinions about those reporting methods, and their beliefs about the components of the letter grade, influence how they interpret that letter grade; that is, they affect the meaning attributed to a letter grade. In this chapter, I present the outcomes of the analyses of the data collected to answer the research question:

What reporting methods do teachers use to communicate information about student learning in Science 9 to students and parents, and what are teachers', students', and parents' opinions of those reporting methods?

Chapter 6 focuses on the methods used to report student learning (progress) in Science 9; Chapter 7 focuses on the components of Science 9 letter grades. Together, these chapters help us better understand some of the teachers' grading and reporting practices, and students' and parents' opinions and beliefs about those practices.

Questions on the TQ asked the teachers to describe how student progress had been reported the previous term, and which reporting methods they preferred to use with students and with parents. Questions on the students' and parents' surveys asked them to indicate which reporting methods they found most useful; whether they were satisfied with, or had any concerns about, the methods used to assess and report student progress in Science 9; and if they believed the Science 9 letter grade to be accurate. During their interviews, people were encouraged to explain their questionnaire responses in more detail. Both questionnaire and interview data were used to prepare this chapter.

Methods Used to Report Student Progress in Science 9

The teachers in this study used no-carbon-required computer forms to report student progress. The Cityside teachers (Wade Mitchell, David Turner, and Elena Kovac) all used the same board-approved report card form. Likewise, Whitewater teachers (Henry Szabo and Robert Reid) used the form approved by their school board. Letter grades, work habits ratings, and attendance were recorded on the forms in both districts. A separate sheet with printed comments was attached to the report cards of Cityside students, while comments were printed directly onto the Whitewater report card form. In addition, a student's overall percentage for the term was recorded on the report cards of the Whitewater District. The three Cityside District teachers told the students their percentages each term.

The information printed on the back of the Cityside District report card is shown in Figure 7, and the information printed on the back of the Whitewater District report card is shown in Figure 8 (p. 128).

A comparison of the two figures shows that, while some of the information printed on the two forms is the same, there is more information on the Whitewater form. For example, the following explanation can be found on the Whitewater form:

Comparative Achievement grades show the pupil's progress in comparison with the widely held expectations for the subject/course/grade/level at which the pupil is working.

The letter grade descriptors "Excellent achievement", "Very good achievement", etc. can also be found on the Whitewater form. The information about comparative achievement is printed on the Whitewater form because, at the time the data were collected, comparative achievement grades, based on the widely held expectations for the course, were to be assigned by teachers in B.C. (BCME, 1986). It should be noted that the Cityside form does not clearly explain that a letter grade is a comparative achievement grade that shows a "pupil's progress in comparison with the widely held expectations for the subject/course/grade/level at which the pupil is working". Moreover, the descriptors (e.g., Excellent, Very good, Satisfactory, etc.) given for the letter

grades on the Cityside form do not make it clear that a letter grade communicates information about a student's achievement. I mention this because some people might assume that a letter grade communicates information about non-achievement as well as achievement factors when they read this report card form, which, in some cases, might make it difficult for them to interpret the letter grade.

| | |
|--|---|
| <p>TO THE PARENTS/GUARDIANS:</p> <p>Only through the co-operation of parent/guardian and teacher can the school do its best work. Therefore, if there is any information concerning the welfare and progress of your son or daughter that you think would be helpful, or if there is anything in this report that you would like to discuss, please contact the school as soon as possible.</p> | |
| <p align="center">AN EXPLANATION OF SYMBOLS</p> | |
| <p><u>FOR TERM REPORTS</u></p> <p>A (Excellent) B (Very good) C+ } C } (Satisfactory) C- } D (Unsatisfactory) E (Probable Failure)</p> | <p><u>WORK HABITS - EFFORT</u></p> <p>G = Good S = Satisfactory N = Needs improvement</p> |
| <p><u>FOR FINAL REPORTS</u></p> <p>A = Excellent B = Very good C+ = } C = } Satisfactory PS = (Pass) The pupil has achieved the basic standard of performance widely expected for the subject/course/grade/level and is considered capable of handing subsequent work. F = (Fail) The pupil has not achieved a pass and it is in the best interests of the student to undertake further work in order to become ready for subsequent courses. SG = (Standing Granted) Although the pupil has not achieved pass standing, a sufficient level of performance has been attained to warrant, consistent with the best interest of the pupil, standing granted for the course. TS = (Transfer Standing) Credit granted for a course taken elsewhere.</p> | <p><u>COURSE DESIGNATIONS</u></p> <p>LD = Locally Developed</p> <p><u>FURTHER DESIGNATIONS</u> (May be used by Schools)</p> <p>I - Incomplete. (Pupil has been granted additional time to complete required work before a permanent letter grade is determined.) NM - No Mark. (For term report use only. See accompanying report card report card comment.) WD - Withdrawn. (Pupil has withdrawn from the course with permission of parents and principal.)</p> |

Figure 7. Information printed on the back of the Cityside District report card form.

TO THE PARENTS/GUARDIANS

The British Columbia system of public education strives to serve society and to meet the needs of individual students. The school's primary responsibility is to educate by enabling each student to pursue excellence, to experience success, and to realize maximum potential. The curriculum should enable each student to achieve educational and vocational goals and to develop interests, skills, and abilities.

Only through the co-operation of parent/guardian and teacher can the school do its best work. Therefore, if there is any information concerning the welfare and progress of your son or daughter that you think would be helpful, or if there is anything in this report that you would like to discuss, please contact the school counsellors as soon as possible

AN EXPLANATION OF SYMBOLS COMPARATIVE ACHIEVEMENT

Comparative Achievement grades show the pupil's progress in comparison with the widely held expectations for the subject/course/grade/level at which the pupil is working.

FOR TERM REPORTS:

| | | | |
|----|---|-------------|----------------------------|
| A | = | (86 - 100%) | Excellent achievement |
| B | = | (73 - 85%) | Very good achievement |
| C+ | = | (67 - 72%) | } Satisfactory achievement |
| C | = | (60 - 66%) | |
| C- | = | (50 - 59%) | |
| D | = | (40 - 49%) | Unsatisfactory achievement |
| E | = | (0 - 39%) | Probable failure |

COURSE DESIGNATIONS:

| | | |
|----|---|-------------------------|
| LD | = | Locally Developed |
| M | = | Modified course content |
| WE | = | Work experience |

INDIVIDUAL EFFORT - WORK HABITS:

| | | |
|---|---|-------------------|
| G | = | Good |
| S | = | Satisfactory |
| N | = | Needs improvement |

FOR FINAL REPORTS:

| | | |
|----|---|---|
| A | = | Excellent achievement |
| B | = | Very good achievement |
| C+ | = | } Satisfactory achievement |
| C | = | |
| PS | = | Pass (the pupil has achieved the basic standard of performance widely expected for the subject/course/grade/level and is considered capable of handling subsequent work.) |
| FL | = | Fail (the pupil has not achieved a pass standing and it is in the best interests of the student to undertake further work in order to become ready for subsequent subjects/courses/grades/levels.) |
| IN | = | Incomplete (pupil has been granted additional time to complete required work before a permanent letter grade is determined.) |
| WD | = | Withdrawn from course prior to October 31 with permission of parents and principal. |
| WF | = | Withdrawn Fail from course after October 31. |
| NC | = | No credit for course. |
| SG | = | Standing Granted (although the pupil has not achieved pass standing, a sufficient level of performance has been attained to warrant, consistent with the best interest of the pupil, standing granted for the subject/courses/grades/levels.) |

Figure 8. Information printed on the back of the Whitewater District report card form.

Not only are the descriptors of the letter grades printed on the back of the Whitewater form, a percentage range is also printed beside each letter grade. For example, the report card form gives the following information about an "A":

A = (86 - 100%) Excellent achievement

In my experience, when information about letter grades is presented in the above manner, people (including teachers) interpret it to mean that a student who achieves a score between 86% and 100% is to be given an "A". Yet, as discussed in Chapter 2, the BCME did

not intend a teacher to assign a letter grade based on a student's percentage, but to assign a percentage score to a student based on their level of achievement.

In order to supplement and discuss the information provided by the report cards, all of the teachers held parent-teacher conferences shortly after the report cards were issued; two informally contacted parents via the telephone throughout the term; and one issued interim reports to some of the students half-way through the term.

How Teachers Determine What to Assess and Grade

Teachers were asked to explain how they determined what to assess about student performance in Science 9 for the purpose of assigning letter grades. They were also asked how they decided which assessment methods to use. The following excerpts are typical of their explanations:

I guess it basically goes by the objectives of the course. What I see to be the most important topics and the most important objectives of the course — the main objectives of the course as given by the teacher guides and what the Ministry has for the curriculum for the junior grades. (David Turner/I)

I use my own expectations, plus I look back at the course outline — at the curriculum guide — and determine how to best get that material across; [for example], what tools am I going to use to have the child understand the process of cellular division? And, then, I assess what they have presented based on that. I assess the knowledge they have presented, plus how they did it. (Robert Reid/I)

As these excerpts show, the junior science curriculum along with their personal beliefs, or expectations, about what Science 9 students should know and be able to do, were the main determinants of teachers' assessment and grading practices.

Some of their other beliefs, however, also influenced their assessment and grading practices. For instance, they believed it is important to give students a number of opportunities to pass the course: "[I try] to find many avenues for kids to be able to give me stuff." (Wade Mitchell/I); "I try to use everything I can." (Henry Szabo/I); "Pretty well everything we mark in class is used for the final assessment." (Elena Kovac/I). Not only did the teachers try to collect a lot of assessment information about their students upon which to base the letter grades, in David

Turner's case, students were encouraged to rewrite tests and/or redo written assignments in order to improve their grade: "[The students] can do rewrites so there is a second chance [to pass the test], or they can build on what they already did on the first test" (David Turner/I). Like David, Elena Kovac allowed her students to rewrite tests. She also encouraged them to try to improve their final letter grade by redoing their labs and other written assignments and then handing them in to be marked again.

Other factors affecting their assessment and grading practices were also identified by the teachers. For example, Wade Mitchell believed that whatever he included in a letter grade should be "justifiable"; as a result, he did not assess non-achievement factors such as a student's attitude, participation, or behaviour because, he said, "It's too subjective. ... It's hard to justify" (Wade Mitchell/I).

Henry Szabo also did not consider areas of student performance that, he believed, entailed "subjective" assessment methods: "Attitude — I probably should consider. But until somebody gives me a way of doing it without being subjective, I won't" (Henry Szabo/I). However, as the following excerpt shows, other factors also influenced Henry's assessment and grading practices:

When I write the plans for the next day, I figure out how I can assess it. That's how I determine what to assess. And I try to use everything I can. Like, I plan on a day-to-day basis. What I did today, I planned last night. And if I see the kids liking a tangent to what I'm doing, I'm flexible. I won't, I won't ... I don't believe — there's all this belief in universities, that they try to drum it into our head, that we're supposed to have a unit with rationales and everything. I know what I want to get across to the kids from a chapter. I have no dammed clue how I'm going to get there. I start off ... I start teaching a certain way. If the kids respond, I go that way; if they don't, I try something else. I go from day to day. The thing that I'm very strong with is the knowledge I have to impart. Most of the stuff that I'm teaching, I could recite the chapters to you from front to back and not miss a single point, so I know the info that has to be covered which leaves me totally flexible as to how I'm going to cover it and I'll go with the flow. So the assessment just comes out of whatever they happen to be doing. They'll be doing something and I'll say, "Hey! Maybe I can get a mark out of that." (Henry Szabo/I)

Clearly, Henry did not base his practices on a detailed assessment and grading plan. Rather, his practice was determined by student reaction to learning activities and his desire to collect a lot of assessment information about students.

When asked if any department, school, or district policies affected how they assessed and graded students, all but one of the teachers said there were no such policies. Elena Kovac, however, explained how the science department in her school met each year to decide which aspects of student performance were to be included in the letter grade: “We have departmental meetings and in these meetings we decide how much emphasis we are going to be putting on class work, homework, tests, projects” (Elena Kovac/I). She further explained that the department set the emphasis each grading component was to be given, but that she had the freedom to decide how specific objectives were to be assessed (e.g., tests, project work).

With the exception of Elena, who was required to follow her department’s grading policy, the teachers in this study were free to choose what to assess, and how to grade their students in Science 9. As a consequence, their personal beliefs — especially their beliefs about what Science 9 students should be able to do — and their teaching experiences determined their assessment and grading practices.

How Teachers Assign Letter Grades

When the teachers were asked to explain how they used assessment data to arrive at a letter grade, they all said something similar to Henry Szabo: “I add it all together and I do the percentage and I put it down there and I see what category it falls into. ... [I use] the standard categories — ‘A’, ‘B’, ‘C’ — that we’ve been using for eons” (Henry Szabo/I). The process used by the teachers to arrive at a letter grade involved adding up the marks recorded for each student during the reporting period to find a total score — weighting different aspects of student performance whenever necessary — converting the total score to a percentage, and then converting the percentage to a letter grade according what they erroneously believed to be to the BCME guidelines (e.g., 86-100% represents an “A”).

It can be seen from the above description that none of the teachers assigned letter grades according to the BCME policy of the time (see Chapter 2 for a discussion of this policy). That is, they did not judge a student's level of achievement compared to the widely held expectations for Science 9, assign a letter grade based on that level of achievement, and then assign a percentage in the appropriate range for that achievement (e.g., a student who has demonstrated a "very good" level of achievement — "B" level achievement — is assigned a percentage in the 73% to 85% range). Like most teachers I am acquainted with, the teachers in this study based a student's letter grade on a total percentage score for the term. Also, like most teachers I am acquainted with, the teachers in this study probably believed that they were following BCME policy when they assigned letter grades in this fashion. Unfortunately, I did not ask them to describe their understandings of the BCME policy when I interviewed them and am not able to say for sure that this was the case.

Two different "weighting" methods were described by the teachers. In one method, they said that the weight given to an assessment device (e.g., lab assignment, test) was reflected in the total possible score for the device (e.g., "I write the tests to carry the weight already factored into them" [Szabo/I]), and then the raw scores for all the assessment devices were added together to get a total score for the term. In the other method, a computer program (i.e., GradeBook)²³ was used to apply the weight designated by the teacher after the assessment device had been administered and marked: "Whatever you gather for the class work and homework and projects you put in a bin [in the computer program], and then there is weighting that you can weight different assignments different ways" (Elena Kovac/I). GradeBook calculates weights by multiplying scores by the weight designated by the teacher; that is, if the teacher intends that Test A is to have twice the weight of Test B, GradeBook multiplies the Test A scores by two.

²³ GradeBook is published by 1st Class Software of Ontario, Canada. A sample of this program can be viewed on the Internet at URL <http://www.1st-class-software.com/samscrn.htm> and a demonstration program can be downloaded from URL <http://www.1st-class-software.com/download.htm>.

It is important to note, however, that neither of these methods is an appropriate way to weight grading components because neither of them takes into account the variability (i.e., standard deviation) of the set of scores to be weighted (Gronlund & Linn, 1990; Hills, 1981). It is erroneous to assume that, for example, because Test A has a total possible score that is twice that of Test B, it is automatically weighted twice as much as Test B. It is also erroneous to assume that the appropriate weight can be calculated simply by multiplying a set of scores by a predetermined factor (e.g., a factor of two). Weighting a grading component using either of these methods is incorrect and misleading (unless the sets of scores for the various grading components all have the same standard deviation). As a consequence, the weighting given to a grading component will not necessarily be the weighting the teacher intended, or the weighting the students expected.

As might be expected in this computer age, four of the five teachers used a computer program (i.e., GradeBook) to record student marks, find total scores for the students for the term, and then calculate the overall percentage for each student. Only Henry Szabo recorded the students' marks in a teacher's daybook and then calculated the students' total scores and percentages with the aid of a calculator.

Participants' Preferred Reporting Methods

Ten commonly-used reporting methods were listed on the questionnaires. Teachers were asked to select from the list the method, or combination of methods, they preferred to use to report student progress to students and to parents. Students and parents were asked to indicate which reporting method, or methods, they found most useful.²⁴ In the event that a preferred/useful method was not listed, the respondents were asked to supply their own answer; however, only one teacher did so.

²⁴ I asked students and parents to indicate which reporting methods they found "most useful" because I felt this term better reflects their roles as users of the information communicated to them about student performance in school. Furthermore, because I assume that a reporting method viewed to be "most useful" by a student or a parent is also a "preferred" method, I use the terms "preferred" and "most useful" interchangeably when I discuss students' and parents' preferences vis-à-vis reporting methods.

Methods Preferred by Teachers

The number of preferred reporting methods listed on their questionnaires varied from teacher to teacher. One teacher listed only one preferred method for reporting student progress to students, one listed two, and three listed three preferred methods. At the same time, two teachers listed three methods they preferred to use to report student progress to parents, and three teachers listed four preferred methods.

Four teachers indicated on their questionnaires that they preferred to use letter grades to report student progress to both students and parents, and one teacher indicated he preferred percentages. As he explained during his interview, Henry Szabo preferred percentages to letter grades because "The percentage is more finely graded — the letter grade is like a lump" (Henry Szabo/I). Even though Elena Kovac indicated on her questionnaire that she preferred to use letter grades, during her interview, it became apparent that she, too, preferred to use percentages to report student progress to both students and parents:

When I said letter grade [on the questionnaire], I meant percentage because, to me, a parent doesn't know if an "A" is an 80 or a 90, and sometimes the student doesn't know it either. But the percentage number — that is what is really important to them. (Elena Kovac/I)

School policy required Elena to record letter grades on the report cards, however, because she believed they were important to them, she made a point of telling her students their overall percentage each term; she also told parents their children's percentages during parent-teacher conferences.

Both Wade Mitchell and David Turner indicated on their questionnaires that they preferred to use letter grades to report student progress to students and to parents; they reiterated this preference during their interviews. Nevertheless, because each letter grade represented such a wide range of percentages, Wade and David also told the students their overall percentages each term: "Like, with a 'B' there's a huge variation, and the percentage tells them if they are a high 'B' or a low 'B'" (David Turner/I); "When students get the same letter grade, the percentage shows if they have improved or not. Students need to know their percentages and how

they are calculated” (Wade Mitchell/I). Neither Wade nor David told a parent their child’s percentage for the term unless s/he asked.

Robert Reid preferred to use letter grades to report student progress to students and to parents even though letter grades and percentages were recorded on the report card. He preferred letter grades for students because he believed students themselves preferred them: “I think students prefer letter grades because I constantly get asked for them. ‘What is that in a letter grade? What letter grade am I getting?’” (Robert Reid/I). At the same time, Robert preferred letter grades for parents because he believed parents understood and used letter grades: “I think the letter grade has become some sort of tool that a parent uses to find out if their child is an ‘A’ student versus a ‘B’ student versus a ‘C’ student” (Robert Reid/I).

Only Wade Mitchell indicated that he preferred a reporting method not listed on the questionnaire — he said he liked to use work habits ratings to report student progress to parents:

I like to put the work habits mark on the report card. Parents want to know what their kid is doing in class — if they’re not doing their homework, if they’re goofing off. The work habits tells that. It’s not so important for students because they already know what they’re doing, or not doing, in class. (Wade Mitchell/I)

As Wade was the last teacher interviewed and the only one to list work habits ratings on the questionnaire, it is not possible to know how the other teachers felt about using work habits ratings to report students’ progress to parents, or to students, as their use was not discussed during their interviews. This is unfortunate because work habits ratings could very well have been important to some of the other teachers, but could have been overlooked because work habits ratings had not been listed as one of the reporting methods on the questionnaire.

All of the teachers indicated on their questionnaires that they liked to report information about student progress to both students and parents via written report card comments. Henry Szabo, for example, explained:

The comments will reflect [effort and behaviour]: “Bobby got a ‘B’, while slacking off, doing very little work and being a nuisance in class.” And the kid who gets the same “B” who has worked hard will get the comment: “This kid has

worked exceptionally well to achieve this level.” But I’m not willing to put that into a letter grade” (Henry Szabo/I).

Other teachers gave similar explanations. Teachers liked comments because they allowed them to communicate information about aspects of student performance not taken into consideration when a letter grade was assigned (e.g., behaviour, effort).

The teachers also liked to talk directly to parents. Three of them liked to informally contact parents by telephone whenever there was something about a student they wished to discuss with a parent (e.g., a change in student behaviour for either the good or the bad). All of them, however, liked to talk to parents during parent-teacher conferences. Robert Reid’s comment illustrates why the teachers liked to talk to parents at conferences:

The conference allows [parents] to do basically what we are doing here [in this interview]. They analyze how I am marking their child — or they can — some of them analyze how I am marking their child. A lot of them come in almost to commiserate, “Oh, he’s doing that in class, too, is he?” Parents want to find out why the mark is such-and-such. They have expectations on what their child’s mark should be. If the marks have not met their expectations, they come to me and find out why: Is it my fault or is it the student’s fault? Or, who is causing this? (Robert Reid/I)

Parent-teacher conferences gave the teachers an opportunity to explain their grading practices, and, when necessary, justify students’ letter grades to parents.

Conferences also provided teachers and parents with an opportunity to work together to help improve student learning: “[A conference is] where you can get a better picture of what the demands of the parents are on the child and, you know, how to help each other to improve [student learning]” (Elena Kovac/I).

Although none of the teachers chose student-led conferences as a preferred method of reporting student progress to students or parents, they all told me that they believed that students should be included in conferences, if not all of the time, at least some of the time. As Elena Kovac observed, student-led conferences were not a preferred method of reporting student progress primarily because they require a lot of time to prepare and to conduct:

The only reason that [student-led conferencing] hasn't been done on a large scale, as yet in this school — and some people are doing that already — is the number of students that we deal with and the inability to schedule all the parents and all the students in one, two, three, or four evenings. So it's an on-going process, but I believe that every parent should have the opportunity to come with their child and sit down with the teacher and discuss [the student's work]. (Elena Kovac/I).

Henry Szabo liked students to be present at conferences because he believed it helped students identify the reasons for any difficulties they might be having in class:

I want the kid there when I talk to the parents. I get them to talk to their parents at the conference. I'll go, "Why don't you tell them what the problem is? Why don't you tell them what's going on?" Usually they'll be — 99% of the time they'll be — okay, let's say 90% of the time, they'll be honest and tell it right from the hip, and you say, "Yup, that's the problem." Like, I've sat a kid down with the parents [and asked], "Why aren't you getting [a better] grade?" [And the student says], "Well, I don't do my homework and I talk too much in class." Ten percent of the time the kid is so out in left field that they really haven't got a damn clue of what the hell they've been doing for the whole year. Then you have to go shake, shake, shake — reality check? Right? ... But it's nice — if it comes out of the kid's mouth, it means more to the kids — and it means the kids realize it. (Henry Szabo/I)

When students are part of the conference, teachers explained, it gives students an opportunity to discuss their strengths and weaknesses with their parents and teacher, and take responsibility for their learning.

Although their preferences varied somewhat from each other, generally, the teachers preferred to use a variety of methods to report information about student progress in Science 9 to students and their parents, however, letter grades and/or percentages were their first choices. By combining letter grades and/or percentages with other reporting methods (e.g., written comments, conferences), they believed they could communicate information about a variety of aspects of student performance (e.g., achievement, behaviour, attitude) and work with students and their parents to improve student learning.

Methods Preferred by Students

Because students were allowed to list as many useful reporting methods as they wished, the number listed varied. For example, one student did not list any methods, while another listed six. It was more common, however, for students to indicate combinations of two, three, or four different methods.

According to the questionnaire results, a majority of students found letter grades (32 or 74%), percentages (30 or 70%), and written comments (24 or 56%) useful. A minority of the students found parent-teacher conferences (eight or 19%), student-led student-parent-teacher conferences (three or 7%); student-led student-parent conferences (one or 2%), interim report cards (six or 14%), written anecdotal reports (three or 7%), or informal contact from the teacher (three or 7%) most useful. In all, 34 (79%) students found a combination of reporting methods useful for learning about their progress in school.

Most students perceived that letter grades and/or percentages were the most useful methods for learning about their progress in school; 42 (98%) of the 43 students who completed questionnaires listed letter grades and/or percentages as useful. Thirty-two (74%) students listed letter grades, alone or in combination with other reporting methods, as most useful. At the same time, 30 (70%) students listed percentages (or scores), either on their own or in combination with other methods, as most useful. A total of 21 (49%) students found both letter grades and percentages, together or combined with other reporting methods, to be most useful.

As reported above, a majority of the students listed combinations of reporting methods that included letter grades, percentages, or both, among their choices. During my discussions with them, however, it became evident that the interviewed students generally found a percentage more useful than a letter grade. In fact, students who had indicated on their questionnaire that they found both letter grades and percentages useful often referred to their

overall percentage, rather than their letter grade.²⁵ Several excerpts from the student interviews illustrate why they preferred percentages over letter grades:

With your percentage, you can change it into your own letter grade, if you want. I mean, I like the percentage because it shows you exactly how well you are doing. With, like, a letter grade, you're either an "A", "B", or "C", or something like that — it doesn't show your exact mark." (Lisa/Szabo/I; C+)

I prefer the percentages. Well, a letter grade can include a lot of percentages, but a percentage tells you exactly." (Heather/Szabo/I; B)

[A percentage] is a lot more accurate than a letter grade. A letter grade is just sort of like an about — between certain percentages. A percent is right dead on. (Bradley/Szabo/I; C-)

[I like the percentage] because it shows you what you really got, but the letter grade has a range. (Adam/Szabo/I; B)

I like the percentage so you know if you're high or you're low — like a high "B" or a low "B". It [the percentage] shows you how you are doing. I just like to know how I am doing. (Sean/Reid/I; C+)

As these excerpts show, some students preferred percentages because they believed them to be more accurate than letter grades. They also preferred percentages because the methods their teachers used to assign letter grades allowed them to readily convert a percentage into a letter grades, whereas, the converse is not true — they could not readily convert a letter grade into a percentage because each letter grade represents a range, rather than a single value. Students wanted to know their "exact" percentages because they could compare them from term to term to determine if they had improved or not: "I like the percentage because then you can know how much you've dropped, or how much you went up" (Kim/Mitchell/I; A). Students found both letter grades and percentages to be useful reporting methods. However, because they viewed them as being more accurate — a percentage appears to be much more precise than a letter grade — students tended to prefer percentages over letter grades. Students' confidence in the precision of percentages leads one to believe that they knew little about test unreliability, measurement error, and confidence intervals.

²⁵ All of the interviewed students were informed of their percentages each term. Both letter grades and percentages were recorded on the report cards of Henry Szabo's and Robert Reid's students, and although only letter grades were recorded on the report cards of Wade Mitchell's students, he told them their percentages when the report cards were issued.

Of the 43 students who completed questionnaires, 24 (56%) found written comments useful; of the 16 students interviewed, 12 found comments useful. Several students who perceived comments to be useful explained that they helped them understand what they were having difficulty with in school: "It tells you what to improve and stuff" (Lisa/Szabo/I; C+); "They give you, like, a lot of information on what part, you know, where to improve on" (Tonya/Szabo/I; C+); and "I like [written comments] because I know what I'm doing in class and how I'm doing it, and if I'm doing something wrong, then I know I can correct it next term" (Jennifer/Reid/I; B). Students who were given information that identified areas they were having difficulty with in school believed that they could use that information to improve their learning.

Slightly more than a quarter (12 or 28%) of the students indicated on their questionnaires that they found some form of conference (i.e., parent-teacher conferences, student-led student-parent-teacher conferences, student-led student-parent conferences) useful; four of the interviewed students found conferences useful. Little was said by the students about conferences during the interviews,²⁶ nevertheless, Adam explained that he liked student-led student-parent conferences because he could discuss what he was doing in school with his parents: "[I like a student-led conference] because it shows your parents what you're doing and they can say what they think about it, and stuff like that" (Adam/Szabo/I; B). Although she had never been to one, Angel believed that a student-parent-teacher conference would provide an opportunity for all three parties to work together to improve student learning: "I don't know if they have them here because I haven't been to one with my parents or anything. But I think they should have them where the students, parents, and teacher can work out what the problem is and where they should fix it up" (Angel/Szabo/I; Incomplete).²⁷

²⁶ I only asked students to comment on those reporting methods they found useful; I did not ask them to comment on any of the reporting methods they had not indicated as being useful. As a result, I did not find out why a student had not selected a particular reporting method.

²⁷ Even though Angel's school did not hold student-led student-parent-teacher conferences, according to her teacher, Henry Szabo, students were encouraged to attend the teacher conferences with their parents. Because Angel had enrolled in the school part-way through the year, she may have not been aware of this.

In general, students wanted to know how well they had done in Science 9. Some of them also wanted information that described what they had done well. Many wanted to know what their weaknesses were so they could address them and thereby improve their letter grade. For these reasons, students found letter grades and/or percentages combined with teacher comments written on the report card and/or communicated during a conference the most useful ways to learn about their progress in Science 9.

Methods Preferred by Parents

When asked to list the method, or combination of reporting methods, they found most useful, parents generally wrote down combinations of two, three, or four methods. One parent, however, listed only one method, while another listed nine.

Based on their questionnaire results, a majority of the parents found letter grades (16 or 76%) and written comments (16 or 76%) most useful. A majority (14 or 67%) of them also listed one or more of the following types of conferences as useful: nine (43%) listed parent-teacher conferences; seven (35%) listed student/parent/teacher conferences; and two (10%) listed student-led student/teacher conferences. Only a minority of the parents listed percentages (10 or 48%), interim report cards (nine or 43%), informal contact from teacher (five or 24%), or written anecdotal reports (five or 24%) as useful. All but one of the parents listed a combination of reporting methods as being useful for learning about their children's progress in school.

The vast majority of parents (19 of 21) found letter grades and/or percentages useful for learning about their children's progress in school. All 16 parents who found letter grades useful listed a combination of reporting methods on their questionnaires. Seven (33%) parents found both letter grades and percentages combined with at least one other reporting method useful. Three parents (14%) found percentages, but not letter grades, combined with some other reporting method useful. Only two parents (10%) did not include either letter grades nor percentages among their choices of useful reporting methods.

As was the case for the students, interviewed parents tended to refer to the percentage for the term rather than the letter grade,²⁸ and as they discussed the various methods used to report student progress in school, it became clear to me that, despite what they had indicated on their questionnaires, many parents found percentages more useful than letter grades because they believed them to be more accurate than letter grades. Mrs. Knight's interview comment is similar to those of other interviewed parents:

The letter grade has quite a span itself. You know, you could be a low "B" or a high "B", or a low "C" or a high "C". I would prefer to see percentages because I know — well, at that point — I know if she's working in the bottom percentile of her, you know, letter grade. (Mrs. Knight/Szabo/I; C+)

Like a majority of the students, most parents explained that they preferred percentages because they believed them to be more precise than letter grades. This belief in the precision of percentages suggests that, like the students, the parents were unfamiliar with the concepts of test unreliability, measurement error, and confidence intervals.

As noted earlier, many parents (16 or 76%) found written comments useful. Some parents liked written comments because they helped them understand the teacher's expectations. Mrs. Black, for example, observed: "I like the written comments because I feel like I'm in touch with the teacher and I know what they are trying to do — what they expect, a little bit" (Mrs. Black/Szabo/I; C). Other parents, including Mrs. Downey, felt written comments helped them better understand how their children functioned at school: "I like a written comment because it tells my son's attitude. It tells his abilities — whether he's tried harder this term than last, or whether he just doesn't get it" (Mrs. Downey/Reid/I; C).

Parents also liked conferences; in all, 14 (67%) found them useful. Parents liked conferences because they gave them an opportunity to talk directly to the teacher about their children's progress in school, and as Mrs. Downey's comment illustrates, some parents

²⁸ Both percentages and letter grades were recorded on the report cards issued to the children of all of the parents who were interviewed.

believed they could learn more about their children's progress in school from the teacher in a face-to-face meeting than they could from a written report card comment:

I like the one-on-one [conference] because, like, they'll write a certain amount [on the report card], but that isn't all of it. So, face-to-face they tend to tell me a lot more than what they write on paper. I'd rather sit and talk to somebody than do it on paper or over a phone. I want to judge their reactions. That's another reason I like parent-teacher [conferences] because they could say, "Oh, your son's doing great!" And their eyes go up and you can see that it's not true. Right?" (Mrs. Downey/Reid/I; C)

A different, and unique, perspective was expressed by Mr. Li who explained that he did not like to go to see the teacher, either alone or with his child, because:

Every time when I go and meet the teacher with the students — with one of them — it doesn't help very much. They [his children] feel that, you know, I'm putting them down, or whatever, in front of a third person [the teacher]. (Mr. Li/Reid/I; A).

Mr. Li was of the opinion that his meeting with the teacher was of little value. Instead, he felt he should discuss his son's progress in Science 9 directly with his son, and that his son should go on his own to talk to the teacher about school. The parents liked to receive information about their children's progress in school that described what, and how, their children were doing in school — for the most part, they found written comments and conferences with teachers useful ways to gain such information.

A few parents liked to be informed about their children's progress in school via written anecdotal reports, informal contact from the teacher, and/or interim reports. Parents, who found anecdotal reports useful, explained that even though such reports were not issued at the secondary level, they had liked to read them when their children were in elementary school because, for them, anecdotals provided more information about a child's performance in school than did grades (letter grades and/or percentages) or computer-generated written comments. Mr. Marsden, an elementary school teacher, expressed the same view as several other parents when he explained:

To me, simply putting down an "A" doesn't really tell me a whole lot other than, "Well, okay, he's doing well." It doesn't tell me what he can do and can't do. It doesn't tell me where he is weak or strong. It doesn't really tell me what the

teacher thinks of him. An anecdotal report tells me — if it's done properly — tells me exactly what he can do and what he can't do. (Mr. Marsden/Szabo/I; B).

Parents who found anecdotal reports useful wanted to know their children's strengths and weaknesses so that they could help them. Similarly, parents who found interim reports and/or informal contact from the teacher useful wanted to learn about their children's problems so that they could help their children address those problems before report cards were issued.

Parents found it most useful when a combination of reporting methods was used to inform them about their children's progress in school. In particular, they found it useful when a symbol such as a letter grade or a percentage — although it became obvious during the interviews that they tended to prefer percentages — was combined with another reporting method (e.g., written comments, conferences) that described what, and how well, their child was learning in school.

Students' and Parents' Satisfaction With Reporting Methods

Students and parents were asked if they were satisfied with the method, or combination of methods, used to report student progress in Science 9. Based on their questionnaire responses, a larger proportion of the students (34 or 79%) than parents (12 or 57%) were satisfied with the reporting method(s) used the previous term. Although students and parents were invited to explain their answer on the questionnaire, few of them did so. People who were interviewed were asked to explain their answers to these questions. As might be expected, those who chose to explain their answer were people who indicated that they were dissatisfied with the reporting method(s) used for Science 9.

The dissatisfied students fell into two groups. The first group includes students who were not satisfied with the nature of their report card comments. The following excerpts illustrate what some students wrote on their questionnaires: "In the comments, they were all the same and telling about the good things. I would also like to know about what I need to work on — the bad things" (Kim/Mitchell/Q; A); "I think the report cards should have more things included, like, what I'll need to work on, or pay attention to more, should get help on"

(Emily/Mitchell/Q; A); and “It is not telling me what I need to improve on and I find it hard to learn” (Angel/Szabo/Q; Incomplete). Some interviewed students echoed these views, and Kim added:

I like comments, but the thing that bothers me, like, when they write comments, it's all the same thing over and over. It's like it's done by computer, it's not what they [the teachers] think. You know what I mean? It's not what they think about you and what *you* need to do. (Kim/Mitchell/I; A)

Kim wanted more personalized comments on her report card — comments that identified what she needed to work on in order to improve her mark.

The second group of dissatisfied students includes those who expressed concerns about the method used to determine a letter grade in Science 9. Students in this group made comments such as these: “I think not too much emphasis should be placed on test results, but more on homework, or in-school work, and class participation in activities, and not much on behaviour in class” (Kevin/Turner/Q; B); “If people do bad on a test it doesn't necessarily mean they didn't study — they may forget or get nervous” (Jill/Mitchell/Q; B); “Marks shouldn't be taken off for lates or absences” (Sarah/Turner/Q; B). As these remarks show, some students believed test results were given too much emphasis, while others believed certain non-achievement factors should (e.g., studying) or should not (e.g., behaviour, tardiness) be factored into the letter grade.

Generally, the students were satisfied with the methods used to report their progress in school. However, some were dissatisfied because they wanted written comments that were personalized and more informative; others were dissatisfied with the way their letter grade was determined by their teacher.

The dissatisfied parents also fell into two groups. The first group included a few parents who, like some students, were not satisfied with the nature of the comments written on report cards. Mrs. Cragg, for example, seemed to want more personalized comments about her son: “I do not like the computer statements — they evaluate my child as if he were a number” (Mrs. Cragg/Kovac/Q; A). Mrs. Black was of the same opinion: “I like written comments — if

they are personal (i.e. from the teacher to parent and student) — not a standard form letter” (Mrs. Black/Szabo/Q; C). Mrs. Black also wanted more information about her daughter’s progress in school: “There doesn’t seem to be any consistency in marking as various teachers mark and grade different, so it’s hard to determine how my child is doing in a specific class because there are no written explanations” (Mrs. Black/Szabo/Q; C).

Some parents not only wanted personalized and informative comments, they wanted some of the comments about their children to be positive:

The only thing that we parents get home is the negative. I don’t like this — I like to see positive things, too. Like, I don’t like to see, “Your child does not have this done.” or “This isn’t going to be completed at the end of the year.” all the time. It would be nice to see some positive stuff. It would be nice to see, “No, you’re not having any problems. This is great! Big pat on the back. We don’t have any worries. Keep up the good work.” Not just the negatives. (Mrs. Black/Szabo/I; C)

Last term my son worked very hard (at home, anyway) on his school work. He brought his mark up from an “E” (possible failure) to a “C-”. The teacher’s comment was “borderline achievement, must put in more effort”. My feeling was that the comment could have been explained, at least — or tempered with a bit of recognition of his improvement. It seemed to be a terse comment about someone who seemed to be trying harder. (Mrs. Levett/Szabo/Q; D)

These parents wanted to see some positive comments about their children because, it would seem, they believed such comments made students feel better about themselves and encouraged them to work harder in school.

The second group of dissatisfied parents included people who wanted to be informed about problems their children were having in school as soon as they arose:

I think if a parent approaches [a] teacher about [the] student’s work the teacher should take time to help [the] parent and contact as soon as problems appear. (Mrs. Mann/Szabo/Q; D)

More information at reporting time would be better, but more information during the term would be best. A problem may not show up until the report card actually comes home — then too much time is needed to ‘catch up’ when earlier contact with the parents may have been more helpful. (Mrs. Levett/Szabo/Q; D)

I didn’t find out about lack of studying/missing assignments until after the term was over. Would prefer to receive explanation of how grades are assessed and what teacher’s expectations are, before term starts — and more frequent informal

reports throughout the term (i.e., monthly) as to student's progress, completion of assignments etc. (Mrs. McIsaac/Reid/Q; C+)

These parents believed that contact from the teacher during the term would enable them to help their child with their school-related problems in a timely fashion, before a report card was issued.

A slight majority of the parents were satisfied with the methods used to report student progress in school. A number of them, however, were not satisfied because they did not find report card comments personalized and informative enough; several others did not feel they had been apprised of their children's problems in school soon enough.

Students' and Parents' Concerns About Assessment and Reporting Methods

When asked if they had any concerns about how student progress in Science 9 had been assessed and reported the previous term, a larger proportion of the parents (nine or 43%) than students (nine or 20%) indicated that they had concerns. As might be expected, the concerns expressed by students and parents reflected the reasons given for their dissatisfaction, described above. Students concerned about the reporting methods said they would like to get more detailed comments in their report cards, and did not want marks taken off for things such as tardiness, absences, or behaviour. Parents with concerns said they would like to see more detailed comments, more information about what students are studying and how they are graded, and more informal contact from the teacher during the term before a report card is issued.

Students' and Parents' Beliefs in the Accuracy of Science 9 Letter Grades

Students' were asked the question: *Do you believe that your letter grade in Science 9 on your last report card accurately shows how well you did last term?* At the same time, parents were asked the question: *Do you believe that the letter grade on your child's last report card accurately shows how well your child did in Science 9 last term?*

When students were asked if they believed that their Science 9 letter grade accurately showed how well they had done the previous term, 22 (51%) of the students completing

questionnaires said “Yes”, 12 (28%) said “No”, and nine (21%) said “I do not know”. Nine of the 16 interviewed students said “Yes”, three said “No”, and four said “I do not know” on their questionnaires.

Some students believed their letter grade to be accurate because it confirmed their personal beliefs about themselves. For example, Heather noted: “I think I did well and it said I did” (Heather/Szabo/Q; B); while Ravi observed: “I tried real hard, did all my work, and I thought I deserved the ‘A’ I got” (Ravi/Mitchell/I; A). Other students, like Jennifer, believed their letter grade to be accurate because the marks assigned for work done throughout the term correlated with the letter grade on their report card:

Jennifer: Yeah, [the letter grade was accurate] ‘cuz after I thought about it, I was, like, I got a “B”! Boy, I thought I’d get lower! But, then I thought about it and I thought about all the marks I got on my labs and everything and it did — it showed that I’d put enough effort in. Like, I should have put more in, but I never, and it showed.

Sue: So, when you look at your letter grade, it sounds like you actually think about whether it’s a fair mark, or an accurate mark.

Jennifer: Yeah, if I don’t think so, then I’ll bring it up to the teacher that I don’t think it’s fair and I’ll go, “What did I do wrong to get such a low grade?”, or whatever — “or a high grade?” (Jennifer/Reid/I; B)

Jennifer had obviously considered whether or not her Science 9 letter grade had been accurate and, after thinking about the marks given for assignments done throughout the term, had concluded that it had been.

Students who did not believe their letter grade to be accurate provided several different reasons for this belief. Walley, for one, did not seem to understand why there had been a “D” for Science 9 on his report card:

And, the stuff that I got back, like, I only got two or three sheets back that had bad marks on it — below failing — and the rest were all high marks, like, 80s and 70s. I don’t really know what happened. ... When I asked the teacher, he said I had low marks in most of my work. But I didn’t really have low marks in most of my work, well, not that I got back. (Walley/Szabo/I; D)

Walley did not believe his letter grade had been accurate because his recollection of the marks given to assignments done throughout the term did not correlate with the letter grade on his report card.

Sandra, who was not interviewed but wrote an explanation on her questionnaire, viewed her letter grade to be inaccurate because some aspects of her performance in school had not been considered by the teacher: “I don’t think it’s accurate because it shows how I did in my work but not how hard I tried etc.” (Sandra/Mitchell/Q; B). On the other hand, Olivia did not think her letter grade had been accurate because she believed she had not been given credit for some of the her work: “Well, he lost a couple of things — and they, I think they were worth quite a bit, so it brought my mark down and he figured ... he just said I didn’t do them” (Olivia/Szabo/I; B).

In all, nine students said they did not know if their letter grade had been accurate, and three of them were interviewed. Emily wrote on her questionnaire, “I don’t know — I don’t usually like judging myself.” (Emily/Mitchell/Q; A), and explained during her interview, “Well, I wouldn’t just sit there and go, ‘Oh, well, let’s see, what do I want for this term? Should I get an ‘A’, or a ‘B’, or a ‘C’?” (Emily/Mitchell/I; A). In her opinion, it was the teacher’s job — not hers — to evaluate her performance in school. Kim explained that because some aspects of her performance in school had not been included as part of the letter grade, she was not sure if it was accurate: “I don’t know if its accurate because, like, when he does our letter grades, it’s not based on behaviour, it’s not based on attitude, and I think that should count” (Kim/Mitchell/I; A).

Angel’s situation differed from the other students in that she had been assigned an “Incomplete” rather than a letter grade on her report card. During her interview, Angel explained that she had answered “I do not know” to the question because she did not have enough information to be able to make that determination: “I don’t know [if the letter grade was accurate] because it does not say where I’ve missed things and what I did” (Angel/Szabo/I; Incomplete).

When parents were asked if they believed their child's letter grade accurately showed how well their child had done, 15 (71%) of the 21 parents completing questionnaires said "Yes", five (24%) said "No", and one (5%) said "I do not know". Of the seven parents interviewed, five (71%) answered "Yes" on their questionnaires and two (29%) answered "No".

Parents who believed their child's letter grade was accurate based their belief on what they knew about their child, what they had observed them do, or the marks they had seen recorded on their children's written assignments and tests. For instance, Mrs. Levett wrote on her questionnaire:

Knowing that my son views school as a social activity, that he puts things off until the last moment and then rushes to hand in something, that although he is very bright, he doesn't put much effort into his work, unless pushed (hard), the grade is likely an accurate one. (Mrs. Levett/Szabo/Q; D)

And during his interview, Mr. Marsden commented, "I've seen some of his tests and looked at his labs, and the mark seems to be fair" (Mr. Marsden/Szabo/I; B).

Parents who explained why they did not think their child's letter grade was accurate argued that, because certain aspects of student performance in school — which they viewed as important — had not been included as part of the letter grade, the letter grade was not accurate. For example, Mrs. McIsaac believed her son needed to be able to think logically and apply what he had learned, but did not believe her son's letter grade reflected this:

It showed how well/or poorly he conformed to expectations (i.e., presentation/neatness) but did not indicate what was covered, or indicate if he had developed any ability to think for himself, or to put the observations together to form logical conclusions. That's the big thing. I guess it's tied in with common sense, or whatever. Sean has done very well academically at regurgitating facts that are fed to him, but shows not very great ability to actually apply them to a problem. (Mrs. McIsaac/Reid/Q; C+)

On the other hand, Mr. Li viewed work habits and neatness to be very important but did not believe his son's letter grade reflected this: "I know how my son works. His notebook is a mess and I can't read anything he writes, but he still got an 'A'. Work habits are very important, but they are not considered by the teacher" (Mr. Li/Reid/I; A). It is interesting to note that the letter grades of the children of the five parents who indicated on their questionnaires that they did not

believe the letter grade to be accurate ranged from a “C-” to an “A”; that is, parents of students with high as well as low letter grades believed their children’s letter grades were inaccurate.

Only one parent said she did not know if the letter grade was accurate. On her questionnaire, Mrs. Rice wrote, “I’m not sure how her class compares to other Science 9 grades or other schools” (Mrs. Rice/Mitchell/Q; A). For Mrs. Rice to know whether her daughter’s letter grade was accurate or not, she needed to know how the letter grades assigned in her child’s class compared to those assigned in other classes; that is, she wanted to know how her daughter’s performance compared to that of students in other classes.

In sum, only about half the students believed their letter grade was accurate; the other half either believed it to be inaccurate, or were not sure about its accuracy. Students who believed in the accuracy of their letter grade did so because the grade confirmed their own opinions of themselves. Some student did not believe their grade was accurate because it did not correlate with their beliefs about their performance in Science 9, while others did not believe it was accurate because aspects of student performance in school important to them were not incorporated into the letter grade. In contrast, most parents believed the letter grade accurately showed how well their child had done in Science 9. For the most part, they based this belief on their knowledge of their child and the marks they had seen on assignments and tests. Some parents did not believe the letter grade was accurate because aspects of student performance in school, which they viewed as important, were not included in a Science 9 letter grade.

Grading Information Distributed to Students and Parents

It is an assumption of this study that the more students and parents know about a teacher’s grading practices, the greater the likelihood they will interpret a letter grade in the way the teacher intended. For this reason, teachers were asked to describe the information they distributed to students and/or parents to explain how student progress was assessed, evaluated, and reported in Science 9. At the same time, students and parents were asked to indicate if they had received information from the teacher explaining how letter grades were determined.

The questionnaire and interview data, along with documents collected from the teachers, show that the teachers provided information about how they graded students in several different ways. To begin with, all of them distributed a Science 9 “course outline” to their students at the beginning of the course. The information presented on the outline varied somewhat from teacher to teacher — some explained teacher expectations with respect to student in-class behaviour, tardiness, attendance, missing or late assignments, required course materials, etc. — however, all of them briefly summarized the course content (e.g., Astronomy and Earth Science, Energy, Changes in Matter), the percentage range for each letter grade (e.g., A = 86 - 100%; B = 73 - 85%; etc.); the mark breakdown for each term (e.g., homework = 25%; lab work = 25%; quizzes = 25%; exams = 25%); and how the year-end, or final, grade would be calculated (e.g., Term 1 = 25%; Term 2 = 30%; Term 3 = 30%; Final exam = 15%). To explain to students the value of a particular assignment or test, the teachers provided additional grading information on an on-going basis throughout the term. For example, Elena Kovac wrote: “During the term, I tell them how many marks [are to be given] for which assignments” (Elena Kovac/Q).

Two teachers also provided information about their grading practices at report card time. Henry Szabo wrote on his questionnaire: “I sent a summary of assignments home with the first report card, but not for the report card that the study refers to” (Henry Szabo/Q). During his interview, Henry explained how he had distributed a “summary sheet” with each first term report card listing a student’s scores for all of the assignments and tests completed throughout the term; he further explained that, because they took a great deal of time to prepare, he had only been able to prepare individual summary sheets for the first report card of the year. Elena Kovac described a somewhat similar method of informing students and parents about her grading practices when she wrote: “During interviews, after the report card, a list of assignments with student’s attached percent is given to parents — listing class averages for comparison” (Elena Kovac/Q). In Elena’s case, however, only those students and parents who met with her during a conference received this information as she did not send them home with the report cards. The rest of the teachers said they showed their mark book to, and discussed their grading practices

with, students and parents whenever they were asked to explain how a letter grade had been determined.

Very few parents were directly given information about how students were to be graded in Science 9 at the beginning of the course — only Wade Mitchell gave such information to parents. As he explained on his questionnaire, however, Wade distributed grading information only to those parents who attended a school information meeting at the beginning of the school year: “The parents that came in for the ‘Parent Walkabout’ [Meet the Teacher Night], in September, were given the same copies of the course outlines that their children received” (Wade Mitchell/Q). Elena Kovac had “not directly” given information about grading to the parents of her students, however, she expected the students to do so: “Students have the expectations sheet [course outline] — this is to be shared with parents” (Elena Kovac/Q).

Even though all of the teachers distributed information to their students about grading, nearly half of the students (21 or 49%) indicated on their questionnaires that they had not received any such information. Some of the 22 (51%) students who said that they had received information about grading also wrote brief descriptions of that information on their questionnaires; two examples are: “We got a sheet at the beginning of the year telling us the percentages” (Joe/Reid/Q; A); and “He told us what he was marking us on” (Bradley/Szabo/Q; C-). During their interviews, some students spoke about the course outline given out at the beginning of the year: “Yeah, he did [give us information]; most of the teachers, at the beginning of the year, they hand out a sheet that says so much of it counts for tests, and so much of your mark counts for the everyday work and stuff” (Heather/Szabo/I; B); “Yes, kinda — he gave us a sheet and went over it” (Leanne/Turner/Q; D). Bradley, one of Henry Szabo’s students, mentioned the summary sheet sent home with his first report card: “I got that sheet that comes with the report cards, usually, but he didn’t give it to us this time” (Bradley/Szabo/I; C-).

When I asked students, who had indicated that they had not been given any grading information, about the course outline distributed to them at the beginning of the year, several of them remembered it after all; some remembered getting a sheet that explained what they would

be studying but not what they would be marked on; and others explained that they might not have been given a course outline because they had attended different schools at the beginning of the year. A number of the students who could not recall receiving grading information said that they would like to know how their teacher determined their letter grade.

Seven of the 21 parents — all of them with children in classes whose teachers distributed grading information to parents — indicated on their questionnaires that they had received information that explained how letter grades in Science 9 were determined. Only Mrs. Levett wrote a description of information she had received:

Sometimes he gives us information — but not this term. I would like to know how marks are determined. However, in an earlier term, a break down of assignments and projects with individual marks for each was enclosed.
(Mrs. Levett/Szabo/Q; D)

One of the interviewed parents, Mrs. Knight, spoke about the Science 9 grading summary sheet distributed with the first term report card:

Um ... the teacher set up sheets that showed different modules, and whatnot, and what the children are working on in different aspects and everything. Whereas, I've never had that before prior ... with my other two children. And he has broken it down and showed where they're working and the marks they got.
(Mrs. Knight/Szabo/I; C+)

Several interviewed parents could not remember getting any information about grading but said they would like to know how the teacher determined their child's Science 9 letter grade.

The teachers used course outlines, summary sheets attached to report cards, discussions in class, and/or teacher conferences to explain, in broad terms, how Science 9 students were graded. Teachers provided more information about grading to students than to parents. Three teachers distributed grading information to parents, but none of them distributed it directly to all of the parents of the children in their classes. Not all of the students could remember getting information about grading; most of them, however, wanted to know how their teacher had determined their letter grade. Relatively few parents remembered receiving information about grading in Science 9, but like the students, most parents wanted to know how letter grades were determined in Science 9.

Summary

In this chapter, I described the methods the teachers in this study used, and preferred to use, to report student progress in Science 9 to students and parents. I also described students' and parents' opinions about those methods, and identified the ones they found most useful.

All of the teachers used report cards with letter grades, work habits, computer-generated comments, and attendance, in conjunction with parent-teacher conferences, to report student progress in Science 9. In addition, they informed students and parents of the percentage for the term either orally or on the report card. All of the teachers assigned a letter grade by converting a percentage to a letter grade, rather than assigning a percentage in the range appropriate for the achievement of the student, as the BCME has stated (BCME, 1986).

The teachers liked to use a variety of methods to communicate information about student progress in Science 9, however, they preferred letter grades and/or percentages. Teachers' comments suggest that they tended to prefer percentages over letter grades because percentages are more finely graded, whereas, a letter grade spans a range of percentages. Teachers also liked to combine letter grades and/or percentages with other reporting methods (e.g., written comments, conferences) because a variety of methods allows them to communicate information about different aspects of student performance including those not taken into consideration when a letter grade is determined. All of the teachers distributed information to their students that outlined how student performance in Science 9 was assessed, evaluated, and reported. Information about grading and reporting in Science 9, however, was only distributed to some parents by some of the teachers.

Most students found letter grades and/or percentages in combination with another reporting method — usually written report card comments — most useful for learning about their progress in school; on the other hand, most students did not find conferences very useful. In general, students preferred percentages over letter grades because they believed percentages are more accurate, and more useful for monitoring progress from term to term. Although a majority of the students were satisfied with the methods used to report student progress in

Science 9, some were dissatisfied because they felt written comments were impersonal and not very informative, or because they did not like the way a letter grade was determined. Only about half them believed their letter grade accurately showed how well they had done in Science 9.

Parents found letter grades and/or percentages, combined with other reporting methods that described what, and how well, their children were learning in school (e.g., written comments, conferences) most useful. Like the students, parents tended to prefer percentages over letter grades because they believed they were more accurate. Even though most parents believed the letter grade accurately showed how well their child had done in Science 9, nearly half of them were not satisfied with the reporting methods used for Science 9. Some dissatisfied parents found written comments to be impersonal and lacking information that described what, and how, their children were doing in school; others did not feel they had been apprised of their children's problems in school soon enough.

CHAPTER 7

COMPONENTS OF SCIENCE 9 LETTER GRADES

As Waltman and Frisbie (1994) pointed out, for letter grades to communicate effectively “parents, [and in the case of this study, students], and teachers must have a clear and consistent understanding of what the grade represents” (p. 235). When teachers determine letter grades, they can consider a variety of different types of information about the students they teach. The types of information, or grading components, incorporated into a letter grade determine what a grade represents. Therefore, to attribute the same meaning to a letter grade as the teacher intended, students and parents need to understand what a letter grade represents; that is, they should be knowledgeable about the grading components incorporated into a letter grade.

The grading components incorporated by teachers into letter grades can vary and can affect the intended meaning of those grades. At the same time, students’ and parents’ beliefs about the grading components incorporated into a letter grade are likely to affect how they interpret that grade. For these reasons, the purpose of this chapter is to present the outcomes of the analyses of the data collected for the research question:

What grading components do teachers incorporate into Science 9 letter grades, and what grading components do students and parents believe teachers incorporate into Science 9 letter grades?

To identify the grading components teachers incorporated into Science 9 letter grades — and the components students and parents believed were incorporated into Science 9 letter grades — participants were asked to select from a list of 15 possible grading components the components that had been considered by the teacher when determining letter grades the previous term (see Table 11, p. 158); teachers were also asked to indicate the percentage each type of information contributed to the letter grade. In addition, participants were asked to write down any information not listed on the questionnaires considered when letter grades were determined. The questionnaire results are presented in the first section of this chapter.

To verify and clarify their questionnaires responses, I interviewed all of the teachers and a subset of the students and parents. The information collected via the interviews is presented in the second section of the chapter.

Table 11 Science 9 Grading Components: Questionnaire Results

| Grading Component | Percentage Component Contributed to Letter Grade* | Number and (Percent) saying "Yes" | | | | |
|--------------------|---|-----------------------------------|--------------|---------------|--------------|--------------|
| | | Teachers (n=5) | Students | | Parents | |
| | | | Q† (n=43) | I** (n=16) | Q† (n=21) | I** (n=7) |
| Test results | 10 to 70 | 5 (100) | 40 (93) | 15 (94) | 21 (100) | 7 (100) |
| Lab assignments | 5 to 25 | 5 (100) | 40 (93) | 16 (100) | 21 (100) | 7 (100) |
| Homework | 10 to 25 | 5 (100) | 40 (93) | 15 (94) | 20 (95) | 6 (86) |
| Effort/work habits | 2 to 20 | 5 (100) | 40 (93) | 15 (94) | 19 (90) | 7 (100) |
| Participation | 0 to 10 | 2 (40) | 39 (91) | 15 (94) | 20 (95) | 7 (100) |
| Behaviour in class | B†† to 5 | 2 (40) | 33 (77) | 13 (81) | 17 (81) | 6 (86) |
| Attendance | B†† to 10 | 2 (40) | 29 (67) | 12 (75) | 15 (71) | 4 (57) |
| Project work | 0 to 5 | 1 (20) | 38 (88) | 16 (100) | 19 (90) | 7 (100) |
| Attitude | 0 to 5 | 1 (20) | 35 (81) | 13 (81) | 18 (86) | 6 (86) |
| Performance tasks | 0 to 3 | 1 (20) | 31 (72) | 9 (56) | 14 (67) | 4 (57) |
| Notebook | 0 to 15 | 1 (20) | 21 (49) | 6 (38) | 9 (43) | 3 (43) |
| Self-evaluation | 0 to 5 | 1 (20) | 17 (40) | 3 (19) | 7 (33) | 1 (14) |
| Learning journal | 0 to B†† | 1 (20) | 5 (12) | 0 (0) | 3 (14) | 1 (14) |
| Learning ability | 0 | 0 (0) | 24 (56) | 10 (63) | 9 (43) | 4 (57) |
| Work portfolio | 0 | 0 (0) | 10 (23) | 3 (19) | 5 (24) | 3 (43) |

* Range in proportion of letter grade each grading component contributed to letter grade as indicated by teachers on their questionnaires.

† Number (and percentage) of all respondents answering "Yes" on questionnaires.

** Number (and percentage) of interviewed respondents answering "Yes" on questionnaires.

†† "B" indicates that the teacher(s) explained on the questionnaire(s) that grading was used for "borderline" cases to "bump" a child into a higher letter grade category.

Components of Science 9 Letter Grades: Questionnaire Results

Table 11 shows how many teachers, students, and parents answered “Yes” on their questionnaires to each grading component given in the list.²⁹ The questionnaire data, as they pertain to the grading components of Science 9 letter grades, are displayed and discussed in this section.

Grading Components Incorporated into a Science 9 Letter Grade: Teachers’ Reported Practices

As Table 12 (p. 161) shows, two teachers incorporated four grading components into a Science 9 letter grade, and three incorporated eight. All of the teachers indicated on their questionnaires that they considered test results, lab assignments, homework, and effort/work habits when determining a letter grade, while none of the them indicated that they considered work portfolios or learning ability. Only one or two teachers considered each of the nine remaining types of information listed in the table. Teachers were asked to write down any additional information they considered when determining a letter grade, but none of them did so.

According to the teachers’ questionnaire responses, test results contributed from 10% to 70% (three indicated that 50% of the letter grade was based on test results), lab assignments contributed from 5% to 25%, and homework contributed from 10% to 20% to the letter grade. All of the teachers considered students’ effort/work habits when determining letter grades; three teachers factored effort/work habits into the overall letter grade (weights ranged from 2% to 20%), and two teachers explained on their questionnaires that a student’s effort/work habits was considered only for “borderline” cases to “bump” a student from one letter grade to the next highest letter grade. Similarly, two teachers indicated that they considered behaviour and one teacher considered learning journals in borderline cases. For example, David Turner wrote on his questionnaire that whenever a letter grade was “borderline, information about a student’s

²⁹ Whenever a table reports questionnaire data, the information in the table is based solely on participants’ questionnaire responses and does not take into account information provided by the participants during their interviews that indicated that their original questionnaire response may have been inaccurate. Instances in which participants told me that they should have answered a questionnaire item differently are discussed in the interview data sections of the document.

attendance, learning journal, and behaviour is also considered to determine if they should move up to the next [letter] grade” (David Turner/Q).

Although it is not shown in Table 11, analyses of the questionnaire data show that four of the five teachers based a Science 9 letter grade on primarily three types of information — test results, lab assignments, and homework — in all, these three grading components accounted for from 80% to 100% of the overall letter grade for these four teachers. The other teacher based 50% of the letter grade on test results, lab assignments, and homework, and 50% on participation, attendance, effort/work habits, and attitude.

Students’ Beliefs About Science 9 Grading Components

According to their questionnaire responses, students believed that their teachers incorporated several different grading components into their Science 9 letter grades; indeed, the majority indicated “Yes” to 11 of the 15 types of information listed on the questionnaire. The number of students indicating “Yes” for each grading component ranged from a low of five (12%) to a high of 40 (93%). The vast majority of the students indicated that they believed their teacher considered test results (40 or 93%), lab assignments (40 or 93%), homework (40 or 93%), effort/work habits (40 or 93%), participation in class activities (39 or 91%), and project work (38 or 88%), when determining their letter grade in Science 9. Large numbers of students also believed attitude (35 or 81%) and behaviour in class (33 or 77%) were considered. Few students, however, believed their work portfolio (10 or 23%) or learning journal (five or 12%) were considered. Students were asked to write down any additional information they believed their teacher considered part of a letter grade, but none did so.

As discussed above, all of the teachers considered and heavily weighted information about three achievement factors — test results, lab assignments, and homework. In addition, all of them, to some extent, took the non-achievement factor effort/work habits into consideration. Students were very much aware that these grading components were incorporated into their letter grade for, as Table 12 shows, students were most in agreement with their teachers (i.e., selected the same response option [“Yes” or “No”] as their teacher) about these four

components — 40 (93%) agreed with their teachers about test results, lab assignments, homework, and effort/work habits. At the same time, students showed high agreement with their teachers as to whether or not their learning journal (34 or 79% agreed) and work portfolio (33 or 77% agreed) were part of their letter grade, and they showed moderate agreement with their teachers about their notebook (28 or 65% agreed), self-evaluation (27 or 63% agreed), learning ability (19 or 44% agreed), attendance (24 or 56% agreed), and behaviour (20 or 47% agreed). They were least in agreement with their teacher about whether or not their project work (eight or 19% agreed) was part of their letter grade.

Table 12 Agreement of Students and Parents with Science Teacher About Science 9 Grading Components: Questionnaire Data

| Grading Component (n=) | Teacher Response (Y or N) and Number of Students and Parents Agreeing with Teacher | | | | | | | | | | | | | | | Number & (%) in Agreement With Teacher | |
|------------------------|--|----|---|--------------|---|---|-------------|---|---|-------------|----|---|-------------|----|---|--|----------|
| | Wade Mitchell | | | David Turner | | | Elena Kovac | | | Henry Szabo | | | Robert Reid | | | S | P |
| | T | S | P | T | S | P | T | S | P | T | S | P | T | S | P | | |
| | | 10 | 4 | | 6 | 2 | | 3 | 3 | | 14 | 8 | | 10 | 4 | 43 | 21 |
| Test results | Y | 10 | 4 | Y | 5 | 2 | Y | 3 | 3 | Y | 14 | 8 | Y | 8 | 4 | 40 (93) | 21 (100) |
| Lab assignments | Y | 10 | 4 | Y | 4 | 2 | Y | 3 | 3 | Y | 14 | 8 | Y | 9 | 4 | 40 (93) | 21 (100) |
| Homework | Y | 10 | 4 | Y | 5 | 2 | Y | 3 | 3 | Y | 13 | 7 | Y | 9 | 4 | 40 (93) | 20 (95) |
| Effort/work habits | Y | 10 | 4 | Y | 6 | 2 | Y | 2 | 1 | Y | 13 | 8 | Y | 9 | 4 | 40 (93) | 19 (90) |
| Participation | N | 1 | 0 | N | 0 | 0 | Y | 3 | 2 | N | 1 | 0 | Y | 8 | 4 | 13 (30) | 6 (29) |
| Behaviour | N | 2 | 1 | Y | 5 | 2 | N | 1 | 2 | N | 4 | 0 | Y | 8 | 3 | 20 (47) | 8 (39) |
| Attendance | N | 5 | 1 | Y | 6 | 1 | N | 1 | 1 | N | 5 | 3 | Y | 7 | 4 | 24 (56) | 10 (48) |
| Project work | N | 1 | 0 | N | 3 | 1 | Y | 3 | 3 | N | 1 | 1 | N | 0 | 0 | 8 (19) | 5 (24) |
| Attitude | N | 2 | 0 | N | 0 | 0 | N | 1 | 2 | N | 3 | 0 | Y | 8 | 3 | 14 (33) | 5 (24) |
| Performance tasks | N | 4 | 1 | N | 2 | 0 | Y | 2 | 1 | N | 3 | 3 | N | 2 | 1 | 13 (30) | 6 (29) |
| Notebook | N | 2 | 2 | Y | 6 | 2 | N | 1 | 2 | N | 12 | 6 | N | 7 | 2 | 28 (65) | 14 (67) |
| Self-evaluation | N | 6 | 2 | N | 2 | 0 | Y | 2 | 0 | N | 10 | 7 | N | 7 | 2 | 27 (63) | 11 (52) |
| Learning journal | N | 9 | 4 | Y | 1 | 1 | N | 1 | 3 | N | 13 | 7 | N | 10 | 3 | 34 (79) | 18 (86) |
| Learning ability | N | 6 | 2 | N | 2 | 2 | N | 2 | 3 | N | 7 | 4 | N | 2 | 1 | 19 (44) | 12 (57) |
| Work portfolio | N | 5 | 2 | N | 5 | 2 | N | 2 | 3 | N | 12 | 8 | N | 9 | 1 | 33 (77) | 16 (76) |

Note. The table shows the numbers of students and parents who selected the same response option ("Yes" or "No") as the teacher for each grading component.

T = teacher; S = students; P = parents; Y = Yes; N = No.

Parents' Beliefs About Science 9 Grading Components

Parents' questionnaire responses indicate that they, too, believed the teachers incorporated several different grading components into a Science 9 letter grade — a majority of them indicated “Yes” to 10 of the 15 types of information listed on the questionnaire (see Table 11, p. 158). The number of parents who indicated “Yes” to each grading component ranged from a low of three (14%) for learning journal to a high of 21 (100%) for test results and lab assignments. All of the parents indicated that they believed the teacher considered test results and lab assignments; in addition, most parents believed that participation (20 or 95%), homework (20 or 95%), project work (19 or 90%), effort/work habits (19 or 90%), attitude (18 or 86%), and behaviour in class (17 or 81%) were considered. Fewer than half of the parents believed the teacher considered their child's notebook (nine or 43%), learning ability (nine or 43%), self-evaluation (seven or 33%), work portfolio (five or 24%), or learning journal (three or 14%) as part of the letter grade. None of the parents indicated that they believed the teacher considered information not listed on the questionnaire when determining their children's letter grades.

Table 12 shows that parents were in high agreement with the teachers (i.e., selected the same response option [“Yes” or “No”] as their child's teacher) that test results (21 or 100% agreed), lab assignments (21 or 100% agreed), homework (21 or 95% agreed), and effort/work habits (19 or 90% agreed) were incorporated into a Science 9 letter grade. Parents also showed high agreement with their child's Science teacher as to whether or not a student's learning journal (18 or 86% agreed) was part of the letter grade. Parents showed moderate agreement with their child's teacher about the grading components notebook (14 or 67% agreed), learning ability (12 or 57% agreed), self-evaluation (11 or 52% agreed), and attendance (10 or 48% agreed), and low agreement for behaviour (eight or 38% agreed), participation (six or 29%

agreed), performance tasks (six or 29% agreement),³⁰ project work (five or 24% agreed), and attitude (five or 24% agreed).

Components of Science 9 Letter Grades: Interview Results

I conducted several preliminary analyses of the questionnaire data before I interviewed any of the people in the study. After completing these preliminary analyses, I felt it was particularly important that I use the interviews to learn more about how the teachers considered and “weighted”³¹ each type of grading component when they assigned letter grades in Science 9. I also felt it was important to find out why students and parents believed a teacher had, or had not, considered a particular grading component, and how they thought the teacher had considered it when determining a letter grade. Therefore, during the interviews, I made it a goal to find out more from teachers, students, and parents about these points.

As previously stated, the main purpose of the interviews was to provide an opportunity for people to discuss their questionnaire answers, and even though some people (particularly those who had answered “Yes” to an item) were able to do so; others were not — despite my encouragement. As a consequence, not all of the questionnaire items were discussed by all of the people I spoke with, and some questionnaire items were discussed more during the interviews than others. It is important to keep in mind that, while all five teachers were interviewed, only a small subset of the students (four from Wade Mitchell’s class, eight from Henry Szabo’s class, and four from Robert Reid’s class) and parents (four from Henry’s class and three from Robert’s class) who completed questionnaires were interviewed. Nevertheless, I believe the information provided by even this small number of students and parents provides insight into

³⁰ I used the term “performance tasks/demonstrations” on the questionnaires, however, I have used the term “performance tasks” throughout this document.

³¹ As noted in Chapter 6, the teachers in this study said that they assigned different weights to different grading components. However, as is also noted in Chapter 6, the methods they used to weight grading components were misleading and inaccurate because they did not take into account the standard deviation of a set of scores. Unless the standard deviation of a set of scores for a grading component is known, it is not possible to know how much that component “counts” or is “weighted”. Nevertheless, because they believed that they were weighting grading components as they intended, and used terms such as “weighted” and “counted” when they spoke to me, I use these terms throughout the document even though I recognize that they are inappropriate.

their perceptions of grading in Science 9.

The following sections summarize what I learned from the interviews — and, to a lesser extent, from the written questionnaire comments — about teachers' practices, and students' and parents' beliefs about those practices, as they pertain to the information teachers consider when determining Science 9 letter grades. Each of the 15 grading components listed on the questionnaires is discussed in a separate section, and the views of the teachers, students, and parents are described separately for each component.

Test Results

Teachers' Views

As discussed above, all five teachers considered test results when determining letter grades in Science 9. When interviewed, they explained that test results included students' scores on quizzes (written tests out of 5 to 25 marks each) and tests or exams (written tests out of 50 to 100 marks each). They also explained how they considered test results when determining a letter grade for a student in Science 9.

Wade Mitchell described how tests and quizzes accounted for 50% of the letter grade in his Science 9 class:

I probably give 6 to 10 quizzes [each term]. It depends on the subject area. ... Often times with science, you just do a worksheet and give a quiz on the worksheet out of five, or out of 10. ... I give two to three exams each term — three would be a really busy term, you know. Last term I gave two exams and six quizzes in Science 9. The exam marks range from 40 to 60, and I don't weight them so that they are equal to the same amount. I look at the 60-mark exam as being a little more heavily weighted than a 40-mark exam, so then you know it gets the necessary weight in the overall grade. ... Quizzes count for 25% and exams count for 25% of the grade — that's why I said [on the questionnaire] that test results count for 50%. (Wade Mitchell/I)

In Wade's class, students wrote more quizzes than tests throughout the term; however, quizzes and tests each accounted for 25% of the Science 9 letter grade.

Like Wade, Elena Kovac administered more quizzes than tests during the term, and based 50% of a student's Science 9 letter grade on test results:

I would say [the letter grade] actually is about 10% on the quizzes and about 40% on the tests, and it's just because a quiz takes, maybe, 5 or 10 minutes of the period and a test might take an hour. ... So a course might have something like 8 to 10 chapters, so throughout the course of the year they might be doing 8 to 10 tests that would be values anywhere between 50 to 100 marks. And then the quizzes would be anywhere between five marks — a short pop-up quiz that was unexpected — to, maybe, 20 marks for a quiz that has been scheduled ahead and it just needs to be tested on one concept to make sure that students got it before they continue. Tests are planned way ahead and they are also announced to the students at least a week to 10 days prior to the test coming. A quiz may not be announced at all, and if I see a need for it, I may give them a quiz next period. ... Last term I gave my Science 9 class seven quizzes and three tests. (Elena Kovac/I)

Unlike Wade, who said he weighted quizzes and tests equally, Elena said she weighted tests more heavily (40% of the letter grade) than quizzes (10% of the letter grade) when determining letter grades.

Henry Szabo also said that he assigned a weighting of 50% to tests results when he determined letter grades in Science 9:

I usually give between two and three tests each term out of between 50 and 75 — last term there were three. ... I usually give the same number of quizzes, about two or three a term — again, last term there were three. ... The majority of them this year have been pop quizzes and, maybe, two or three of them were announced. ... Quizzes are out of maybe 10 to 12 marks. I write the tests [and quizzes] to carry the weight already factored into them. (Henry Szabo/I)

Henry's students completed the same number of tests (three) and quizzes (three) throughout a term; however, because Henry wrote tests and quizzes "to carry the weight already factored into them" — that is, the total possible score for a test was greater than the total possible score for a quiz — he considered tests to be more heavily weighted than quizzes in the letter grade.

Test results accounted for a large percentage of the letter grade in David Turner's class:

Seventy percent of the letter grade comes from test results. ... I gave seven quizzes last term out of between 10 and 15. Quizzes tend to be weighted quite lightly — say around 20%, maybe 25% — and then, the larger tests make up the rest of that 70%. ... The whole year, you're probably looking at seven or eight chapters so there's probably around that — about eight tests — eight major chapter tests for the course. ... I gave four chapter tests last term. (David Turner/I)

Test results were the most important component of a letter grade in David's class — 70% of the overall grade was based on test results.

In contrast, test results accounted for a relatively small percentage of a letter grade in Robert Reid's class:

For a term — a term being 2 1/2 months — I try and give them a test of some magnitude at least once or twice every term — sort of a half-hour test, if you like. A quiz, I use — I'm not sure — the girl [who taught science at this school] before me called them "stills" and I've just continued on with them. So they're, basically, "Sit down and pay attention." So I'll write two or three questions on the board. They would be out of three marks, five marks, that kind of stuff. ... I try to give one about every second or third class, if I can get it. And tests [and quizzes] are weighted so they are 10% of the letter grade. I weight average, like, GradeBook [a computer grading program] allows you to weight-average from the marks. (Robert Reid/I)

Compared to the four other teachers, Robert put little emphasis on students' test results when determining letter grades — the 15 small quizzes, or "stills", and two tests given the previous term accounted for only 10% of the letter grade. Moreover, because he did not require students taking a "modified"³² Science 9 program to write tests or quizzes, test results were not included in their letter grade.

Students' Views

According to their questionnaire responses, 40 (93%) students,³³ including 15 (94%) of the 16 who were interviewed,³⁴ believed the teacher considered their test results when determining their letter grade (see Table 11, p. 158). Students who were interviewed said that tests included quizzes and large tests, or exams.

³² Students taking a "modified" Science 9 program were students with identified learning difficulties (i.e., exceptional needs students) who used modified textbooks and materials to complete the course.

³³ Ten students from Wade Mitchell's class, five from David Turner's, three from Elena Kovac's, 14 from Henry Szabo's, and eight from Robert Reid's.

³⁴ Four students interviewed from Wade Mitchell's class, eight from Henry Szabo's, and three from Robert Reid's.

All 10 of Wade Mitchell's students indicated on their questionnaires that the teacher had considered their test results when determining their letter grade. Interviewed students said they knew test results counted because their teacher had told them: "He told us tests count for 25% of our mark" (Ravi/Mitchell/I; A); "He told us tests are part of our grade" (Emily/Mitchell/I; A).

The 14 students who completed questionnaires from Henry Szabo's class all believed that test results were part of their letter grade. Some students, like Tonya, knew test results were considered because it had been written on the course outline: "In the outline it said — I think it said — 40% comes from tests" (Tonya/Szabo/I; C+). Other students said they knew their test results were part of their letter grade because they wrote tests that were marked by the teacher: "Well, mostly what we do is tests and worksheets, and he marks those, so they must count" (Walley/Szabo/I; D); "He marks [our tests] and puts it on our paper [report card insert issued with the first term report card]" (Adam/Szabo/I; B).

Eight of the 10 students in the study from Robert Reid's class indicated on their questionnaires that test results were part of the letter grade. Students who believed test results were part of their letter grade told me that their teacher had told them that test scores count towards the letter grade: "Well, he told me that I got a lower mark because I didn't do good on the test" (Sean/Reid/I; C+); "He said tests count for half of your mark" (Jimmy/Reid/I; C). In contrast to the other students I interviewed, Justin said that tests were not part of his letter grade: "I don't do tests 'cuz I'm in a different book" (Justin/Reid/I; B). Robert explained that due to Justin's learning difficulties, he was taking a modified Science 9 program and was not required to write tests.³⁵

³⁵ It should be noted that the data reported in Table 12 is based solely on the questionnaire responses of the participants. Table 12 does not take into account the fact that Justin and Robert Reid agreed that test results were not part of Justin's letter grade because Robert answered "yes" for test results on his questionnaire, and I only learned that test results were not part of Justin's (and one other student's) letter grade during the interview phase. (David Turner also told me that he did not consider the test results of one of the students in his class either.) Even though, respondents sometimes changed their minds about their questionnaire responses during their interviews, I did not change their questionnaire responses or the questionnaire data tabulated in the tables of this document when this happened; instead, I describe why and how they changed their minds throughout this document whenever the interview data are discussed.

Parents' Views

All 21 parents indicated on their questionnaires that they believed the teacher considered test results when determining their children's letter grades (see Table 11, p. 158).

Parents of children in both Henry Szabo's and Robert Reid's classes believed test results were part of the letter grade because the teacher had told them: "I happened to go and speak to Mr. Szabo after the first term, and he told me he uses test marks" (Mrs. Black/Szabo/I; C); "I spoke to the instructor who said it's [the letter grade] by the test results, by the assignments, and participating in class" (Mr. Li/Reid/I; A). Other parents of children believed test results were part of the letter grade because they knew their children wrote tests in Science 9: "I've seen the tests" (Mrs. Knight/Szabo/I; C+); "Well, he has tests and I've seen his marks on them and they really brought his grade down. He knows more than he shows on the test, but he always falls apart" (Mrs. Downey/Reid/I; C). Because some parents knew their children wrote tests, they believed that test results must be part of the letter grade.

Lab Assignments

Teachers' Views

All of the teachers considered students' lab assignments when determining letter grades; the weighting given to lab assignments ranged from a low of 5% to a high of 25% (see Table 11, p. 158). Teachers considered lab assignments to be students' written reports (write-ups) of the activities and experiments done in the science lab.

As the following excerpts illustrate, the teachers viewed lab assignments to be an important part of the Science 9 curriculum:

Lab assignments are a big part of their mark — 20%. I try to do lots of labs and I try to give each lab as thorough a going over as I can. (Robert Reid/I)

Lab assignments are hands-on. They are very important. (Henry Szabo/I)

Twenty-five percent of their mark is based on labs. ... We do anywhere from 6 to 10 labs, depending on the area — some stuff they learn better doing labs. And

I mark them usually out of 10 or 20 depending on the size of the lab. (Wade Mitchell/I)

We do a lot of lab work — I try to have them do some sort of activity nearly every day. Some [labs] I just mark for completion, others are marked out of 10 or 20. ... Twenty percent of their grade comes from labs. (Elena Kovac/I)

Each of the teachers quoted above allocated a fairly large proportion of the Science 9 course to lab-based activities; as a result, 20% to 25% of the total mark for the term came from lab assignments.

David Turner, however, did not put as much emphasis on lab assignments as the other teachers. During his interview, David observed:

The time spent on big labs is probably not a big component. They're not doing labs every day. They spend some time on smaller activities so the activities tend to be shorter and not so extensive. That's what I've been doing so far, anyway. Like I'm still sort of developing the [Science 9] course. I'm not really happy with the whole course, but that's the way it is right now. I find on the quarter system that we have to cover a lot of material in just a few weeks, so a lot of things come from the textbook, like worksheets based on the textbook or amplifying the textbook, and I don't do as many labs as I'd like. (David Turner/I)

David went on to explain that he believed lab assignments were an important part of the Science 9 curriculum and that he hoped to increase the amount of time students spent doing lab assignments the next time he taught the course. However, because his students had not spent a large proportion of their time completing lab activities, only 5% of the overall term mark, upon which a student's letter grade was based, came from lab assignments in David's class.

Students' Views

Forty (93%) students indicated on their questionnaires that they believed the teacher considered their lab assignments when determining their letter grade (see Table 11, p. 158).³⁶ All 16 (100%) interviewed students believed lab assignments were part of the letter grade and thought "lab assignments" referred to the written reports of the activities and/or experiments done in science class.

³⁶ Ten students from Wade Mitchell's class, four from David Turner's, three from Elena Kovac's, 14 from Henry Szabo's, and nine from Robert Reid's.

Wade Mitchell's students knew lab assignments were part of the letter grade because it had been written on their course outline: "The sheet Mr. Mitchell gave us said 25% of our mark is on lab assignments" (Ravi/Mitchell/I; A); and because they were marked: "Oh, he definitely marks you on those so they must count [as part of the letter grade]" (Jackie/Mitchell/I; C-).

Several students from Henry Szabo's class said they believed lab assignments were part of the letter grade because they were marked by the teacher: "He marks them, so he must include those 'cuz they are worth a lot of marks" (Heather/Szabo/I; B); "I know labs count because we get marked on them and he changes them to percentages so he can, kind of, get an overall average of what we're doing" (Olivia/Szabo/I; B). Some of Henry's students, including Adam, said they knew that lab assignments were part of the letter grade because it had been written on the Science 9 course outline: "They're on that paper [course outline], too" (Adam/Szabo/I; B). Walley said he knew lab assignments were part of the letter grade because the teacher had said so: "Well he tells us — virtually everything we do — how much it's going to be on our report card" (Walley/Szabo/I; D).

The students I spoke with from Robert Reid's class believed lab assignments were part of the letter grade because they were marked by the teacher. For example, Jimmy said: "I know 'cuz we do lots of labs and it's for our marks and he tells us" (Jimmy/Reid/I; C); while Jennifer observed: "Like, he always gives us a mark out of 10, or whatever, and it shows up, usually, on our report card if you do good or bad on your labs" (Jennifer/Reid/I; B).

Parents' Views

All 21 (100%) parents indicated on their questionnaires that they believed the teacher considered lab assignments when determining their children's letter grades (see Table 11, p. 158). None of the interviewed parents seemed confused about the meaning of the term "lab assignment" — they knew their children did science experiments and lab reports in Science 9.

Several parents with children in Henry Szabo's class knew lab assignments were part of the letter grade because it had been shown on a previous report card: "Last [report] time — but

not this one — last time it showed how many marks Tonya got for her labs”

(Mrs. Knight/Szabo/I; C+). Mr. Marsden, however, believed that lab assignments were part of the letter grade because he knew his son completed lab assignments that were marked by the teacher: “I’ve seen some my son’s and they were marked” (Mr. Marsden/Szabo/I; B).

Mrs. Downey, along with the other parents interviewed from Robert Reid’s class, mentioned how lab assignments completed by students were marked by the teacher: “I know he does labs and hands them in for marks” (Mrs. Downey/Reid/I; C). Parents from Robert’s class seemed to assume that because their children completed lab assignments that were marked by the teacher, they must be part of the letter grade.

Homework

Teachers’ Views

According to their questionnaire responses, all five teachers considered homework when determining letter grades. Ten percent of the letter grade came from homework in three of the classes, 20% came from homework in one class, and 25% in another. For the most part, teachers considered homework to be work done at home on assignments begun in class (e.g., lab write-ups, textbook questions).³⁷ From time to time, however, students were also required to complete a science fair or a research project for homework.

The teachers assigned homework marks to students in a variety of ways. For example, David Turner administered “a notebook test” to determine whether or not the students had completed their homework:

I give them a notebook test. ... I just ask for certain questions that were assigned for homework and they just copy their answers out of their notebook — they’ve got to find it and copy it out. They get about 20 minutes of the class to do it. It is all the homework that should be in their notebook. All they have to do is copy it. The textbook is closed, calculators are away. ... So most of the homework mark comes from this. I give them four of these per term ... and the student that is

³⁷ As I interviewed the teachers, I realized that I should have listed *daily written assignments* as a grading component on the questionnaire. Despite this omission, not one person suggested, on a questionnaire or during an interview, that *daily written assignments* had been included in the letter grade. In fact, the respondents seemed to have viewed written assignments and homework as being one and the same.

working hard will get 25 or 30, and the student that is hardly working will be getting 15 or 20. (David Turner/I)

David said he liked to use notebook tests because they allowed him to see if students were completing his/her homework without having to collect and mark all of the assignments done by them throughout the term. Ten percent of the letter grade in David's class came from homework.

Elena Kovac also tested her students to see if they had completed their homework. However, the homework test, or "homework quiz" as she put it, was only one of several methods Elena used to assign marks for homework:

I check homework sometimes through a homework quiz. So the questions that they had done for homework, I'll take three of five and put them on the quiz sheet, and if they've done it properly, I'll know they've finished their homework. Sometimes I collect only half of it, and sometimes I will leave it with them and go around and put check marks on it, and then when we accumulate three or four or five assignments, then they will bunch them together, put them on my desk, and then I may give them a mark out of 10. (Elena Kovac/I)

As this excerpt shows, Elena Kovac assigned homework marks to students in a variety of ways: sometimes she administered homework quizzes, sometimes she used check marks to indicate that a student had completed their homework, and sometimes she collected assignments and marked them out of 10. In Elena's class, 10% of the Science 9 letter grade was based on homework.

Henry Szabo conducted a "homework check" to see if the students in his Science 9 class had completed their homework:

At the beginning of a class I do a homework check. ... What I do is I'll go around and I'll check [their homework], and that's basically one mark. Homework's done, one mark; if not done, zero out of one. So the weighting on it, and the effect on their grade, isn't very much. What I do want is to be able to tell parents — and I guess it tells the kid, too — how many times the student had not completed their homework in a term." (Henry Szabo/I)

By conducting "homework checks" Henry was able to provide a homework mark which he used when determining letter grades. In addition, the homework checks provided a record that showed how consistently a student had completed their homework assignments — a record that showed how often a student completed their homework, but not how well the student had done

it. Whenever Henry marked a homework assignment to determine how well it had been completed, he recorded the score as a lab assignment mark. The homework mark accounted for 10% of the letter grade in Henry's class.

Like Henry, Wade Mitchell gave students credit for completing their homework assignment. However, Wade believed that the homework mark also reflected another aspect of a student's performance in class — their effort:

What I do — which I've found helpful — is instead of just giving kids a mark for trying the homework — I find that if I did that they would never listen to me as I read out the corrections. [They'd say], "Why should I listen? I've already got my mark." I thought that I needed to be a little more clever than they are, so I split it into two parts. If the students try the questions, whether they get them right or not is irrelevant, they will get half the marks. Then, if they copy down all of the answers off the overhead or the board and hand those in, they get the second half of the marks. So for the student that didn't try anything, at least it gives them a chance to get 50% 'cuz they get their correction marks. And I really feel that by listening and writing, they still absorb something, whatever it is. I don't know what it is, but I just — it's a gut feeling I know, myself, how I absorb information — by listening and writing, even if I'm not interested, I pick up things. And I hope that what's happening. (Wade Mitchell/I)

Wade gave marks to students for trying their homework — what he later referred to as an "effort mark" — and marks for copying the answers down as he reviewed homework questions with the class. In Wade's class, 25% of a student's letter grade was based on homework.

Robert Reid wrote on his questionnaire that homework contributed 20% to the overall letter grade. Robert did not give homework quizzes nor rate how often his students had completed their homework; instead, he collected their homework assignments (worksheets, textbook question sets) — which were really assignments begun in class and completed at home — and marked them, recording the marks as a homework mark that was factored into the letter grade. For this reason, the marks Robert recorded as homework marks could also have been recorded as "daily written assignment" marks had I provided that option on the questionnaire.

Students' Views

Forty (93%) students,³⁸ including 15 (94%) of the interviewed students,³⁹ indicated on their questionnaires that they believed that homework was part of the letter grade (see Table 11, p. 158).

The students from Wade Mitchell's class who were interviewed knew that homework was part of their letter grade because it had been on their course outline and because Wade conducted homework checks: "He always checks our homework. ... That paper [course outline] said 25% of our mark is homework" (Ravi/Mitchell/I; A); "Yeah, homework is part of our mark — it was on that sheet [course outline] he gave us. Mr. Mitchell checks our work and gives us part marks if we try to do it and we get marks for making our corrections" (Jackie/Mitchell/I; C-). Wade's students knew they were given marks for completing their homework and that homework was a grading component.

The eight students interviewed from Henry Szabo's class all believed homework was part of their letter grade. Like Angel and Heather, Henry's students believed that homework was part of the letter grade because Henry regularly checked to see if it had been done: "It must be part of our mark because he checks it. He checks our homework when we come back the next day, or whatever, and he gives us a mark for if it's done, or he writes down if we don't have it, or it's incomplete" (Angel/Szabo/I; Incomplete); "He always checks our homework and he marks it, so he probably includes it" (Heather/Szabo/I; B).

Robert Reid's students viewed homework as being an extension of their class work. None of the students interviewed from Robert's class — including those who had answered "Yes" on their questionnaires — believed he gave them a separate homework mark; instead they believed that if they did not complete an assignment for homework, the mark for the assignment

³⁸ Ten students from Wade Mitchell's class, five from David Turner's, three from Elena Kovac's, 13 from Henry Szabo's, and nine from Robert Reid's.

³⁹ Four students interviewed from Wade Mitchell's class, eight from Henry Szabo's, and three from Robert Reid's.

would be affected which, in turn, would affect their letter grade. Jennifer's comment is a good example of what Robert's students had to say about homework and their letter grade:

I don't think it's a separate mark or anything. I think he just ties the homework and the lab assignments together. Like, if you haven't done your homework, you usually haven't done your lab assignment. If you don't do your homework and stuff, it reflects on your mark. (Jennifer/Reid/I; B)

Robert's students knew he collected their assignments (which were to have been completed for homework), marked them, and included the marks in their letter grade; they did not believe he assigned a homework mark per se.

Parents' Views

Twenty (95%) parents,⁴⁰ including six (86%) of the seven who were interviewed,⁴¹ indicated on their questionnaires that they believed the teacher considered homework when determining their children's letter grades (see Table 11, p. 158).

Several parents with children in Henry Szabo's class believed their children were given a homework mark that was factored into their letter grade. Mrs. Knight was one parent who recalled seeing a homework mark on the Science 9 report card insert included with the first term report card: "First term — not this time — it showed a mark for homework on the sheet in the report card. It showed where they were missing an assignment or if they're finished on time. ... We didn't get a sheet this time, but I think homework counts" (Mrs. Knight/Szabo/I; C+). Most of Henry's parents thought their children received a homework mark as well as marks for their assignments, and that both types of marks were part of the letter grade. Mr. Marsden was the only parent with a child in Henry's class who indicated on the questionnaire, and reiterated during his interview, that he didn't think homework was part of the letter grade: "I wouldn't think so. As a teacher, I see homework as studying for tests and doing things like practice

⁴⁰ Four parents from Wade Mitchell's class, two from David Turner's, three from Elena Kovac's, seven from Henry Szabo's, and four from Robert Reid's.

⁴¹ Three parents interviewed from Henry Szabo's class and three from Robert Reid's.

worksheets. Homework is between projects, which the teacher marks, so I wouldn't think a mark would be given for homework" (Mr. Marsden/Szabo/I; B). Mr. Marsden believed students were given a mark for their completed assignments, but did not believe that students were given a mark simply for doing their homework.

Parents with children in Robert Reid's class believed that assignments completed for homework were marked and included as part of the letter grade: "Now, I took that to be homework assignments, not self-study, or whatever, at home. I believe they are marked and are part of the letter grade" (Mrs. McIsaac/Reid/I; C+); "I know he marks their homework assignments, so it must be part of the letter grade" (Mr. Li/Reid/I; A); and "I don't think the teacher considers how much homework they do. I think it's just part of the marks for their work" (Mrs. Downey/Reid/I; C). These parents did not believe that Robert gave a separate homework mark that was factored into the letter grade; they believed a student's assignments were marked and the marks were factored into the letter grade.

Effort/Work Habits

Teachers' Views

The teachers viewed a student's effort/work habits⁴² as the consistency with which a student worked in class, completed assignments, and met deadlines. All five teachers indicated on their questionnaires that they considered a student's effort/work habits when determining a letter grade in Science 9 (see Table 11, p. 158); however, only two of them indicated on their questionnaires that they allocated a percentage of the letter grade to effort/work habits.

In Elena Kovac's class, a student's effort/work habits accounted for 2% of their letter grade:

Work habits or effort is based a lot on their capabilities, you know. Some kids are able to show a lot more effort than they do. In which case, it would be

⁴² As a teacher I always considered work habits and effort as synonymous. As a result, when I designed the questionnaires I joined the two terms together rather than listing them separately. I now believe that effort and work habits should have been listed separately because some people may view the two terms as being two distinctly different aspects of student performance in school.

assessed in that way. If I know a student is capable and they have a lot to work with, but they are not showing the effort, then they would get — and, again, I would convert it to marks — something like a mark out of five and I will share that with the student immediately so that they have something that they can do about it next time. (Elena Kovac/I)

Elena rated and assigned a mark to each student for his or her effort/work habits, and explicitly factored it into the letter grade.

Robert Reid also explicitly factored effort/work habits into the letter grade — he indicated on his questionnaire, and reiterated during his interview, that 20% of a letter grade was based on a student's effort/work habits: "Effort and work habits — that's more based on the number of assignments they've handed in. I look at how many they've handed in [and] how many they've missed and give them a mark out of 20%" (Robert Reid/I). Robert did not incorporate a student's score for an assignment into the effort/work habits mark because he recorded that score as a homework mark. Instead, because he equated the number of assignments handed in by a student to their effort/work habits, he used the number of assignments turned in as a basis for determining a mark out of 20.

Although Wade Mitchell did not assign a separate effort/work habits mark, he did factor it into the letter grade: "I feel that it is embedded in their homework mark. When I give them a mark for trying their homework, it's really a mark for effort" (Wade Mitchell/I). Wade believed that when he assigned a mark to a student for "trying" to complete their homework (see previous section) he was also giving them a mark for their effort/work habits.

David Turner did not explicitly factor effort/work habits into a letter grade either, however, David's perceptions of a student's effort/work habits could affect the letter grade he assigned: "Again, that's like attendance or behaviour. I might use their work habits to decide if I should bump up their grade" (David Turner/I). David explained that his decision about a borderline letter grade was sometimes influenced by the student's effort/work habits. On the other hand, Henry Szabo did not factor effort/work habits into the letter grade:

If a kid puts in an effort, the work's going to be better, the mark's going to be better. It's almost included in the other stuff they do in class. ... It's not in the

letter grade because that's why we have the effort code [work habits rating]; that's what that's for. I've got kids that have "Es" but have got an effort code of "G" because they've tried. (Henry Szabo/I)

Henry believed that a student's effort/work habits affected the work done by the student, and that the way to communicate information about effort/work habits was via the work habits rating not the letter grade.

Students' Views

Forty (93%) students,⁴³ including 15 (94%) of the 16 students interviewed,⁴⁴ indicated on their questionnaires that they believed the teacher considered their effort/work habits when determining their letter grade (see Table 11, p. 158).

It should be noted that because such a large proportion of the students had indicated on their questionnaires that they believed effort/work habits had been considered as part of the letter grade, and because teachers in B.C. are required to issue a work habits rating for each student, I wanted to find out what students believed about the ways in which their teachers considered effort/work habits as part of the letter grade. To that end, I asked each interviewed student if they thought that the teacher had rated their effort/work habits and then factored it into the letter grade; I didn't ask them if they thought it would be part of the work habits rating or written comments even though some students made these suggestions when they spoke to me.

All of Wade Mitchell's students who completed questionnaires believed that he considered effort/work habits when determining their letter grade. However, when interviewed, two of his students reconsidered their questionnaire responses: "It's probably in the work habits" (Ravi/Mitchell/I; A); "It's part of our comments, not into our letter grades" (Kim/Mitchell/I; A). Ravi and Kim each concluded that they should have answered "No" on the questionnaire because they did not believe that effort/work habits had been explicitly factored

⁴³ Ten students from Wade Mitchell's class, six from David Turner's, two from Elena Kovac's, 13 from Henry Szabo's, and nine from Robert Reid's.

⁴⁴ Four students interviewed from Wade Mitchell's class, eight from Henry Szabo's, and three from Robert Reid's.

into the letter grade. On the other hand, Jackie and Emily explained how their homework mark also included a effort/work habits mark:

It's part of our homework. Sometimes when I can't do a question for homework, I'll just write it down because I'm not sure how to do it, and he'll give you a homework mark because at least you've tried. (Emily/Mitchell/I; A)

Well, if he gives you a review for homework and you hand it in, he'll automatically give you two. But, later on, he'll do the corrections on the board and you have to copy those down and he'll give you another two. So then those are for work habits. (Jackie/Mitchell/I; C-)

Each of these girls knew that Wade gave them an effort mark for completing their homework and that the homework mark was factored into their letter grade.

All of Henry Szabo's students indicated on their questionnaires that they believed effort/work habits had been part of their letter grade. When I asked the interviewed students if they thought the teacher had rated their effort/work habits and included it in their letter grade, some of them, including Bradley, said they didn't think so and suggested that that it probably had been included in the work habits rating: "Oh, no. That would be part of the work habits mark. I should have said 'No'" (Bradley/Szabo/I; C-). Olivia did not believe the teacher rated her effort/work habits, but argued that a student's effort/work habits might affect how the teacher marked their work: "I would think that if you wouldn't work, he'd consider that and your mark would go down a little bit because part of being in a class is working in the class, you know" (Olivia/Szabo/I; B). Other students agreed that the teacher rated and included effort/work habits as part of the letter grade: "Yes, I think it is [rated] and it's part of the letter grade" (Angel/Szabo/I; Incomplete); "I think he gives us a mark for it" (Walley/Szabo/I; D).

According to their questionnaire responses, three of Robert Reid's students who were interviewed believed a letter grade included effort/work habits. Of these, only Sean expressed a desire to change his questionnaire response when I asked if he thought the teacher had rated his effort/work habits and included it in the letter grade: "No, no. That one I made a mistake on. Sorry. It should be 'No'. I was thinking of the work habits mark" (Sean/Reid/I; C+). Jennifer maintained that effort/work habits were rated by the teacher: "I know that one for sure. If you

don't put enough effort, or your work habits are so poor, you do not get a good mark. ... He usually rates everything. Effort is, like, over probably about half of your mark" (Jennifer/Reid/I; B). Jimmy was the only one of Robert's students to indicate on the questionnaire that he did not believe effort/work habits were part of the letter grade. Jimmy believed that effort/work habits were addressed in the written comments and were not been part of the letter grade: "I think it's part of the write up, not the letter grade" (Jimmy/Reid/I; C).

Parents' Views

Nineteen (90%) parents,⁴⁵ including all seven who were interviewed, indicated on their questionnaires that they believed that effort/work habits were considered as part of the letter grade (see Table 11, p. 158). Just as I had with the students, I asked the parents if they thought the teacher rated students on their effort/work habits and then included the rating in the letter grade.

Parents from Henry Szabo's class held differing opinions about how effort/work habits had been considered by the teacher for grading purposes. For example, although she answered "Yes" on the questionnaire, Mrs. Black reconsidered her answer as she discussed her questionnaire response with me:

I said "Yes", but I would change that now. If you worded like that, I would say "No". I believe that you have to have good work habits to have good work and get a better mark, so that's kind of where I was coming from. But actually rated and included in the letter grade? If you say it that way, I would say "No". I think the teacher would write a comment about it, and they do get a work habits mark. (Mrs. Black/Szabo/I; C)

Mrs. Black believed that a student's work habits affected the quality of work done which, in turn, affected the mark given to that work; other parents with children in Henry's class echoed this point of view and said they should have answered "No" rather than "Yes" on the questionnaire. Only one of the interviewed parents, Mrs. Knight, believed students' effort/work habits were assessed and included in the letter grade: "I think he probably gives them a mark for

⁴⁵ Four parents from Wade Mitchell's class, two from David Turner's, one from Elena Kovac's, eight from Henry Szabo's, and four from Robert Reid's.

their effort, but it's also part of the comments. He'll usually write something about how Tonya is working in class on the report card" (Mrs. Knight/Szabo/I; C+). As her comment shows, Mrs. Knight also believed that a student's effort/work habits would also be addressed in the written report card comment.

Parents of children in Robert Reid's class also expressed different opinions about how effort/work habits had been considered by the teacher. Two parents believed that effort/work habits were dealt with in the work habits rating: "Um, that [effort/work habits] shouldn't be 'Yes' because it's with the work habits mark" (Mrs. McIsaac/Reid/I; C+); "Oh, I don't think it's part of the letter grade. It's a separate thing like the 'G' and 'S' thing" (Mr. Li/Reid/I; A). On the other hand, Mrs. Downey believed effort/work habits were rated and included as part of the letter grade: "Yeah, it's part of the grade. I think he gives them a mark for it" (Mrs. Downey/Reid/I; C).

Participation in Class Activities

Teachers' Views

Two of the five teachers indicated on their questionnaires that they considered a student's participation in class activities when determining a letter grade; three indicated that they did not.

Participation accounted for 5% of the letter grade in Elena Kovac's class. In the following excerpt, Elena describes how she assessed students' participation in class activities:

Participation has to do with their working in groups — how much they participate when they are working in groups, like, when the students have to work generating information like you see on these posters [on the walls of the classroom], and then one person in a group needs to present that to the entire group. And when I walk around, I see how much information is being put in by each student. What kind of active role, or passive role, do they play in that? So participation — attention — how much attention do they pay? How willing are they to take risks? All those things. Of course, you tell them what the criteria are to start with so there's no surprises and they say, "Well, if I only knew, I would have." ... Sometimes, I carry a checklist, or sometimes I observe for a little while and then go to my desk and record it, and then observe some more. ... I usually try to do the whole class at once, so there is some kind of consistency. I try to be extremely fair. Students are very observant in that aspect as well. (Elena Kovac/I)

Elena observed her students' participation in class activities several times each term, recorded her observations, and then transformed her observation notes into a numerical score at the end of the term which she incorporated into the letter grade.

Robert Reid said he based 10% of the letter grade on participation. The following excerpt shows how he assessed student participation for the purpose of grading:

Sue: How do you consider participation?

Robert: It's an observational thing — how well the student does or does not participate, how the student's participation in class affects the environment of the class.

Sue: And do you have a checklist that you use or ... ?

Robert: No, it's more an observation. I look and see, well, Student X is distracting the group and not working, whereas, Student Y is working positively towards the end — the group's end.

Sue: And you rate them? You put a mark down of some sort?

Robert: I put a mark down. Generally, for the participation and attendance — I group the two together — there's no way that they will get a failing mark. The lowest that I will give for that will be 50% and then it will go up from there. The very poorest of participants would get a 50% and then the best of my organized — well organized, well motivated, constantly with me in class students — reactive students, will get a 90% on that particular part of the course.

Sue: And do you rate the participation on an on-going basis throughout the term, or do you do it at the end of the term?

Robert: I do it at the end of the term. During report card time, I think about each student and rate them out of 10. (Robert Reid/I)

Robert went on to explain that he did not keep notes about students' participation, but relied on his memory when assigning marks for participation at end of the term.

Neither Henry Szabo nor Wade Mitchell factored participation into the letter grade. Henry did not include participation as part of the mark because he viewed participation as mandatory: "Participation in class activities is expected. I'm not going to assess something that I demand — you either do it or you're gone" (Henry Szabo/I). Wade didn't include participation in the letter grade because he felt assessing participation was "too subjective" (Wade Mitchell/I).

Even though David Turner indicated on his questionnaire that he did not consider participation when determining letter grades, his comments suggest that, at times, his perceptions about a student's participation in class affected the letter grade he assigned to them:

That's one of those, you know, those things that come up. If somebody's been there every time and they've written every test, never missed a test, never missed a quiz, participated all the time, then they are the people that should get a break — like if they've had a bad test here and there, or a bad quiz — then those are the people that you might look at if they need, like, 1% to take them up to a "C+" or a "B". Those are the kind of people that would have that edge. But if a student has been skipping out here and there, those people you are not going to consider — you are not going to help them out because they haven't helped themselves out with their attendance and participation and that kind of stuff. So it's kind of an individual case thing. (David Turner/I)

David did not explicitly factor participation into the letter grade, however, he sometimes considered a student's participation when deciding whether or not to raise a borderline letter grade up a step.

Students' Views

Thirty-nine (91%) students,⁴⁶ including 15 (94%) of those interviewed,⁴⁷ indicated on their questionnaires that they believed the teacher considered participation in class activities as part of the letter grade (see Table 11, p. 158).

As was the case for their effort/work habits, I wanted to find out from the students how they thought the teacher considered their participation in class activities when determining their letter grade. Hence, when I spoke with them, I asked if they thought their teacher gave them a mark for their participation and included it in their letter grade.

When I asked the students if they thought their teacher had marked their participation, three of Wade Mitchell's students reconsidered their questionnaire answers; Ravi's comment is a good example of what Wade's students had to say:

⁴⁶ Nine students from Wade Mitchell's class, six from David Turner's, three from Elena Kovac's, 13 from Henry Szabo's, and eight from Robert Reid's.

⁴⁷ Four students interviewed from Wade Mitchell's class, eight from Henry Szabo's, and three from Robert Reid's.

It wouldn't affect our letter grade, but it would affect our work habits or it might be in the comment. Participation doesn't matter. Like, you can fool around every class, but do your homework at home and still get an "A". So, I guess I should have said it's not part of the letter grade. (Ravi/Mitchell/I; A)

Ravi, like two of Wade's other students, concluded that participation was more likely to be part of the work habits rating, or comments, than the letter grade. Kim, however, believed that Wade might consider a student's participation when he determined a letter grade: "I think he does in a way because, if you participate in class and you're still getting a low mark, I think he might, like, put that in the letter grade. It might be in the comment, too, but I think it might show up in your letter grade. It might boost you up a bit, maybe" (Kim/Mitchell/I; A). Kim suggested that Wade might reward a student for participating in class by raising the letter grade.

Henry Szabo's students also reconsidered their questionnaire responses when I asked them to explain how participation was considered for the letter grade: "Well, if you don't participate, then you won't get a 'G' for work habits. I said 'Yes', but I guess it should be 'No'" (Heather/Szabo/I; B); "Now, I don't think I should have answered 'Yes'. It [participation] might be included in the work habits, I think" (Tonya/Szabo/I; C+). Although Lisa did not believe that participation was part of the letter grade, and said that she should have answered "No" on her questionnaire, she believed participation was important: "I don't really think it would be part of the letter grade. It's just that you have to kind of participate to do your work, right? Instead of, like going and socializing. You do stuff like that, that wouldn't be good, I don't think" (Lisa/Szabo/I; C+). Similarly, Walley suggested: "If there is something going on and you don't participate, you either get kicked out, or a referral, or sent to the office, or something. And then you won't get any marks during that class" (Walley/Szabo/I; D). Walley did not think the teacher marked student participation — he believed the amount of work done affected the mark assigned for the work which, in turn, affected the letter grade.

Students interviewed from Robert Reid's class thought their teacher considered participation in a variety of different ways. For example, when Sean — who had answered "Yes" to participation on his questionnaire — spoke with me, he changed his answer to "No" explaining: "I meant that participation would be for the effort part [work habits rating]"

(Sean/Reid/I; C+). Jimmy, who answered “No” on his questionnaire, maintained: “I think he would consider it [participation] as the comments or the work habits” (Jimmy/Reid/I; C). Jennifer, however, believed participation was part of the letter grade: “It’s definitely part of the letter grade. Like, he sees if we work together as a group. If we’re on task or off, and if we are involved in class discussions and stuff like that. He gives us a mark for that” (Jennifer/Reid/I; B). Jennifer believed Robert rated how much a student participated in class and included it in the letter grade.

Parents’ Views

Twenty (95%) parents,⁴⁸ including all seven who were interviewed, indicated on their questionnaires that they believed the teacher considered participation in class activities when determining their children’s letter grades (see Table 11, p. 158). Just as I asked the students if they thought their teacher had given them a mark for participation and included it as part of the letter grade, I asked the parents if they thought the teacher had marked student participation and included it in the letter grade.

None of the parents I spoke with from Henry Szabo’s class thought he gave a mark for participation in class activities; instead, most of them explained that they had answered “Yes” to participation, not because they believed it was part of the letter grade, but because Henry included it in the work habits rating or wrote a comment about it on the report card: “Well, it’s under the satisfactory or non-satisfactory part [work habits rating]” (Mrs. Mann/Szabo/I; D); “Well, knowing Henry, he would write something if they weren’t participating” (Mrs. Knight/Szabo/I; C+). Although he had answered “Yes” on his questionnaire, once Mr. Marsden realized that the question referred specifically to the letter grade, he changed his mind about his answer: “No, I don’t believe it’s rated because I don’t think you can put a paper-and-pencil mark on that. That’s subjective, so I wouldn’t think so. But it would colour how he marked a student’s work, especially things like group project work” (Mr. Marsden/Szabo/I; B).

⁴⁸ Four parents from Wade Mitchell’s class, two from David Turner’s, two from Elena Kovac’s, eight from Henry Szabo’s, and four from Robert Reid’s.

Mr. Marsden seemed to draw upon his own experience as a teacher rather than his knowledge of his son's teacher's grading practices to conclude that student participation would probably not be rated, but that the degree to which a student participated in an activity, such as a group project, would affect the mark given by the teacher to the student for the project.

Even though they had answered "Yes" to participation on their questionnaires, none of Robert Reid's parents believed a mark was given for participation. Mr. Li thought participation would be included as part of the written comments: "Usually they put it in a written report" (Mr. Li/Reid/I; A). Neither Mrs. Downey nor Mrs. McIsaac believed student participation was rated, however, they did feel that participation would affect the marks given to students for their work:

Well. If he didn't get it [an assignment] done, he didn't complete the project, but he also didn't participate in that activity. So that's what he was marked down for, so that's where I found participation was considered. (Mrs. McIsaac/Reid/I; C+)

If he doesn't participate, it's going to give him a lower grade because of what he's producing. I think it [participation] has to do with the whole letter grade. Like, it's a piece of the pie. If he gets low marks for his work, he'll get a lower letter grade. (Mrs. Downey/Reid/I; C)

These parents believed participation affects letter grades in that, if a student doesn't participate, their work won't be done well and the marks for that work will be low, resulting in a lower letter grade.

Behaviour in Class

Teachers' Views

Behaviour in class was included in the list of possible grading components because I am aware that some teachers factor behaviour into a letter grade; however, it is not part of the set of objectives for the junior science curriculum in B.C. Nevertheless, two teachers indicated on their questionnaires that they considered student behaviour when they determined letter grades: David Turner said he considered student behaviour, along with attendance and participation, in "borderline" cases to decide whether or not a student's letter grade should be "bumped up" to the next letter grade; and Robert Reid said that, at the end of the term, rated student behaviour on a

five-point scale and assigned 5% of score used to determine a letter grade for behaviour:

“Behaviour in class — 5% of their letter grade is for behaviour” (Robert Reid/I).

Henry Szabo was adamant that behaviour was not part of the letter grade in his class:

“Behaviour in class — not a chance that it’s included in the mark because it’s expected. I’m not going to give a higher letter grade because they were good” (Henry Szabo/I). Elena Kovac also did not include behaviour as part of the letter grade, although she suggested that student behaviour might possibly be part of her participation mark: “That [behaviour] might affect what I write about their participation in group work” (Elena Kovac/I).

Despite indicating on his questionnaire that he did not consider behaviour when determining letter grades, Wade Mitchell’s comments suggest that a student’s behaviour might, in some cases, affect their letter grade:

No, again, behaviour to me, is a subjective area. I mean, at the end of a term, if a kid who works very hard, does 72%, I’ll bump them up to 73. But if a kid is at 72.4, then the Remark program automatically bumps them up the half mark. In the past, if the kid has been a real attitude problem, has missed, you know, five assignments — had they handed in one of them, they’d have made it on their own — in the past, I’d leave them at 72.4, so they get a “C+”. So I can be really hard-nosed with the kids if they, you know, if they’re really difficult in class, or if they’ve missed even one homework assignment, ‘cause the way I look at it is, “If you did it, you would have got it on your own, so why should I give it to you?” It’s the kid that’s done everything and behaves in class that’s still just a hair short, I always give the benefit of the doubt to every time. (Wade Mitchell/I)

Like David, Wade considered student behaviour in borderline cases to decide whether or not a student’s letter grade should be “bumped” up to the next grade.

Students’ Views

Thirty-three (77%) students,⁴⁹ including 13 (81%) of the 16 who were interviewed,⁵⁰ indicated on their questionnaires that they believed the teacher considered their behaviour in class when determining their letter grades (see Table 11, p. 158). To learn more about the ways in

⁴⁹ Eight students from Wade Mitchell’s class, five from David Turner’s, two from Elena Kovac’s, 10 from Henry Szabo’s, and eight from Robert Reid’s.

⁵⁰ Three students interviewed from Wade Mitchell’s class, seven from Henry Szabo’s, and three from Robert Reid’s.

which students thought their teacher considered behaviour, I asked them if they thought their behaviour was rated and included it in the letter grade.

Ravi — the only student I spoke with from Wade Mitchell's class to circle "No" for behaviour on his questionnaire — said he knew that behaviour was not part of the letter grade because it was not listed on the course outline: "I know it's not part of the letter grade because that sheet [course outline] had four things on it and behaviour had nothing to do with it" (Ravi/Mitchell/I; A). The other students from Wade's class, whom I spoke to, decided that they should have circled "No" instead of "Yes" for behaviour because, like Emily, they felt it was more likely to be addressed in a written comment or included in the work habits rating: "No, I don't think it has anything to do with the letter grade. But I think he'd say something on your report if you didn't behave in class and it'd probably affect, like, your work habits mark" (Emily/Mitchell/I; A). Kim was also of the opinion that behaviour was not rated and factored into the letter grade; however, she believed that her teacher might reward students for good behaviour when he assigned letter grades: "He probably doesn't [rate it], but it [the letter grade] does depend on how you behave in class. I mean, if you are trying to listen or you are trying to cooperate, it might boost your mark, you know" (Kim/Mitchell/I; A). Wade's students did not believe that their behaviour was rated and included in the letter grade. Rather, they believed behaviour might be part of the work habits rating or the written comment, or that it could affect the letter grades assigned by the teacher.

Most of the students I spoke to from Henry Szabo's class did not believe their behaviour was rated and included in the letter grade, either, and explained that they should have circled "No" not "Yes" for behaviour. Some of them suggested that behaviour would affect their work habits rating: "I'd guess that'd be work habits not the letter grade" (Heather/Szabo/I; B); "Behaviour would be probably more the work habits" (Bradley/Szabo/I; C-). Others suggest that the teacher would discuss their behaviour in a written comment: "He puts comments about talking in class on our report card, so I don't really think he considers it for our letter grade" (Angel/Szabo/I; Incomplete); "Now, I'd say it's in the work habits, not the letter grade"

(Lisa/Szabo/I; C+). Walley, who circled “No” on his questionnaire, decided that a student’s behaviour probably affected their letter grade to a small degree: “I said ‘No’, but maybe a small percentage [of the letter grade] could be for behavior” (Walley/Szabo/I; D).

Robert Reid’s students’ were of different opinions as to how behaviour affected the letter grade. Sean, for instance, said he did not really believe his teacher rated students’ behaviour for their letter grade even though he had answered “Yes” on his questionnaire, “Oh, that would be like participation. [It would be] in the work habits and comments. It’s not in the letter grade” (Sean/Reid/I; C+). Jimmy had answered “No” for behaviour on his questionnaire because he thought it was part of the report card comment, but not part of the letter grade: “I said ‘No’ because I think he’d just write something on your report if you fool around and don’t pay attention” (Jimmy/Reid/I; C). On the other hand, Jennifer felt behaviour was part of the letter grade:

Yes, it’s part of the letter grade. If you’re a goof and you’re goofing off all the time, then it reflects on your mark pretty bad. But if you’re a good student and you goof off once and awhile, you’re okay — he has no problem with you. If you’re a goof and just sort of act like a dunce, well, he doesn’t give you that good of a mark. It’s like attendance and participation, you’d probably get, like a 5 out of 10, I would say. (Jennifer/Reid/I; B)

Jennifer believed that her teacher rated student behaviour and included it as part of the letter grade.

Parents’ Views

Seventeen (81%) parents,⁵¹ including six (86%) of those who were interviewed,⁵² indicated on their questionnaires that they believed the teacher considered students’ behaviour in class when determining letter grades (see Table 11, p. 158). To find out how the interviewed parents thought the teacher had considered behaviour as part of the letter grade, I asked them if they thought the teacher rated student behaviour and included it in the letter grade.

⁵¹ Three parents from Wade Mitchell’s class, two from David Turner’s, one from Elena Kovac’s, eight from Henry Szabo’s, and three from Robert Reid’s.

⁵² Four parents interviewed from Henry Szabo’s class and two from Robert Reid’s.

All of the parents I spoke to with children in Henry Szabo's class had circled "Yes" for behaviour on their questionnaires; however, none of them said they thought the teacher rated student behaviour for grading purposes. Instead, they suggested behaviour might affect the work habits rating, or the report card comment. Two parents suggested that a student's behaviour might have an indirect affect upon the letter grade:

I probably circled "Yes" thinking in terms of how I would react to somebody in the classroom. It probably shouldn't be part of the letter grade, it should be part of the work habits mark, but I would think it colours it [the letter grade].
(Mr. Marsden/Szabo/I; B)

I think behaviour is mostly in the comments because I see comments like "Constant chatter" or "Talking" or "Has to move location". I also think it [a student's behaviour] may affect how the teacher marks their work, but it's not incorporated into it [the letter grade] in a conscious, deliberate way.
(Mrs. Black/Szabo/I; C)

Some parents believed that a student's behaviour could affect the way the teacher marked a student's work, but did not believe it was explicitly factored into the letter grade.

Two of Robert Reid's parents thought that student behaviour was rated and included in the letter grade. Mrs. Downey simply observed: "Yeah, I think it's rated. Behaviour is a big one. It's part of their mark [letter grade] here" (Mrs. Downey/Reid/I; C). While Mrs. McIsaac explained:

I assumed that behaviour would have some effect [on the letter grade]. I can't remember the ratio Robert told me, but I was told what he used for Sean's marks, and it wasn't just 80% [from] the tests and 20% [from] the homework assignments — it was also class participation, and behaviour. As I say, I don't know if he said 5% is for behaviour, but I know he gives a percentage.
(Mrs. McIsaac/Reid/I; C+)

Mr. Li, however, did not believe behaviour was included in the letter grade: "No. They may put a comment [about behaviour] on there [the report card], but not into the letter grade."

(Mr. Li/Reid/I; A).

Attendance

Teachers' Views

Two teachers indicated on their questionnaires that they considered attendance when they determined Science 9 letter grades, and three indicated that they did not (see Table 11, p. 158). The teachers who did not consider attendance as part of the letter grade observed that it was school policy to record a student's attendance for each subject on the report card but that it was not part of the letter grade. For example, Wade Mitchell observed: "There's a space on the report card to record a student's attendance for every class they take" (Wade Mitchell/I).

Even though Robert Reid recorded attendance on the report card, he also factored it into their letter grade: "I add a student's attendance up and look at their excused absences, and then convert it into a number that is added into their total score" (Robert Reid/I). In Robert's class, attendance accounted for 10% of the letter grade.

David Turner took a student's attendance, along with their behaviour and work habits/effort, into consideration when a letter grade was borderline to determine if the grade should be "bumped up", but did not explicitly factor it into the letter grade: "I look at attendance the same as I do behaviour or effort. If a student has been there all the time [and] has not skipped out and isn't late, then, I'll give them a break if they only need another 1% to take them up to, say, a 'C+' or a 'B'" (David Turner/I).

Students' Views

A total of 29 (67%) students,⁵³ including 12 (75%) who were interviewed,⁵⁴ indicated on their questionnaires that attendance was considered by their teacher when determining letter grades (see Table 11, p. 158). To learn more about how students thought attendance had been

⁵³ Five students from Wade Mitchell's class, six from David Turner's, two from Elena Kovac's, nine from Henry Szabo's, and seven from Robert Reid's.

⁵⁴ Three students interviewed from Wade Mitchell's class, seven from Henry Szabo's, and two from Robert Reid's.

considered by the teacher, I asked them if they thought they were given a mark for their attendance that was included in the letter grade.

As it turns out, even though three had circled “Yes” for attendance on the questionnaires, none of the students I spoke with from Wade Mitchell’s class believed their attendance was marked and included in the letter grade. Ravi’s comment echoed those of the other students whom I spoke with from Wade’s class: “I don’t think he uses it. I don’t think it can even affect your work habits because it just goes on a different part of the report card” (Ravi/Mitchell/I; A). Because Wade’s students knew that their attendance was recorded elsewhere on their report card, they did not believe it was part of the letter grade.

Likewise, none of the students I spoke with from Henry Szabo’s class believed that attendance was marked and factored into the letter grade. Moreover, those who had circled “Yes” on their questionnaires suggested that they should have answered “No” because they knew attendance was recorded separately on their report card: “No, I don’t think he does include it in the letter grade, but he has it on the report card — I was thinking of the whole report card, not just the letter grade, when I answered that” (Heather/Szabo/I; B); “He shows how many times we’re away or late on it [the report card]. ... It’s not part of the letter grade” (Adam/Szabo/I; B). Angel’s and Bradley’s comments about attendance and grading were very similar: “Well, if you’re not there, you don’t really get a mark for all the stuff he does when you’re away so your grade would be bad” (Angel/Szabo/I; Incomplete); “Well, if you’re not there, it would make a difference in your mark because you would miss assignments, but I don’t think he gives you a mark for it [attendance]” (Bradley/Szabo/I; C-). These two students believed that a student’s attendance could affect the amount of work they did, which, in turn, could affect the letter grade; they did not believe attendance was a direct part of the letter grade.

Two of the students I spoke to knew Robert Reid factored attendance into their letter grade. Jennifer, for example, explained: “Yeah, he does [consider it]. Like, if we’re late or away, he marks it down and then, I think, he gives us, like, two marks or something out of five on our attendance for our letter grade” (Jennifer/Reid/I; B). On the other hand, neither Sean nor

Jimmy believed that attendance was part of their letter grade: "It's good to be there to do your work 'cuz if you don't get it done, you'll lose marks. ... It's not part of the letter grade, I don't think" (Sean/Reid/I; C+); "It's good to be there, but it's not really part of the letter grade because it's written on the back of the report card. It might be part of the work habits, too" (Jimmy/Reid/I; C).

Parents' Views

Fifteen (71%) parents⁵⁵ who completed questionnaires, including four (57%) of the interviewed parents,⁵⁶ indicated that they believed the teacher considered attendance when determining letter grades. To find out how parents thought attendance had been considered, I asked if they thought it was marked and then factored into the letter grade.

During the interviews, it became apparent that none of the parents with children in Henry Szabo's and Robert Reid's classes who had answered "Yes" on their questionnaires believed attendance was directly factored into the letter grade. However, they did believe that a child's attendance affected how well they did in school in general, and thus, indirectly, it was part of the letter grade. Mrs. Black's comment is a good example of what parents had to say about attendance:

Okay, now attendance. When I said "Yes" on that one, that was because — not to determine their mark — but, if they're not there, they're not going to be doing very well in class. That's how I was looking at that one. He wouldn't use it, I don't think, when determining the letter grades, but you would have to be there to learn. (Mrs. Black/Szabo/I; C)

Like other parents from Henry's class, Mrs. Black believed a student's attendance could affect the letter grade because it affects student learning in general, not because the teacher purposely factored it into the letter grade.

⁵⁵ Three parents from Wade Mitchell's class, one from David Turner's, two from Elena Kovac's, five from Henry Szabo's, and four from Robert Reid's.

⁵⁶ One parent interviewed from Henry Szabo's class and three from Robert Reid's.

Mr. Marsden's comment is a good example of what parents who circled "No" for attendance on their questionnaire had to say about attendance and the letter grade: "No. I wouldn't think so. It doesn't make sense because there is a place to record attendance on the report card" (Mr. Marsden/Szabo/I; B). These parents felt that because attendance was recorded separately on the report card, it was not part of the letter grade.

Project Work

Teachers' Views

The teachers viewed project work as being research projects (e.g., science fair, library projects) that students completed over a period of time. According to their questionnaire responses, only Elena Kovac considered students' project work as part of the letter grade the previous term:

Last term, the students did one major oral presentation. And by major, I don't mean something that takes a month to finish, but possibly about a week and a half for preparation and then the final outcome is marked together with all the different processes. For instance, I issue a folder for the students where they include all the different information they gathered in the library — their notes, and research. And we do an outline and reorganize it and they have a practice session to practice their oral presentations. I look at it and give them some hints on what to improve, and then their final outcome was out of 25 marks, and then 25 marks on the other work that went into it. (Elena Kovac/I)

None of the other teachers had considered students' project work the previous term because, they explained during their interviews, their students hadn't done any projects. They also explained that they included project work as part of the letter grade whenever it was done by the students.

Students' Views

Thirty-eight (88%) students,⁵⁷ including all 16 (100%) interviewed students, indicated on their questionnaires that they believed the teacher had considered their project work when determining their letter grade (see Table 11, p. 158). Given that only one teacher had

⁵⁷ Nine students from Wade Mitchell's class, three from David Turner's, three from Elena Kovac's, 13 from Henry Szabo's, and 10 from Robert Reid's.

considered project work the previous term, I was surprised to find that so many students had answered “Yes” to project work on their questionnaires. After talking to some of them, I concluded that this discrepancy was probably due to different understandings of the term “project work” — while the teachers and I viewed project work as larger research projects completed over a period of time, many of the students I spoke to viewed both work done on a daily basis and research projects as project work. Ravi’s and Olivia’s comments are good examples of how students described project work: “I thought project work was homework and lab work” (Ravi/Mitchell/I; A); “For me, project work meant assignments out of the text book, like, questions and labs” (Olivia/Szabo/I; B).

Once the term “project work” had been clarified for them, the students I spoke with from Wade Mitchell’s class all decided project work had not been part of the letter grade the previous term. Like Emily, they noted that they had not done any project work, so it could not have been part of the letter grade: “Oh, no, project work like that wasn’t part of the letter grade, then, ‘cuz last term we didn’t do any” (Emily/Mitchell/I; A).

Angel’s comment is a good example of what Henry Szabo’s students had to say about project work and letter grades: “I think he does consider that [project work] when we do one, but we didn’t do any [last term], so I don’t think it counted [as part of the letter grade]” (Angel/Szabo/I; Incomplete). Other students from Henry’s class also mentioned that they were currently working on a science project that would count toward their next letter grade: “Well, last term we didn’t do any projects, but right now, we’re doing a winch project and that’s worth a lot of marks [for the next report]” (Bradley/Szabo/I; C-); “We have to do a project this term and he told us that he would give us marks if we did it and stuff, but I don’t remember what percent” (Lisa/Szabo/I; C+).

During their interviews, Robert Reid’s students agreed that, whenever project work was done in a term, it was part of the letter grade. They also echoed Sean’s observation that project work had not been part of the previous letter grade because they had not completed any projects: “Oh, you mean, like, a research thing. We did one of those first term and it was a big chunk of

our mark, but we didn't have to do one last term so I guess I should have said 'No' [on the questionnaire]" (Sean/Reid/I; C+).

Parents' Views

Nineteen (90%) parents,⁵⁸ including all seven who were interviewed, indicated on their questionnaires that they believed the teacher considered project work when determining their child's letter grade (see Table 11, p. 158).

Like the students, the parents I spoke with had a broad view of what constitutes project work. Most of them seemed to view any work done by their child as project work whether it be their daily assignments or larger research-type projects. Parents knew their children completed work for science that was marked by the teacher and included in the letter grade; however, none of them seemed to know that their children had not completed any large research-type projects the previous term. Consequently, all of the parents I spoke to with children in Henry Szabo's and Robert Reid's classes maintained that project work had been included as part of the letter grade: "Project work is considered because he has to hand in so many assignments and he's marked according to whether he's done them or not" (Mrs. Downey/Reid/I; C); "Project work — oh, yes, definitely! I saw some of the marks on my son's labs and they brought his letter grade down" (Mrs. Mann/Szabo/I; D).

Attitude

Teachers' Views

One teacher indicated on his questionnaire that he considered a student's attitude when determining a letter grade in Science 9; four indicated that they did not. Teachers who did not factor attitude into the letter grade believed attitude was difficult to assess:

Attitude — it's too subjective. I used to teach in an area where you were quite accountable for everything you did, so I got away from the subjective portion of my marking. You know, I can show you exactly my marks, but when a parent

⁵⁸ Four parents from Wade Mitchell's class, one from David Turner's, three from Elena Kovac's, seven from Henry Szabo's, and four from Robert Reid's.

asks why their son didn't get 10 out of 10 on attitude, it's hard to justify. (Wade Mitchell/I)

Attitude, I probably should consider it, but until somebody gives me a way of doing it without being too subjective, I won't. (Henry Szabo/I)

I would write something in their comments. I don't believe I can fairly assess their attitude. (Elena Kovac/I)

As these comments illustrate, some of the teachers did not believe they could assess their students' attitudes objectively or fairly.

Robert Reid, however, believed that he was able to assess the attitude of his students: "Attitude, to me, would include things like their participation in class activities. Is it positive, neutral, or negative? And, basically, I give them a mark out of five for their attitude at the end of each term" (Robert Reid/I). Robert said attitude accounted for 5% of the letter grade for Science 9.

Students' Views

Even though only one teacher said he considered students' attitudes when he determined letter grades, 35 (81%) of the 43 students,⁵⁹ including 13 (81%) of the 16 who were interviewed,⁶⁰ circled "Yes" for attitude on their questionnaires (see Table 11, p. 158). As I had for other non-achievement factors listed on the questionnaire (e.g., participation, behaviour), I asked interviewed students if they thought their teacher rated their attitude and included it as part of the letter grade.

Two of Wade Mitchell's students, whom I interviewed and who had circled "Yes" for attitude on their questionnaires, reconsidered their answers: "Now I don't think it's put into the letter grade — maybe in the comments" (Kim/Mitchell/I; A); "I don't think it has anything to do with the letter grade. I think, maybe, it would be in the work habits or the comment"

⁵⁹ Eight students from Wade Mitchell's class, six from David Turner's, two from Elena Kovac's, 11 from Henry Szabo's, and eight from Robert Reid's.

⁶⁰ Three students interviewed from Wade Mitchell's class, seven from Henry Szabo's, and three from Robert Reid's.

(Emily/Mitchell/I; A). Jackie also changed her mind when I spoke with her: "I think it would be bonus marks for Mr. Mitchell. I don't really think he includes it in the letter grade. I think he'll just give you bonus marks and that might boost your mark up a little bit" (Jackie/Mitchell/I; C-). Jackie felt her teacher might give a student bonus marks for his or her attitude which could affect the letter grade by raising it somewhat. Ravi, who answered "No" to attitude on his questionnaire, explained that attitude would affect the work habits rating: "No, he doesn't consider our attitude for our letter grade. He just considers that in our work habits" (Ravi/Mitchell/I; A).

Seven of the students I spoke to from Henry Szabo's class had circled "Yes" on their questionnaires, however, none of them believed the teacher rated their attitude and included it in the letter grade. Instead, like Tonya, several students suggested that they should have answered "No" because they believed attitude would be part of the work habits rating rather than the letter grade: "No, I'd say not part of the letter grade. I think it would go for work habits, actually" (Tonya/Szabo/I; C+). Some students, who decided that their questionnaire response should have been "No", believed that a student's attitude could affect their letter grade in other ways. For instance, Lisa implied that because a student's attitude could affect the quality of their work, it could have an indirect effect on their letter grade: "Well, I don't think attitude is really part of the letter grade but I think you should have, like, a good attitude towards your work and towards your teacher and stuff [because] it'd be kind of hard to be able to do good, like, if you didn't enjoy it and stuff" (Lisa/Szabo/I; C+). And Walley suggested that a student's attitude might affect their letter grade because it might affect how the teacher marked their work: "I think that, maybe, if someone's really snobby or rude in class, then it might affect their mark because the teacher might be harder on them when he marks their work" (Walley/Szabo/I; D).

Three of the four students I spoke with from Robert Reid's class answered "Yes" to attitude on their questionnaires; however, Jennifer was only the student who believed attitude was rated and included in the letter grade: "Yeah, it's part of the grade. If you have, like, a real poor attitude — you don't want to do this, you don't want to do that — it does affect your mark

quite a bit. ... I think he probably gives us a mark out of five, or something, for attitude” (Jennifer/Reid/I; B). Other students suggested that attitude was more likely to affect the work habits rating or the written comment: “No, it’s not considered for the letter grade. It’s on the comments and the work habits mark” (Sean/Reid/I; C+); “Not the letter grade. Maybe for work habits or write-ups” (Jimmy/Reid/I; C).

Parents’ Views

Eighteen (86%) parents,⁶¹ including six (86%) of the interviewed parents,⁶² indicated on their questionnaires that they believed the teacher considered students’ attitudes when determining their letter grades (see Table 11, p. 158).

Even though a number of the parents I interviewed who had children in Henry Szabo’s class had circled “Yes” on their questionnaires, during their interviews, they explained that they thought attitude would be part of the work habits rating, but not of the letter grade: “Oh, I’d have to change that [to ‘No’]. It’s in the other part of the report card — the ‘G’ and ‘S’ part [work habits rating]” (Mrs. Mann/Szabo/I; D); “Again, when I said ‘Yes’ I was thinking about the report card itself, not just the letter grade. Attitude shouldn’t be part of the letter grade because there is a different spot on the report for it. ... He doesn’t have a mark, he doesn’t have a column in his grade book called ‘Attitude’” (Mr. Marsden/Szabo/I; B). Mrs. Black did not believe attitude was factored into the letter grade; however, she did believe that it could affect the marks given to a student by the teacher: “I believe that teachers and students can have personality conflicts and I believe that that can reflect on their grade. Sometimes, if they are not getting along and the grade is questionable, a student’s attitude might influence what mark the teacher gives” (Mrs. Black/Szabo/I; C).

When I spoke with parents from Robert Reid’s class, those who had answered “Yes” revised their answers to “No” because they, too, felt attitude would be part of the work habits

⁶¹ Four parents from Wade Mitchell’s class, two from David Turner’s, one from Elena Kovac’s, eight from Henry Szabo’s, and three from Robert Reid’s.

⁶² Four parents interviewed from Henry Szabo’s class and two from Robert Reid’s.

rating rather than the letter grade. Nevertheless, Mrs. McIsaac still believed that a student's attitude could affect the letter grade assigned to them:

I don't know if the teacher would actually rate the person from 1 to 10 and assign that as part of their letter grade mark, but I think it might affect the how the teacher assigns a mark for their work. Like, if you have, say, a person's who is a borderline "B" and "A" and they're really trying hard, they might get the "A"; and also, if you have somebody that's a borderline "B"/"A" and they had a terrible attitude in class, they might end up getting the "B" mark. (Mrs. McIsaac/Reid/I; C+)

Mrs. McIsaac implied that she believed that a teacher might be influenced by a student's attitude and, as a result, might reward or punish students with borderline marks. Mr. Li answered "No" to attitude on his questionnaire for a reason not expressed by any of the other parents: "What I was thinking about that question is whether the teacher is looking at a particular student and asking if he has a good attitude towards the subject, and I saw my son doesn't have [a good attitude] but still got an 'A'. No, it will not affect their mark" (Mr. Li/Reid/I; A).

Performance Tasks

Teachers' Views

All of the teachers said they were familiar with performance tasks, however, only Elena Kovac had administered performance tasks to her students the previous term:

Sometimes I give them a task to perform. For instance, they have to illustrate to me that they know how to use an equal-arm balance, and then I would mark them on the proficiencies with which they can do that and how many questions they have to ask in order to arrive at the results. I would do that either with a pair of students so that they have someone to bounce the ideas off, or individually. (Elena Kovac/I)

Three percent of the letter grade in Elena's class was based on performance tasks. Even though none of the other teachers administered performance tasks to their students, they all explained that they hoped to sometime in the future.

Students' Views

Thirty-one (72%) students,⁶³ including nine (56%) of the 16 interviewed students,⁶⁴ indicated on their questionnaires that they believed the teacher had considered performance tasks when determining their letter grade (see Table 11, p. 158). Many of the interviewed students said they were not sure what a performance task was, so as an example, I suggested that the teacher might set up a testing station and ask them to demonstrate how to correctly use a piece of laboratory equipment such as a Bunsen burner, or to identify an unknown substance.

After we had discussed the meaning of the term “performance task”, Wade Mitchell’s students — including Ravi who had answered “Yes” on his questionnaire — said that they had not done any performance tasks in Science 9, so they could not be part of the letter grade: “Oh we don’t do that, so he wouldn’t have considered it” (Ravi/Mitchell/I; A).

Henry Szabo’s students — even those who had answered “Yes” on their questionnaires — echoed Walley’s comment: “Oh, we haven’t done any of those for science” (Walley/Szabo/I; D). Henry’s students did not believe performance tasks had been considered when their letter grades were determined because they had not done any for Science 9.

Once they were clear about the meaning of “performance task”, all but one of Robert Reid’s students decided that it had not been part of their letter grades because they had not done any performance tasks in Science 9: “I wasn’t sure what it [a performance task] was. I don’t remember doing one of those, so I guess it couldn’t have counted [towards the letter grade]” (Sean/Reid/I; C+). Jennifer, however, described how her teacher sometimes observed students as they completed their lab work and thought that this might count as a performance task for their letter grade: “I think a couple of them when we were doing, like, the really big labs, he’d come around and see if you knew what you were doing and he’d mark you on that” (Jennifer/Reid/I; B).

⁶³ Six students from Wade Mitchell’s class, four from David Turner’s, two from Elena Kovac’s, 11 from Henry Szabo’s, and eight from Robert Reid’s.

⁶⁴ One student interviewed from Wade Mitchell’s class, five from Henry Szabo’s, and three from Robert Reid’s.

Parents' Views

Fourteen (67%) of the 21 parents,⁶⁵ including four (57%) of the seven I spoke with,⁶⁶ indicated on their questionnaires that they believed the teacher considered performance tasks when determining letter grades (see Table 11, p. 158).

Like some students, some parents were not sure what "performance task/demonstration" meant. Several of Henry Szabo's parents said they were not sure if performance tasks had been part of the letter grade because they didn't know if they were done in Science 9. Mrs. Knight's comment is a good example of what they had to say: "I'm not clear about that [performance tasks being considered when the teacher determined the letter grade] because Tonya has never talked about doing anything like that" (Mrs. Knight/Szabo/I; C+). Other parents, like Mrs. Black who answered "No" to performance tasks, decided that if performance tasks were done in Science 9, they would be considered by the teacher: "I would change that and say 'Yes', then. If they had to do that in his class he'd include it [in the letter grade]" (Mrs. Black/Szabo/I; C).

Two of the parents I spoke to from Robert Reid's class were familiar with the performance task. Mrs. McIsaac said she answered "Yes" on her questionnaire based on her own experience: "I thought that performance tasks and demonstrations is if Sean had to demonstrate how to measure something using the balance, or something like that. That he does it correctly, or safely, I guess. How do you light a Bunsen burner without blowing yourself up. ... But I guess I'm not sure if he has done any" (Mrs. McIsaac/Reid/I; C+). Mrs. Downey had not heard the term before, but decided to change her answer from "Yes" to "No" once she understood its meaning: "I don't think they have to do anything like that. So, I'd say, it's probably not part of their mark" (Mrs. Downey/Reid/I; C).

⁶⁵ Three parents from Wade Mitchell's class, two from David Turner's, one from Elena Kovac's, five from Henry Szabo's, and three from Robert Reid's.

⁶⁶ Two parents interviewed from Henry Szabo's class and two from Robert Reid's.

Notebook

Teachers' Views

Only David Turner considered students' notebooks when he determined letter grades. The others explained that, because they marked students' assignments on an on-going basis, they didn't feel it was necessary to collect the students' work again in order to give a notebook mark. In actuality, David did not mark his students' notebooks either:

I have them do a table of contents [for their notebook] — it should be up-to-date everyday — and I'll ask for that to be sent in to make sure they are doing it, so that's kind of a day-to-day thing that they're keeping up with. I collect it and make sure it's up-to-date. Usually it's based on one week and I can see if they have done it or not. If they haven't done it, then they don't get a credit for it. ... I find it easier to collect the table of contents than their whole binder. (David Turner/I)

David believed it was important for his students to keep their notebooks up-to-date and organized; however, because he felt that he did not have time to collect and mark his students' notebooks, he collected each student's table of contents and used it as an indicator of the condition of the notebook and based their mark on it.

Students' Views

Twenty-one (49%) students,⁶⁷ including six (38%) of those who were interviewed,⁶⁸ indicated on their questionnaires that they believed the teacher considered their notebook when determining their letter grade (see Table 11, p. 158).⁶⁹

When I asked students from Wade Mitchell's class who had answered "Yes" on their questionnaires if their teacher collected and marked their notebooks, it became evident that this was not the case, and that what they had meant by answering "Yes" was that the assignments

⁶⁷ Eight students from Wade Mitchell's class, six from David Turner's, two from Elena Kovac's, two from Henry Szabo's, and three from Robert Reid's.

⁶⁸ Three students interviewed from Wade Mitchell's class, one from Henry Szabo's class, and two from Robert Reid's.

⁶⁹ According to their questionnaire responses, all six students from David Turner's class — the only class in which there was a notebook mark — knew that notebooks were factored into the letter grade; however, because none of his students were interviewed, it was not possible to discuss their questionnaire responses with them.

within their notebooks were marked by the teacher and were part of the letter grade. For example, Emily explained: “Oh, no, he doesn’t collect our notebooks, but he marks our homework assignments and that goes into our letter grade” (Emily/Mitchell/I; A). Jackie explained that she had answered “No” because “He doesn’t even mark our notebooks” (Jackie/Mitchell/I; C-).

Henry Szabo’s students explained that, because their notebook had not been marked, it could not have been considered as part of the letter grade: “He never took a look at it” (Tonya/Szabo/I; C+); “He kind of doesn’t care what we have as long as we hand in what we have to” (Olivia/Szabo/I; B). Lisa went so far as to say that she knew her notebook didn’t count for her letter grade because she didn’t even have one: “No, I haven’t used a notebook all year and he hasn’t come around to check it or anything” (Lisa/Szabo/I; C+).

Two of the students I spoke to from Robert Reid’s class thought their notebook was part of the letter grade, the other two did not. The students who said notebooks were not part of the letter grade explained that their notebooks were not marked: “He doesn’t even mark us on that” (Jennifer/Reid/I; B); “Is my notebook marked? No. He doesn’t take it in and look through it” (Sean/Reid/I; C+). Even though Robert did not collect and mark notebooks, both of the students who thought notebooks were part of the letter grade said he had: “Yeah, he marks them” (Justin/Reid/I; B); “He marks it, yeah, to see if we got everything in order and stuff, and that goes on to our report card” (Jimmy/Reid/I; C).

Parents’ Views

Nine (43%) parents,⁷⁰ including three (43%) of the seven who were interviewed,⁷¹ indicated on their questionnaires that they believed the teacher considered their child’s notebook when determining the letter grade (see Table 11, p. 158).

⁷⁰ Two parents from Wade Mitchell’s class, two from David Turner’s, one from Elena Kovac’s, two from Henry Szabo’s, and two from Robert Reid’s.

⁷¹ One parent interviewed from Henry Szabo’s class and two from Robert Reid’s.

In general, parents who were interviewed from Henry Szabo's class believed that the notebook was a student's personal belonging that was not marked by the teacher for the purpose of grading: "I've never seen his notebook marked. I've seen specific assignments marked, specific tests marked, but his notebook I've never seen marked" (Mr. Marsden/Szabo/I; B); "No, I think that they are for their own reference. I don't think the teacher even looks at it" (Mrs. Black/Szabo/I; C). Even Mrs. Knight, who answered "Yes" on the questionnaire, changed her mind during her interview and suggested that notebooks were not part of the Science 9 letter grade: "Actually, I don't really think he marked Tonya's notebook, so I guess it couldn't have been part of the letter grade" (Mrs. Knight/Szabo/I; C+).

One of Robert Reid's parents thought that, because her son's assignments were kept in his notebook, it would be part of the letter grade: "Well, I think he must mark their notebooks because that's where they keep their work" (Mrs. Downey/Reid/I; C). Mrs. McIsaac thought that her son's notebook had been marked for neatness and included in the letter grade: "Yes, because I know they got some percentage of their marks for having a neat notebook" (Mrs. McIsaac/Reid/I; C+). However, Mr. Li explained that he did not believe his son's notebook could have been part of the letter grade since he thought it was very messy: "I don't think he considers the notebook. I took a look at my son's notebook. It is not a notebook, it is a scribble book. That is basically what it boils down to. I can't believe his teacher looked at his book — he got an 'A' on his report card" (Mr. Li/Reid/I; A). Mr. Li felt that if his son's notebook had been considered by the teacher, his letter grade would have been less than an "A".

Self-evaluation

Teachers' Views

Four of the teachers did not have their students complete self-evaluations; as a consequence, they did not include student self-evaluation as part of the letter grade. Elena Kovac, however, had her students complete self-evaluations from time to time throughout the previous term and included them as part of the letter grade. Elena described how her students completed a self-evaluation for an oral presentation:

I provide them with checklists when they do, say, [a self-evaluation for] an oral presentation. Now, you have to teach the kids to do this. They don't do that automatically. They don't like to, actually reflect on themselves. They feel it's either not important enough, or they don't have any skills to do that properly. So, again, the criteria, I would have gone over first. I go over it at the overhead. Give them lists of things to do. ... Basically, I try to break everything down. Usually they're marked zero, one, two. You know zero is it hasn't been done, one is it has been done but not very well, and two they are happy with the way they have done it. And that's probably the best way to do that. Now, often they are allowed to do half marks, just in case they can't decide, you know they spent a little bit of time, but it's not exactly how it should be. And it's usually marked out of 10. I don't make it more than that because, otherwise, it's an arbitrary mark. So students can best evaluate [themselves as] poor, average, good, and then the mark can be out of 10 or 20 and then I record the marks from their self-evaluation and it would consist of 5% for the year.

Even though Elena was the only teacher whose students completed self-evaluations, other teachers mentioned that they planned to have their students complete them in the future.

Students' Views

Seventeen (40%) of the 43 students who completed questionnaires indicated that they believed the teacher considered their self-evaluations when determining their letter grades.⁷² Only three (19%) of the 16 students who were interviewed,⁷³ indicated on their questionnaires that they believed the teacher considered their self-evaluations when determining their letter grades (see Table 11, p. 158).

The students I interviewed who answered "No" to self-evaluation on their questionnaires said that the teacher could not have considered their self-evaluation because they had not done one for Science 9: "We don't do those self-evaluations, so that he can't consider them if we don't do them" (Heather/Szabo/I; B); "We don't do a self evaluation" (Ravi/Mitchell/I; A); "We've never done one in this class" (Sean/Reid/I; C+).

Students who answered "Yes" on their questionnaires said they had done so because they had been unsure about the meaning of the term "self-evaluation". Once the term had been

⁷² Four students from Wade Mitchell's class, four from David Turner's, two from Elena Kovac's, four from Henry Szabo's, and three from Robert Reid's.

⁷³ One student interviewed from Henry Szabo's class and two from Robert Reid's.

clarified, they explained that they had not done a self-evaluation and, hence, should change their questionnaire response to "No".

Parents' Views

Seven (33%) of the 21 parents who completed questionnaires indicated that they believed the teacher considered a student's self-evaluation when determining a letter grade.⁷⁴ Only one (14%) of the seven parents who were interviewed indicated on her questionnaire that she believed self-evaluation was considered by the teacher (see Table 11, p. 158).⁷⁵

All of the interviewed parents seemed to be familiar with the term "self-evaluation". Moreover, most of them explained that they had indicated "No" for self-evaluation because they did not think their children had completed them for Science 9: "I put 'No' on that one simply because for some of his other classes Sean brought home self-evaluation sheets and he said he didn't have to fill one out for Science" (Mrs. McIsaac/Reid/I; C+); "If you had asked me about Mrs. Hurley's class I would have said "Yes", but in this class, I don't think his teacher would get them to do a self-evaluation" (Mr. Marsden/Szabo/I; B). Because these parents did not believe their children completed self-evaluations, they felt they could not be part of the letter grade. Mrs. Downey was the only parent who thought her child completed a self-evaluation for Science 9 that was included as part of the letter grade: "I think Mr. Reid does have them do one, so I guess he would consider it a little bit" (Mrs. Downey/Reid/I; C).

Learning Journal

Teachers' Views

Four of the five teachers indicated on their questionnaires that they had not considered learning journals when determining letter grades. Only David Turner's students maintained, what he viewed to be, a learning journal:

⁷⁴ Two parents from Wade Mitchell's class, two from David Turner's, one from Henry Szabo's, and two from Robert Reid's.

⁷⁵ One parent from Robert Reid's class.

I have the students keep a journal sometimes. We'll look at a video and I'll ask for an impression based on the video. Or just, like, a general impression of the whole term. Like, what was your favorite part of Biology? What was your least favourite part? (David Turner/I)

David was the only teacher to indicate on his questionnaire that he considered learning journals when determining letter grades in Science 9 the previous term. However, he explained to me that he did not allocate a set percentage to a student's learning journal and then factor it into the letter grade, but considered a student's learning journal, along with other information about a student such as their behaviour and attendance, when a letter grade was borderline to determine if he should "bump" up the letter grade.

Students' Views

In all, only five (12%) students indicated on their questionnaires that they believed the teacher had considered their learning journal when determining their letter grade;⁷⁶ however, none of the interviewed students believed this to be the case (see Table 11, p. 158). During the interviews, the students explained that they knew that the teacher had not considered their learning journal when determining their letter grades because they did not keep a journal in Science 9; "We don't do one" (Emily/Mitchell/I; A); "We didn't have one of those" (Tonya/Szabo/I; C+); "We haven't done one of those in science" (Sean/Reid/I; C+).

Parents' Views

Three (14%) parents,⁷⁷ including one (14%) of the interviewed parents,⁷⁸ indicated that they believed the teacher had considered their child's learning journal when determining their child's letter grade (see Table 11, p. 158). The majority of the parents I spoke with did not believe the teacher had considered learning journals as part of the letter grade because, as far as they knew, their children did not keep learning journal in science: "I've never seen a learning journal, so I presume it's not there in the letter grade" (Mr. Marsden/Szabo/I; B); "I know what

⁷⁶ One student from Wade Mitchell's class, one from David Turner's, two from Elena Kovac's, and one from Henry Szabo's.

⁷⁷ One parent from David Turner's class, one from Henry Szabo's, and one from Robert Reid's.

⁷⁸ One parent from Robert Reid's class.

a learning journal is, but as far as I know they don't do one in science" (Mrs. Black/Szabo/I; C). Mrs. Downey, the only parent I spoke with who had circled "Yes" to learning journal on the questionnaire, decided that a learning journal could not have been part of her son's letter grade because he did not keep one in Science 9: "I know he does one for another class, but not for science, so it couldn't be part of his mark" (Mrs. Downey/Reid/I; C).

Learning Ability

Teachers' Views

According to their questionnaire responses, none of the teachers considered learning ability when determining a student's letter grade. Wade Mitchell did not consider a student's learning ability when determining a letter grade because he found learning ability difficult to measure: "I find that a really subjective thing. Like, how much ability do they really have? Do we ever know?" (Wade Mitchell/I). Elena Kovac expressed a similar point of view: "It think it is very difficult to accurately assess ability" (Elena Kovac/I). These two teachers cited the difficulty of assessing learning ability as the reason they did not consider it when determining letter grades.

Henry Szabo did not consider learning ability as part of the letter grade because he did not believe it was fair to the student:

I try not to do that because I don't think that's fair to consider a kid's learning ability. I don't think that's fair. However, the comments will reflect it, "Bobby got a 'B', while slacking off, doing very little work and being a nuisance in class." And the kid who gets the same "B" who has worked hard will get the comment, "This kid has worked exceptionally well to achieve this level". But I'm not willing to put that into a letter grade. (Henry Szabo/I)

Henry communicated information about a student's learning ability via a written comment.

Although neither Robert Reid nor David Turner explicitly factored learning ability into the letter grade, they assessed and evaluated students identified (by the school) as learning disabled somewhat differently from the other students in the class. For instance, David did not consider the same types of grading information for students with identified learning disabilities

as he did for student without disabilities: "If students in the CELD [Career Education and Learning Disabled] program have a hard time writing things down or keeping a notebook up, that may not be a component of their mark" (David Turner/I). Robert also considered different types of grading information for different students in his class: "In this class, I have four learning assistance kids that are on a separate program. Their assessment is different than the rest of the class. Like, they don't write tests because they just can't do them" (Robert Reid/I). In addition to assessing students with identified learning disabilities somewhat differently from those without learning disabilities, Robert explained how his perception of a student's ability might affect a letter grade when that grade was "borderline":

I get students in the class who obviously have a great deal of skill and they bring with them a great deal of knowledge, a great deal of ability into the classroom, but once they get here, they don't show it. And if they were on the borderline — they were a "C+"/"B" — they would get a "C+". And the opposite applies, too. If a student who doesn't have a great deal of skill works hard is borderline that [ability] would factor in as sort of a bump. (Robert Reid/I)

Robert compared his perception of a student's learning ability to his or her achievement in class to make a decision about a borderline letter grade.

Students' Views

Twenty-four (56%) students,⁷⁹ including 10 (63%) of the interviewed students,⁸⁰ indicated on their questionnaires that they believed their teacher considered their learning ability when determining their letter grades (see Table 11, p. 158).

All of the students I spoke with from Wade Mitchell's class seemed to understand the term "learning ability". Only Jackie indicated on her questionnaire that she thought learning ability had been considered as part of the letter grade; however when interviewed, she observed: "No. Oh, no. He doesn't consider your learning ability when he gives you your grade, but I think it might affect how he treats some of the students, like, if someone has trouble learning or

⁷⁹ Four students from Wade Mitchell's class, four from David Turner's, one from Elena Kovac's, seven from Henry Szabo's, and eight from Robert Reid's.

⁸⁰ One student interviewed from Wade Mitchell's class, five from Henry Szabo's, and four from Robert Reid's.

something. ... If we can't understand as well, he will help us more help" (Jackie/Mitchell/I; C-). Jackie believed that a student's learning ability might affect the teacher's relationship with that student, but would not be explicitly factored into a letter grade.

The students I spoke with from Henry Szabo's class were varied in their opinions as to whether or not learning ability had been considered as part of the letter grade. Several students indicated "Yes" to learning ability on their questionnaires, and reiterated this point of view when I spoke with them. However, when asked to explain how their teacher considered learning ability when determining letter grades, like Adam, they had difficulty doing so: "I don't know how he does it. Like, I just think he does for some people" (Adam/Szabo/I; B). Walley was one of the students who answered "Yes" to learning ability, but said during their interviews that they thought their teacher would probably write a comment about it rather than consider it as part of the letter grade: "Well, if someone isn't quite as smart, and they try harder and they do better, I think he's probably going to write something about it on your report card" (Walley/Szabo/I; D). Angel explained that she had answered "Yes" on her questionnaire because she felt a student's ability affects how a teacher helps a student learn but not the letter grade: "Like, if you have trouble on it, like, if you have a disability, like, he'd get you some help like a tutor or something, but I don't think it's part of our mark" (Angel/Szabo/I; Incomplete). Olivia's perspective was unique: "No, because there are students in our class that have a harder time learning, but he kind of embarrasses them in front of the class so they'll try and work harder. So, I don't really think he takes into consideration if we have a hard time learning or not" (Olivia/Szabo/I; B). Olivia said that she answered "No" on her questionnaire because she felt her teacher's interaction with some students indicated that he did not take their learning abilities into consideration:

Robert Reid's students also differed in their opinions as to whether or not learning ability was part of the letter grade. Sean, for example, thought that his teacher might reward a student who outperformed their perceived ability: "I think he does [consider learning ability], yeah. I'm not sure, but I think uses his own judgment so that someone whose abilities are lower but does

better, I think they may get a higher mark” (Sean/Reid/I; C+). On the other hand, Jennifer was aware that some of the students in her class were taking a different program from her: “Yeah, I think so, usually. Like, we have two separate — like we have one science class, but there’s two groups. Like, we’ve got the ones that are working in the not so hard book and we’ve got the regular textbook, and I think he marks us differently” (Jennifer/Reid/I; B). Jennifer felt students from the two groups within her Science 9 class were graded differently by the teacher. The other students I spoke with from Robert’s class were unable to explain why they had answered “Yes” to learning ability on the questionnaire, nor how the teacher might consider it: “Um, I don’t know about learning ability. I’m not sure if it counts. I can’t really say” (Justin/Reid/I; B).

Parents

Nine (43%) parents,⁸¹ including four (57%) who were interviewed,⁸² indicated on their questionnaires that they believed the teacher considered a child’s learning ability when determining a letter grade (see Table 11, p. 158).

Mrs. Knight was one of two parents who thought Henry Szabo might reward a “slower student” who worked hard by passing them: “He may take into consideration the learning ability of a slower child who works hard. If they are putting out the effort — and sure maybe they can’t verbalize or maybe they haven’t got the hand-eye coordination — but if they are striving, he’d probably give them a pass” (Mrs. Knight/Szabo/I; C+). Other parents, however, did not think Henry took learning ability into consideration; Mr. Marsden’s comment summarizes what these parents had to say:

Ability shouldn’t be considered because you are marking a test, not his ability to learn it. Henry hasn’t given me any information specifically about learning ability, but I would presume it’s a percentage based on test scores — taking in certain other factors — but measurable things so the teacher can say why a student got an “A”, why he got a “B”. (Mr. Marsden/Szabo/I; B)

⁸¹ Two parents from Wade Mitchell’s class, four from Henry Szabo’s, and three from Robert Reid’s.

⁸² Two parents interviewed from Henry Szabo’s class and two from Robert Reid’s.

Like, Mr. Marsden, some parents, who did not think learning ability was taken into consideration, felt that Henry based a letter grade on what a student produced, not on their learning ability.

Like some of Henry's parents, two parents thought Robert Reid might reward students of lesser ability who worked hard: "I think he might boost a kid's mark, if they're slow but work real hard in class" (Mrs. Downey/Reid/I; C); "If a child had difficulty in school, say, a reading problem, but they've put out a lot of effort and really try hard, I think that they might be given a higher mark for their effort" (Mrs. McIsaac/Reid/I; C+). Mrs. McIsaac also thought Robert might penalize a strong student who did not work: "And, again, the opposite comes in — if someone that has no problems learning [and] does nothing, they're probably going to get a worse mark from the teacher" (Mrs. McIsaac/Reid/I; C+). Mr. Li, who answered "No" to learning ability, felt students' letter grades were based on what they produced, not on their ability: "No, I don't think you can include ability in the letter grade. It's what they do, their worksheets and tests" (Mr. Li/Reid/I; A).

Work Portfolio

Teachers' Views

None of the teachers indicated on their questionnaires that they considered a student's work portfolio when they determined a letter grade in Science 9. When interviewed, four teachers explained that they did not consider portfolios because their students did not keep them. Only Elena Kovac's students kept work portfolios:

What I have done is ... I have the students put their work in folders. That's their portfolios. Now, it's available for parents anytime they want to come in and talk to me about the student for our conferencing because the parents can see the quality of the student's work. Also, it helps me to go over the information with the student anytime and not have to rely on what they have at home. And, of course, if they want to do a re-test, they have access to all the information and we can go through it one-on-one and I can tell what they need to study, how they need to improve in order to achieve the grade that they are striving for. (Elena Kovac/I)

Elena did not assess a student's work portfolio for the purpose of determining a letter grade; instead, a portfolio was used as a repository so that student work was readily available for review by the students, parents, and teacher.

Students' Views

In all, only 10 (23%) students,⁸³ including three (19%) of the 16 who were interviewed,⁸⁴ indicated on their questionnaires they believed the teacher had considered their work portfolio when determining letter grade. Based on their questionnaire responses, it appears as though the majority of students knew that portfolios were not part of the letter grade (see Table 11, p. 158).

Three students from Wade Mitchell's class — the only students I spoke with who circled "Yes" to work portfolios on their questionnaires — explained that they were unsure about the meaning of the term "work portfolio". When they were clear about the meaning of the term, they decided that they should probably have answered "No" instead of "Yes": "I thought [work portfolio] meant lab work. We don't have them, so I'd have to change that to 'No'" (Emily/Mitchell/I; A); "Oh, I don't have one for science. It [the questionnaire response] should have been 'No'" (Kim/Mitchell/I; A).

Students who explained why they had indicated "No" on their questionnaires, said that they did not maintain portfolios in Science 9: "We don't even have one" (Heather/Szabo/I; B); "We have them in English and socials, but we don't in science" (Jennifer/Reid/I; B). Because the students knew they did not keep work portfolios for Science 9, they knew they could not be part of the letter grade.

⁸³ Five students from Wade Mitchell's class, one from David Turner's, one from Elena Kovac's, two from Henry Szabo's, and one from Robert Reid's.

⁸⁴ Three students interviewed from Wade Mitchell's.

Parents' Views

Five (24%) parents,⁸⁵ including three (43%) of the parents who were interviewed,⁸⁶ indicated on their questionnaires that they believed the teacher had considered work portfolios when determining letter grades (see Table 11, p. 158).

All of Henry Szabo's parents said that they were familiar with work portfolios, however, none of them thought their children maintained portfolios for Science 9: "I've never seen her with a portfolio of any kind at all" (Mrs. Knight/Szabo/I; C+); "I don't believe that they do one in science here, so I said 'No' because they don't have one. I haven't seen too much of that in high school" (Mrs. Black/Szabo/I; C). Because these parents did not think their children kept work portfolios in Science 9, they had answered "No" to work portfolios on their questionnaires.

The three parents I spoke to from Robert Reid's class were familiar with work portfolios, however, they said they did not know if they were kept in Science 9. Mrs. Downey's comment is a good example of what these parents had to say when I interviewed them: "I know he has one in English. I'm not sure if he has one in science, but I thought if he did, it would count for the report card. That's why I said 'Yes'" (Mrs. Downey/Reid/I; C). During their interviews, the parents who had answered "Yes" on their questionnaires each decided a work portfolio could not have been part of the letter grade because their child had not kept one for Science 9. In the end, none of the parents who were interviewed believed that work portfolios had been part of the letter grade.

Summary

In the first part of this chapter, questionnaire data were used to identify the grading components teachers incorporate into Science 9 letter grades, and the grading components students and parents believe teachers incorporate into letter grades.

⁸⁵ Two parents from Wade Mitchell's class and three from Robert Reid's.

⁸⁶ Three parents from Henry Szabo's class.

The analyses and discussion of the questionnaire data indicate that the grading components incorporated into a Science 9 letter grade, as well as the supposed weights given to those components, varied from teacher to teacher. Nevertheless, all of the teachers said that they considered, and heavily weighted, test results, lab assignments, and homework. Teachers' comments concerning the weighting of different grading components point out a commonly-held misconception; that is, how much something (e.g., test, quiz, lab assignment) "counts" depends on what it is out of. Their comments show that they believe that, for example, a test out of "60" counts more than one out of "40". However, this is not necessarily the case, because it is the standard deviation of a set of scores generated by an assessment device that determines how much it "counts", not what the device was out of. Furthermore, when a teacher gives a score of "zero" ("0") to a student who missed a test, or an assignment, it has a tremendous effect on the standard deviation of that set of scores making those scores count more than a set of scores without zeroes.

All of the teachers indicated that they considered the non-achievement factor, effort/work habits, when grading students, albeit to a much lesser extent than they did test results, lab assignments, and homework. Other non-achievement factors such as attitude, participation, and behaviour were less often incorporated into a Science 9 letter grade. Moreover, information collected about students based upon "authentic" assessment methods (i.e., work portfolio, self-assessment, learning journal, performance tasks) was rarely, if ever, incorporated into a letter grade by the teachers.

The questionnaire results indicated that, for the most part, students appeared to be knowledgeable — that is, they showed high agreement with their science teacher — about the grading components most commonly used, and supposedly heavily weighted, by their teacher (i.e., test results, lab assignments, homework). Their questionnaire responses show that students also agreed that their teacher considered effort/work habits when determining their letter grade, but did not consider learning journals or work portfolios. Students showed less agreement with their teacher about less commonly used grading components; that is, those that

contributed only slightly to the letter grade, or those components incorporated into a Science 9 letter grade by only a minority of the teachers. Except for project work, such information falls into two categories: information about student performance based on authentic assessments (i.e., self-evaluation, performance tasks); and information about students related to non-achievement factors (i.e., attendance, participation, attitude, behaviour, learning ability).

Based on their questionnaire responses, parents also appeared to be knowledgeable about the most commonly used and heavily weighted components of Science 9 letter grades — test results, lab assignments, and homework. Also like the students', parents' responses indicated that they agreed with the teacher that effort/work habits were part of a letter grade. Most parents knew that learning journals and work portfolios were not part of the letter grade, but they seemed less knowledgeable about grading components not often included in a letter grade such as project work, participation, attitude, and behaviour.

In the second part of the chapter, interview data were used to verify and clarify participants' questionnaire responses. The descriptions of participants' viewpoints based on the interview data (and to a much lesser extent comments written on the questionnaires) highlight a number of interesting points. To begin with, the interview data highlight the similarities and differences in teachers' grading practices. Teachers' use of test results in determining letter grades serves as a good example of one similarity in their practices. Teachers were similar in that they tended to base a large proportion of a letter grade on a number of tests (exams) and quizzes administered throughout a term. Moreover, quizzes tended to be short and limited to a single topic or concept, while tests were longer than quizzes and often covered an entire chapter or unit, and, for the most part, tests accounted for a larger portion of the letter grade than did quizzes. Teachers' use of the grading component, effort/work habits, serves as a good example of one difference in their grading practices. Although, all five teachers indicated on their questionnaires that they considered effort/work habits when determining letter grades, the ways in which they were considered varied considerably: effort/work habits were explicitly factored

into a letter grade, were considered only in borderline cases, were incorporated into the work habits rating, or were addressed in a written comment.

Likewise, the interview data also highlight some similarities and differences among students' and parents' beliefs about the components of letter grades. For example, students and parents tended to share the belief that test results contributed significantly to a letter grade, however, their beliefs about some of the other grading components of a letter grade often differed. A case in point, students' beliefs about how effort/work habits were incorporated into letter grades differed in several ways: some believed they were explicitly factored into the letter grade; some believed that they influenced the grade because they affected the amount of work done by a student, but were not factored into the letter grade; and some believed that they were addressed by the teacher in a written comment or work habits rating. Parents' beliefs about effort/work habits paralleled those of the students.

As I endeavoured to verify participants' questionnaire responses during their interviews, their comments highlighted several problems with the questionnaire items. First, the meanings of the grading components were unclear to some participants. For example, like me, teachers viewed "project work" to be longer-term assignments such as science fair or library projects, while many of the students and parents viewed both longer-term and daily written assignments to be "project work". Discrepancies in the meanings attributed to a grading component listed on the questionnaire could account for some of the differences between the teachers' questionnaire responses and those of the students and the parents. Moreover, because there is evidence that participants attributed different meanings to some of the grading components, there is reason to believe that they might not have consistently answered some of the questionnaire items.

Second, some participants did not always base their questionnaire responses on the letter grade per se. Instead, they sometimes based a response upon information presented elsewhere on the report card. For example, some people answered "Yes" for "attendance" because attendance is recorded on the report card, not because they believed it was factored into the letter grade.

Third, the wording of the question *What types of information do you think the teacher considered when determining a letter grade in Science 9 the previous term?* was problematic. I asked this question because I wanted to find out which components participants believed were incorporated, or factored into, a Science 9 letter grade. However, some people indicated “Yes” for a grading component on their questionnaires, not because they believed it was “factored into” a letter grade, but because they believed it “affected” the letter grade. Attitude is a good example of a such a component. During their interviews, a number of students (and parents) explained that they had selected “Yes” for attitude because they believed a student’s attitude could affect the work done by the student which, in turn, could affect the letter grade. Other students and parents suggested that, whether it be good or bad, a student’s’ attitude might affect how a teacher marked a student’s work. As a result of my research, I now know that I should have worded the question differently to ensure that people’s responses meant that they believed the component was directly incorporated into a letter grade.

Fourth, there were errors and omissions in the list of grading components on the questionnaires. For example, I erred when I lumped “effort” and “work habits” together. I did this because, as a teacher, I always viewed the two terms as being synonymous. However, I found out that some people see them as being very distinct. Listing both effort and work habits on the questionnaires would have allowed participants to respond to each one separately rather than together. In addition, I neglected to provide a way for respondents to indicate whether or not “daily written assignments” (e.g., worksheets, problem sets, review questions) were part of a letter grade. My discussions with participants revealed that they considered daily written assignments to be part of the grading component “homework”, however, this omission might have made the grading components section of the questionnaire difficult for some respondents.

The results presented in this chapter help us better understand the components of Science 9 letter grades and students’ and parents’ beliefs about the components of letter grades. They also help identify several problems concerning the questionnaire items used to collect some of the data of this study.

CHAPTER 8

MEANINGS ATTRIBUTED TO SCIENCE 9 LETTER GRADES

In this chapter, I present the outcomes of the analyses of the questionnaire and interview data collected for the purpose of answering the following question:

What meanings do teachers, students, and parents attribute to Science 9 letter grades?

One assumption of this study is that to communicate effectively, people must give the same meanings to the words and symbols used to convey information. To find out what teachers intend a Science 9 letter grade to mean — and what meanings students and parents attribute to a letter grade — participants were asked to select from a list of 10 statements the ones they believed described the meaning of a Science 9 letter grade.

The meaning statements are intended to describe different comparison bases a teacher might use when assigning letter grades. The statements listed on the questionnaires were included because measurement specialists (e.g., Cunningham, 1986; Hills, 1981; Worthen et al., 1993) assert that teachers use a basis for comparison when assigning letter grades to indicate how well a student has performed in a course. Therefore, another assumption of this study is that the basis for comparison adopted by a teacher gives meaning to the letter grades assigned; that is, the basis for comparison determines the meaning to be attributed to a letter grade. Furthermore, it is assumed that when the comparison basis is clearly articulated and made explicit by the teacher, students and parents will interpret a letter grade in the way intended by the teacher. For example, if a teacher says that she assigns letter grades by ranking and comparing the performances of the students in her class, the basis for comparison is the other students in the class, and the letter grade should be interpreted to mean that it shows how well the student has done in comparison with other students. When the meaning of a letter grade is clear to the teacher, students, and parents, a letter grade can be an effective way to communicate information about student performance in school.

When the data were collected for this study, BCME documents (e.g., BCME, 1986). stated that a letter grade was to show a student's progress in comparison with the widely held expectations for the subject/course/grade/level at which the student is working. Letter grades, therefore, were to be criterion-referenced, and teachers were expected to use the *widely held expectations for the subject/course/grade/level at which the student is working* as the basis for comparison for student achievement when assigning letter grades. Letter grades were not to be defined in norm-referenced terms, as they had been prior to 1981, and other students were not to be used as the basis of comparison for assigning letter grades.

The remainder of this chapter is divided into two sections. In the first section, the participants' questionnaire responses are summarized and discussed. In the second section, the interview data are used to help us better understand the participants' questionnaire responses.

Meanings Attributed to Science 9 Letter Grades: Questionnaire Data

The purpose of this section is to discuss the meanings attributed to letter grades by the participants as indicated by their responses to the questionnaire items. Table 13 displays the 10 meaning statements, the basis for comparison described by each meaning statement, and the number and proportion of teachers, students, and parents choosing "Yes" for each statement. Teachers', students', and parents' responses are discussed separately below.

Meanings Attributed by Teachers

According to the questionnaire results shown in Table 13, all five teachers intended a letter grade to show how a student compared to their expectations for students studying Science 9 (basis for comparison is an absolute standard); that is, they attributed a criterion-referenced meaning to a letter grade. In addition, four out of the five teachers indicated that they intended a letter grade to show how well a student can do Science 9 (basis for comparison is ability), how much Science 9 a student knew at the end of the reporting period (basis for comparison is achievement), and how hard a student tried to learn Science 9 (basis for comparison is effort). At the same time, only two teachers indicated that they intended a letter

grade to show how well a student compared to other students taking the same course whether they be in the same class, school, school district, or province (basis for comparison is other students); in other words, they attributed a norm-referenced meaning to a letter grade. Based on their questionnaire responses, the teachers attributed a variety of meanings to the letter grades they assigned in Science 9.

**Table 13 Meanings Attributed to Science 9 Letter Grades:
Questionnaire Results**

| The teacher intended the letter grade to show ... | Basis for Comparison | Number and (Percent) saying "Yes" | | | | |
|---|----------------------|-----------------------------------|--------------|--------------|--------------|-------------|
| | | Teachers (n=5) | Students | | Parents | |
| | | | Q* (n=43) | I† (n=16) | Q* (n=21) | I† (n=7) |
| how a student compared to teacher's expectations for students studying Science 9. | absolute standards | 5 (100) | 23 (53) | 8 (50) | 15 (71) | 5 (71) |
| how hard a student tried to learn Science 9. | effort | 4 (80) | 33 (77) | 13 (81) | 14 (67) | 4 (57) |
| how well a student can do Science 9. | ability | 4 (80) | 33 (77) | 14 (88) | 13 (62) | 4 (57) |
| how much Science 9 a student knew at the end of the reporting period. | achievement | 4 (80) | 32 (74) | 14 (88) | 14 (67) | 5 (71) |
| how much a student improved in Science 9 from the beginning to the end of reporting period. | improvement (growth) | 2 (40) | 36 (84) | 13 (81) | 13 (62) | 4 (57) |
| how a student compared to standards set by the Ministry of Education for Science 9. | absolute standards | 2 (40) | 26 (60) | 12 (75) | 6 (29) | 1 (14) |
| how well a student did in Science 9 compared to other students in the class. | other students | 2 (40) | 17 (40) | 6 (38) | 8 (38) | 3 (43) |
| how well a student did in Science 9 compared to other students in the province. | other students | 2 (40) | 12 (28) | 5 (31) | 1 (5) | 1 (14) |
| how well a student did in Science 9 compared to other students in the school district. | other students | 2 (40) | 9 (21) | 3 (19) | 4 (19) | 2 (29) |
| how well a student did in Science 9 compared to other students in the school. | other students | 2 (40) | 12 (28) | 5 (31) | 7 (33) | 3 (43) |

* Number (and percentage) of all respondents answering "Yes" on questionnaires.

† Number (and percentage) of interviewed respondents answering "Yes" on questionnaires.

Table 14 (p. 223) shows the meaning statements each of the teachers selected on their questionnaires, and the numbers of students and parents who agreed with the science teacher about the meaning of the letter grade (i.e., the table shows the numbers of students and parents who selected the same response option ["Yes" or "No"] as the teacher for each meaning

statement). This table shows that the teachers attribute multiple meanings to the letter grades they assign in Science 9. Indeed, all of them selected the “Yes” option for at least three of the statements, and one selected “Yes” for all 10 of them. It would seem, then, that the teachers attributed many meanings to the letter grades they assigned.

Table 14 Agreement of Students and Parents with Science Teacher About Intended Meaning of Science 9 Letter Grade: Questionnaire Data

| | Teacher Response (Y or N) and Number of Students and Parents Agreeing with Teacher | | | | | | | | | | | | No. & (%) in Agreement With Teacher | | | | |
|--|--|----|---|--------------|---|---|-------------|---|---|-------------|----|---|-------------------------------------|----|---|---------|---------|
| | Wade Mitchell | | | David Turner | | | Elena Kovac | | | Henry Szabo | | | Robert Reid | | | S | P |
| | T | S | P | T | S | P | T | S | P | T | S | P | T | S | P | | |
| Intended Meaning (n=) | | 10 | 4 | | 6 | 2 | | 3 | 3 | | 14 | 8 | | 10 | 4 | 43 | 21 |
| how student compared to teacher expectations | Y | 3 | 3 | Y | 4 | 1 | Y | 1 | 3 | Y | 9 | 6 | Y | 6 | 2 | 23 (53) | 15 (71) |
| how hard student tried to learn Science 9 | Y | 9 | 2 | N | 2 | 1 | Y | 3 | 3 | Y | 9 | 5 | Y | 8 | 3 | 31 (72) | 14 (67) |
| how well student can do Science 9 | Y | 8 | 2 | Y | 5 | 1 | Y | 3 | 2 | N | 4 | 2 | Y | 7 | 2 | 27 (63) | 9 (43) |
| how much Science 9 the student knew | N | 2 | 1 | Y | 4 | 1 | Y | 2 | 2 | Y | 10 | 6 | Y | 8 | 2 | 26 (60) | 12 (57) |
| how much a student improved | N | 0 | 2 | N | 1 | 0 | Y | 2 | 2 | N | 1 | 4 | Y | 6 | 3 | 10 (23) | 11 (52) |
| how student compared to Ministry standards | N | 4 | 3 | Y | 3 | 1 | Y | 2 | 2 | N | 5 | 7 | N | 4 | 3 | 18 (42) | 16 (76) |
| how student compared to others in class | N | 6 | 3 | Y | 2 | 1 | Y | 1 | 3 | N | 9 | 7 | N | 5 | 2 | 23 (53) | 16 (76) |
| how student compared to others in province | N | 6 | 4 | Y | 2 | 0 | Y | 0 | 0 | N | 11 | 8 | N | 7 | 3 | 26 (60) | 15 (71) |
| how student compared to others in district | N | 7 | 4 | Y | 1 | 0 | Y | 0 | 2 | N | 11 | 7 | N | 8 | 3 | 27 (63) | 16 (76) |
| how student compared to others in school | N | 7 | 4 | Y | 1 | 1 | Y | 0 | 3 | N | 10 | 7 | N | 6 | 2 | 24 (56) | 17 (81) |

Note. The table shows the numbers of students and parents who selected the same response option (“Yes” or “No”) as the teacher for each meaning statement.

T = teacher; S = students; P = parents; Y = Yes; N = No.

To better understand the teachers’ questionnaire responses, and because all of them selected “Yes” for more than one meaning statement, the response patterns for several pairs of

meaning statements are compared in Table 15 (p. 225).⁸⁷ There are numerous possible response combinations for the 10 meaning statements, however for illustrative purposes, only three pairs of meaning statements are compared here.

The first comparison shown in Table 15 contrasts the statements, *It shows how much Science 9 a student knew at the end of the reporting period* and *It shows how well a student compared to the teacher's expectations for students studying Science 9*. These two statements are contrasted because their meanings are logically compatible with each other in that it is possible for a teacher to assign a letter grade that reflects student achievement compared to their expectations. Four teachers indicated on their questionnaires that they attributed both of these meanings to a letter grade.

The second comparison shown in Table 15 contrasts the statements, *It shows how well a student did in Science 9 compared to the other students in the class* and *It shows how a student compared to the teacher's expectations for students studying Science 9*. These two statements are contrasted because norm-referenced and criterion-referenced grading systems are commonly used by teachers (Worthen et al., 1993); measurement specialists argue that teachers should not try to combine norm-referenced and criterion-referenced frames of references when determining a letter grade (Stiggins et al., 1989); and is it the policy of the BCME that criterion-referenced, not norm-referenced, grading is to be used in B.C. (BCME, 1994a). Three teachers indicated on their questionnaires that they intended a letter grade to show how well a student has done compared to their expectations but not to other students in the class, and two intended their letter grade to show how well a student has done in relation to both their expectations and to other students. Based on these results, some of the teachers attributed both norm-referenced and criterion-referenced meanings to their letter grades — meanings that are possibly logically incompatible with one another.

⁸⁷ This approach to analyzing the questionnaire data is based on the work of Waltman and Frisbie (1993; 1994) who grouped, classified, and contrasted their data to better understand the responses of the people in their study.

Table 15 Comparison of Contrasting Intended Meaning of Letter Grade Statements: Questionnaire Results

| Responses Given to Contrasting Meaning Statements | Number and (Percent) with Response Pattern | | |
|--|--|-----------------|----------------|
| | Teachers (n=5) | Students (n=43) | Parents (n=21) |
| "Achievement"* versus "Teacher Expectations"† | | | |
| "Yes" to "Achievement" and "No" to "Teacher Expectations" | 0 (0) | 14 (33) | 4 (19) |
| "No" to "Achievement" and "Yes" to "Teacher Expectations" | 1 (20) | 5 (12) | 5 (24) |
| "Yes" to "Achievement" and "Yes" to "Teacher Expectations" | 4 (80) | 18 (42) | 10 (48) |
| "No" to "Achievement" and "No" to "Teacher Expectations" | 0 (0) | 6 (14) | 2 (10) |
| "Others in Class"** versus "Teacher Expectations" | | | |
| "Yes" to "Others in Class" and "No" to "Teacher Expectations" | 0 (0) | 6 (14) | 2 (10) |
| "No" to "Others in Class" and "Yes" to "Teacher Expectations" | 3 (60) | 12 (28) | 9 (43) |
| "Yes" to "Others in Class" and "Yes" to "Teacher Expectations" | 2 (40) | 11 (26) | 6 (29) |
| "No" to "Others in Class" and "No" to "Teacher Expectations" | 0 (0) | 14 (33) | 4 (19) |
| "Student Effort"†† versus "Teacher Expectations" | | | |
| "Yes" to "Student Effort" and "No" to "Teacher Expectations" | 0 (0) | 17 (40) | 3 (14) |
| "No" to "Student Effort" and "Yes" to "Teacher Expectations" | 1 (20) | 7 (16) | 4 (19) |
| "Yes" to "Student Effort" and "Yes" to "Teacher Expectations" | 4 (80) | 16 (37) | 11 (52) |
| "No" to "Student Effort" and "No" to "Teacher Expectations" | 0 (0) | 3 (7) | 3 (14) |

* Achievement meaning statement: It shows how much Science 9 a student knew at the end of the reporting period.

† Criterion-referenced meaning statement: It shows how a student compared to the teacher's expectations for students studying Science 9.

** Norm-referenced meaning statement: It shows how well a student did in Science 9 compared to the other students in the class.

†† Effort meaning statement: It shows how hard a student tried to learn Science 9.

For the third comparison, the statements *It shows how a student compared to the teacher's expectations for students studying Science 9* and *It shows how hard a student tried to learn Science 9* are compared. This comparison is shown because four of the teachers in the study indicated that they intended a letter grade to show how a student compared to their expectations, and because measurement specialists assert that some teachers use effort as a basis for comparison when they assign letter grades (e.g., Worthen et al., 1993). Table 15 shows that one teacher intended the letter grade to show how well a student had done compared to teacher expectations, but not how hard a student tried to learn; and, four of the five teachers attributed both meanings to their letter grade.

According to the above comparisons, some of the teachers attributed multiple, and possibly incompatible, meanings to the letter grades they assigned in Science 9.

Meanings Attributed by Students

Based on their questionnaire responses, a majority of the students believed that their letter grades showed how much they had improved in Science 9 from the beginning to the end of the reporting period (36 students or 84%) (see Table 13, p. 222). In addition, a majority of them indicated that their letter grade showed how well they can do Science 9 (33 students or 77%); how much they tried to learn Science 9 (33 students or 77%); how much Science 9 they knew (32 students or 74%); and how they compared to BCME standards (26 students or 60%). Only about half of the students (23 students or 53%) indicated on their questionnaires that they believed their letter grade showed how they compared to their teacher's expectations for students studying Science 9.

Table 14 (p. 223) shows the number of students who agreed with their Science 9 teacher about the meaning of their letter grade (i.e., the table shows the number of students who selected the same response option ["Yes" or "No"] as the teacher for each meaning statement). It can be seen from the table that the students' beliefs about the meaning of a letter grade in Science 9 varied somewhat from their teachers' beliefs — the overall response agreement between students and their teachers ranged from a low of 23% to a high of 72%. Although all five teachers said that the letter grade showed how a student compared to their expectations for students studying Science 9, only 23 (53%) students gave the same response as their teacher to this meaning statement. Many of the students agreed with their teacher about the meaning statement, *It shows how hard a student tried to learn Science 9* — 31 (72%) students gave the same response as their teacher for this meaning statement. Somewhat fewer students agreed with their science teacher about whether or not a letter grade showed how well a student had done compared to other students in the class, school, district, or province — anywhere from 23 (53%) to 28 (65%) gave the same responses as their teacher for these statements. They showed little agreement about the meanings statement, *It shows how much a student improved in*

Science 9 from the beginning to the end of the reporting period — only 10 (23%) of the students gave the same response as their science teacher.

Like their teachers, students attributed more than one meaning to a Science 9 letter grade (see Table 15, p. 225). Also, like their teachers, they attributed meanings that were possibly logically incompatible with one another. For example, six students (14%) indicated that their letter grade showed how well they had done compared to the other students in the class, but not to the teacher's expectations; 12 (28%) indicated that it showed how well they had done compared to the teacher's expectations, but not to other students; 11 (26%) indicated that it showed how they compared to both the students in the class and the teacher's expectations; and 14 (33%) indicated that it did not show either. Similar results can be seen when the response patterns of the students for the teacher expectations and effort meaning statements are compared.

Meanings Attributed by Parents

The questionnaire data show that, like the teachers and students, the parents attributed multiple meanings to letter grades, meanings that varied from parent to parent, and meanings that might be incompatible with one another (e.g., some attributed both norm-referenced and criterion referenced meanings to the same letter grade).

Table 13 (p. 222) shows that, according to their questionnaire responses, a majority of the parents selected "Yes" for five of the intended meaning statements: 15 (71%) parents believed that a letter grade showed their child compared to the teacher's expectations; 14 (67%) believed that it showed how hard their child tried to learn Science 9; 14 (67%) believed that it showed how much their child knew at the end of the reporting period; 13 (62%) believed that the letter grade showed how well their child can do Science 9; while 13 (62%) believed that it showed how much their child improved from the beginning to the end of the term. Only a minority of the parents believed that a letter grade showed how their child compared to other students, or to standards set for Science 9 by the BCME.

Parents' beliefs about the meaning of a Science 9 letter grade also differed somewhat from their child's teacher. As Table 14 (p. 223) shows, the overall agreement between parents and teachers ranged from a low of 43% (nine parents gave the same response as their child's teacher for the meaning statement, *It shows how well a student can do Science 9*) to a high of 81% (17 parents gave the same response as their child's teacher about the meaning statement, *It shows how well a student has done in Science 9 compared to other students taking the same course in the school*).

Again, like the teachers and students, all of the parents attributed multiple, and seemingly incompatible, meanings to their child's letter grade (see Table 15, p. 225). For example, two parents (10%) indicated that the letter grade showed how well their child had done compared to the other students in the class, but not to the teacher's expectations; nine (43%) indicated that it showed how well their child had done compared to the teacher's expectations, but not to other students; six (29%) indicated that it showed how their child compared to both the students in the class and the teacher's expectations; and four (19%) indicated that it did not show either. At the same time, slightly more than half (11 or 52%) of the parents indicated that a letter grade showed both how hard their child worked in Science 9 and how their child compared to the teacher's expectations.

Meaning Attributed to Science 9 Letter Grades: Interview Data

Several interesting findings emerged from the preliminary analyses of the participants' responses to the meaning of letter grades questionnaire items. Specifically, some people seemed to attribute more than one meaning to a letter grade, some people attributed meanings that seemed incompatible with one another, some believed a letter grade shows how hard a student tried to learn, and some believed it shows how much a student had improved. I endeavoured to verify and clarify these findings as I conducted the interviews.

Letter Grade Compares a Student to Teacher Expectations

Teachers' views

When teachers assign letter grades, they may compare student performance to absolute standards such as their own expectations. In this study, all of the teachers indicated that they intended a letter grade to show how a student compared to their expectations for students studying Science 9 (see Table 13, p. 222).

The following excerpts illustrate some of the things the teachers had to say when they discussed this meaning statement:

[The letter grade] shows how a student compares to my expectations because there are the things that I think should be in the course — here's what the students are supposed to do, and I ask, how close did a student come to doing those activities? The standards are my standards. Like, this is what I think they should know in this classroom, and I hope it's transferable across the province. (Wade Mitchell/I)

I have overall expectations written down on a sheet that I use when I assign letter grades. But a lot of it is implicit, too, so I still need some sort of way to make them [my expectations] explicit to the kids. (Robert Reid/I)

I said "Yes" for that one because I look at how well my expectations, or the objectives I've set out, have been satisfied within a particular topic within the subject. (Elena Kovac/I)

None of the teachers said that they directly compared the information collected about student progress in Science 9 to a set of their own expectations, however, they did speak about having both explicit and implicit expectations for students studying Science 9 that guided what they taught and how they assessed and graded their students.

Students' views

According to their questionnaire responses, 23 (53%) students,⁸⁸ including eight (53%) of those who were interviewed,⁸⁹ believed the letter grade showed how well a student compared to the teacher's expectations for students studying Science 9 (see Table 13, p. 222).

Some students indicated on their questionnaires that their letter grade showed how they compared to their teacher's expectations, spoke about their teacher having specific expectations about what they as individual students could do, but did not speak about their teacher having a set of expectations for students studying Science 9: "I know that the teacher expected more than what I got because I think he knows that I can do better than 'C-'" (Bradley/Szabo/I; C-); "Like, for me, I think he set a level and I didn't reach that, so I didn't get a very good mark" (Sean/Reid/I; C+). Apparently, these students indicated "Yes" on their questionnaires because they felt that they had not done as well as the teacher expected them to. Heather, however, mentioned that her teacher had expectations for Science 9 students: "I just think that the teacher has expectations, and if I meet them, I'll get a good mark. ... He tells us his expectations when he gives us our work" (Heather/Szabo/I; B). Heather thought she knew what her teacher's expectations were, and felt that her mark showed how she compared to them.

Jennifer did not believe her letter grade showed how she compared to her teacher's expectations: "I think he just marked us on how we actually did and he never thought of anything else. Like, he just added up our marks" (Jennifer/Reid/I; B). Jennifer suggested that, to arrive at a letter grade, her teacher did nothing other than add up her marks; she did not believe he compared her to anything.

A number of students admitted that they really didn't understand the meaning statement: "I guess I'm confused about this one. I don't really know" (Ravi/Mitchell/I; A) "I don't kinda understand that one, sort of" (Angel/Szabo/I; Incomplete). Even after I explained what I meant

⁸⁸ Three students from Wade Mitchell's class, four from David Turner's, one from Elena Kovac's, nine from Henry Szabo's, and six from Robert Reid's.

⁸⁹ One student interviewed from Wade Mitchell's class, six from Henry Szabo's, and one from Robert Reid's.

by teacher expectations, these students were not sure if the letter grade showed how they compared to them.

Parents' views

Fifteen parents (71%),⁹⁰ including five (71%) of the seven who were interviewed,⁹¹ indicated on their questionnaires that the letter grade showed how their child compared to the teacher's expectations for students studying Science 9 (see Table 13, p. 222).

Most of the parents I interviewed answered "Yes" to teacher expectations on their questionnaires. Here are some of their comments:

Mm-hmm, that's what I think the letter grade is. That a child gets a "C+" because a teacher has certain expectations for all the students in the class and, at that level of accomplishment or output, he's going to give a "C+" grade for that.
(Mrs. McIsaac/Reid/I; C+)

Oh, that's guaranteed. If you meet these maximum expectations, you'll get an "A". If you're the middle-of-the-road, you get a "C", and so on.
(Mr. Marsden/Szabo/I; B)

Because the teacher has their own expectations and they are going to grade accordingly. (Mrs. Black/Szabo/I; C)

These parents believed that a teacher graded students according to what s/he believed Science 9 students should be able to do.

The two parents I spoke with who answered "No" to teacher expectations on their questionnaires had this to say: "No, [it doesn't show how he compared to the teacher's expectations] 'cuz a teacher wants an 'A', obviously, from all the students. And Jimmy's got a 'C', so he didn't meet the teacher's expectations" (Mrs. Downey/Reid/I; C); "He's not getting up to the teacher's expectations, because he's definitely getting a low letter grade and below 50 in the percentage" (Mrs. Mann/Szabo/I; D). Mrs. Mann and Mrs. Downey answered "No" on their questionnaires because they felt their children had not met the teacher's expectations, not

⁹⁰ Three parents from Wade Mitchell's class, one from David Turner's, three from Elena Kovac's, six from Henry Szabo's, and two from Robert Reid's.

⁹¹ Four parents interviewed from Henry Szabo's class and one from Robert Reid's.

because they believed a letter grade did not show how well a student compared to the teacher's expectations. It appears as though these parents answered "No" to the question because they did not understand what I meant by the question; they should have answered "Yes" because they believed a teacher intended the letter grade to show how well a student compared to their expectations for students studying Science 9.

Letter Grade Reflects the Effort of a Student

Teachers' Views

Four teachers indicated on their questionnaires that a letter grade showed how hard a student tried to learn Science 9; one indicated that it did not (see Table 13, p. 222). To find out if the teachers used effort as a basis for comparison in the sense suggested by Worthen et al. (1993) (i.e., students who work the hardest should get the highest grades), I described how a teacher might use effort as a basis for comparison and asked them if that is what they meant when they answered "Yes" on their questionnaires.

As I spoke with them, it became apparent that the teachers who indicated on their questionnaires that a letter grade showed how hard a student tried to learn Science 9, had not done so because they used effort as a basis for comparison when they determined letter grades. For example, Wade Mitchell explained:

I believe there's a correlation between the numerical standing and the amount of effort that's been put in. The higher percentage typically relates to the kids getting more done on my system. So, I feel the more work they do, they will absorb more as they go along. (Wade Mitchell/I)

Wade believed that the harder a student worked, or the more effort a student put into learning, the more the student would learn and do; the more a student did, the more marks he would get for work done. Wade believed a letter grade showed how hard a student tried to learn Science 9, but he did not base a letter grade on the effort expended by a student. Henry Szabo expressed a view similar to Wade's: "It shows how hard a kid tried because if they don't try, they don't finish their work and they blow their tests. The more they try, the better they'll do, and they'll get a higher grade" (Henry Szabo/I).

Elena Kovac said that she had answered “Yes” to the “effort” meaning statement because she included effort as one of the components of a letter grade: “Well, I said it shows how hard a student tried because I give them marks for effort that are included in the letter grade. It’s part of the grade” (Elena Kovac/I). Robert Reid said “Yes” because he considered how hard a student tried whenever a letter grade was borderline: “I said ‘Yes’ because I use effort more as a bumping tool. The kid who works harder, but is just, maybe, 1% below, say, a ‘B’, I’d bump him up” (Robert Reid/I).

David Turner was the only teacher to indicate that a letter grade did not show how hard a student tried to learn Science 9. Nevertheless, as the following comment shows, he believed that effort and achievement are linked:

To some degree [effort] will show up in the way I evaluated them ... like it will show up in the test scores because, if they don’t try, they won’t learn the material. But, generally, I don’t base a letter grade on it. ... Once in a while — like if there are two students and they’re both 72% — which is 1% lower than a “B”, right? If one was breaking his ass, then I would give him a “B” and the other one I would give him a “C+”. So, you know, it’s an individual kind of a call. (David Turner/I)

David believed that how much a student learned depended upon the effort they expended, and like Robert, he considered how hard a student tried when dealing with a borderline case, but he did not directly factor effort into the letter grades he assigned.

Students’ Views

Thirty-three (77%) students,⁹² including 13 (81%) of those who were interviewed,⁹³ indicated on their questionnaires that the letter grade showed how hard they had tried to learn Science 9 (see Table 13, p. 222).

⁹² Nine students from Wade Mitchell’s class, four from David Turner’s, three from Elena Kovac’s, nine from Henry Szabo’s; and eight from Robert Reid’s.

⁹³ Four students interviewed from Wade Mitchell’s class, five from Henry Szabo’s, and four from Robert Reid’s.

None of the students I spoke with believed their teacher based their letter grades on how hard they had tried to learn Science 9. However, many of them believed that their letter grade reflected how hard they tried:

I guess so, yeah. I don't know, I guess I'm hanging out with the wrong crowd. I didn't try very hard and I didn't do very well. (Walley/Szabo/I; D)

Well, for me, I know that I didn't try hard enough last term and I got a bad mark. So, that shows that I didn't try hard enough. (Bradley/Szabo/I; C-)

Well, if I try really hard, then I'll do better than if I don't try at all. (Lisa/Szabo/I; C+)

Mmm ... it depends on how much effort I put into it and that's about it. The more work I do, the higher my letter grade. (Justin/Reid/I; B)

I know that I could try a lot harder to learn more. Even the boring stuff I could do. My grade tells me that I didn't try that hard. (Jimmy/Reid/I; C)

These students believed that the harder they tried, the higher their letter grade would be, however, they did not believe that their teacher assigned letter grades according to how hard a student tried to learn Science 9.

Sean indicated on his questionnaire that his letter grade showed how hard he had tried, however, when I spoke with him, I discovered that he had not meant that his "letter grade" showed how hard he tried, he meant his "work habits rating" showed how hard he tried: "Well, that was the other side of it — the, not the letter grade, but the other one. The 'G' or 'S' side. Is that what you meant?" (Sean/Reid/I; C+). Once I explained that I wanted to know his opinion about his letter grade, he decided that he should have answered "No": "Well, no, then. My grade doesn't show how hard I tried, my work habits does" (Sean/Reid/I; C+).

Three students I spoke with did not believe their letter grade showed how hard they had tried to learn:

Um ... it doesn't show ... like, um, it doesn't show how hard you try. Because you could have copied all the stuff from other people and he wouldn't know, like, he'd think that you'd tried really hard. But I don't think he does that. (Angel/Szabo/I; Incomplete)

No, it doesn't. It shows how well I did because you can't really tell if a person's tried or not. (Heather/Szabo/I; B)

He doesn't put anything to do with your effort in your grade. I mean he just — if you don't do good on your tests you, don't do good on your homework, then, it's a bad mark. He doesn't really try to give you credit for any effort you put into doing your work. He probably doesn't even know. (Olivia/Szabo/I; B)

These students thought their letter grade did not show how hard they tried to learn Science 9 because they did not believe their teacher could determine how much effort they had put into their work.

Parents' Views

Fourteen (67%) parents,⁹⁴ including four (57%) of those interviewed,⁹⁵ indicated on their questionnaires that the letter grade showed how hard their children had tried to learn Science 9 (see Table 13, p. 222).

As I spoke with the parents, I learned that some of them had indicated "Yes" for the "effort" meaning statement on the questionnaire because they believed the "work habits rating" showed how hard their child had tried to learn Science 9. This excerpt of my conversation with Mrs. Knight is a good example of what these parents had to say:

Sue: Okay, you answered "Yes" for, It shows how hard my child tried to learn Science 9. And, in what way does it do that?

Mrs. Knight: Well, I think that it comes into the work habits, and whatnot. You know her, say, the "G" in her work habits, and whatnot.

Sue: Mm-hmm. Do you think that the teacher would rate how hard she tried to learn and then base her letter grade on how hard she's worked? The letter grade — not the work habits mark.

Mrs. Knight: I don't think so. I think it's just in the work habits mark. (Mrs. Knight/Szabo/I: C+)

⁹⁴ Two parents from Wade Mitchell's class, one from David Turner's, three from Elena Kovac's, five from Henry Szabo's, and three from Robert Reid's.

⁹⁵ Two parents interviewed from Henry Szabo's class and two from Robert Reid's.

Some parents said the work habits rating, not the letter grade, showed how hard a student tried to learn.

Other parents said the letter grade showed how hard a student tried to learn because they believed a letter grade indicated how much work their child did in science: "I think so because if a student has done all their work, their letter grade will show it. ... It will be a good grade" (Mrs. Black/Szabo/I; C); "Well, it shows how hard he tried, but it doesn't prove anything. You know, because a grade says that he met a 'C' level and I know he can do better. He knows he can do better" (Mrs. Downey/Reid/I; C).

Mr. Marsden was one parent who didn't think the letter grade showed how hard his child had tried to learn Science 9:

He's doing a science project right now which, to me, looks like a Grade 11 physics project. And he's done I don't know how many different ideas. He's worked non-stop over the last month and a half on it. None of them have quite worked. And I mean his expectation is, "Does it work the way I want it to work?" or he does it over again. If he doesn't get it to work, and he doesn't get it in, there goes 20% of his mark which certainly influences his mark, but it doesn't show how hard he worked. Because to determine it on how hard he worked, he should already have an "A" on his project because he's changed ... he's re-thought his project, I don't know, completely a dozen times, but that won't reflect in a mark. (Mr. Marsden/Szabo/I; B)

Mr. Marsden believed that his son's letter grade was based on the product of his work, not on how hard he tried to do the work.

I found Mr. Li's point of view particularly interesting. Mr. Li did not think his son's letter grade showed how hard he tried to learn Science 9 because his son had been given an "A" in Science 9 even though, according to Mr. Li, his son did not try very hard to learn: "I look at his notebook and it's just scribbles — there's no work in it. He hardly does any work, but he still got an 'A'" (Mr. Li/Reid/I; A).

Like the students, none of the parents I spoke with believed that effort served as a basis of comparison for a letter grade; however, a most of them believed that a letter grade reflected how hard their child had worked in Science 9.

Letter Grade Reflects the Ability of a Student

Teachers' Views

Four teachers agreed with the statement, *It shows how well a student can do Science 9*, and one did not (see Table 13, p. 222).

I had expected teachers who agreed with this statement to say that a letter grade was based on the ability of a student to do science; however, only Henry Szabo seemed to have interpreted the statement in this way: "When I interpret your question there, I'm saying the capabilities of the student, and no, I'm not going to base a letter grade on that" (Henry Szabo/I). Henry was the only teacher to indicate on the questionnaire that a letter grade did not show how well a student can do Science 9.

All the other teachers selected "Yes" for the "ability" meaning statement, however, I found from speaking to them that they had not answered "Yes" because they assigned letter grades on the basis of ability, but because they attributed meanings, other than ability, to the statement. For example, Wade Mitchell explained:

Again, I believe there's a correlation between the numerical standing and the amount of effort that's been put in. The higher percentage typically relates to the kids getting more work done on my system. So, I feel, the more work they do, they will absorb more as they go along. (Wade Mitchell/I)

I could see that Wade had not viewed the statement as one that described student ability. When I told Wade that I had intended the statement to reflect ability, he said he had answered "Yes" because he had thought it referred more to the amount of work done, but went on to say: "Ability. Mmm. Well, I'd say ability will affect how well a student does, but I don't base a letter grade on ability. I find that a really subjective thing. I mean, what is ability? How do you measure it?" (Wade Mitchell/I). As it turns out, Wade did not base a letter grade on a student's ability.

The meaning of the statement was also not clear to Robert Reid:

Yeah. "How well a student can do Science 9." Well, it shows how well a student is doing in Science 9, I would say. Can do science? Can do? I was, sort of, a little bit muddled with the language, there. But I would say when I selected "Yes", I meant it shows how well a student does in Science 9. ... After what you said, I'd still say "Yes" because I definitely have two different ability groups in this class and I take the ability of the students in the modified program into consideration when I give them their letter grades. ... If they work hard, they can do very well. (Robert Reid/I)

Robert answered "Yes" on his questionnaire because he thought the meaning statement referred to student achievement rather than ability. Nevertheless, once he was clear about my intended meaning, he decided that he would still have answered "Yes" because he graded students with different abilities differently.

In the end, this questionnaire item proved to be problematic because most of the teachers attributed a different meaning to the statement than I had intended.

Students' Views

Thirty-three (77%) students,⁹⁶ including 14 (88%) who were interviewed,⁹⁷ indicated on their questionnaires that they agreed with the meaning statement, *It shows how well I can do Science 9* (see Table 13, p. 222).

Nearly all of the interviewed students answered "Yes" to this statement on their questionnaires. However, as I spoke with them, I could see that they, too, attributed meanings to the statement different from what I had intended. For example, some of them seemed to believe that the statement referred to how well they understood Science 9:

Yes, it does. Well, it shows how hard you try, how much you understand it, how much you pay attention. (Jackie/Mitchell/I; C-)

⁹⁶ Eight students from Wade Mitchell's class, five from David Turner's, three from Elena Kovac's, 10 from Henry Szabo's, and seven from Robert Reid's.

⁹⁷ Four students interviewed from Wade Mitchell's class, seven from Henry Szabo's, and three from Robert Reid's.

Yeah, I think that if you get an “A”, obviously you understand it. And if you get a “B”, I guess you don’t understand it, as well. And it just goes lower and lower, right? (Kim/Mitchell/I; A)

If you understand everything, you will get an “A”. (Ravi/Mitchell/I; A)

And some seemed to use their letter grade to judge their ability to do science:

‘Cuz I know I can do better. The beginning of the term I had a “C+” and now it’s down to a “C”. But I think I’m working pretty good now, so. (Jimmy/Reid/I; C)

Well, my mark, it shows that I can do it fairly well, but, like, I could do better. (Jennifer/Reid/I; B)

Well, most other years I’ve been getting high marks in science. Like Grade 6 wasn’t too good, and most of the other years were pretty good. So, I think I’m kind of dropping off in my science. I can do better than a “D”. (Walley/Szabo/I; D)

Well, it shows if I understand it. If I know what I’m doing. If I didn’t understand it, I probably would get a bad mark. (Heather/Szabo/I; B)

However, none of their comments suggests to me that the students thought the statement referred to their ability. When I mentioned ability to the students, some of them, like Olivia and Tonya, seemed to change their minds:

Ability. Well, no, it doesn’t show that because some students don’t work to their best ability. They don’t even try. (Olivia/Szabo/I; B)

No, I’ve changed my mind; it doesn’t show how well I can do science. Well, it’s not showing how well you can do, actually. Maybe he doesn’t know how well you can do, you could do a lot better than what you’ve tried or than what we actually do in class. (Tonya/Szabo/I; C+)

Once Olivia and Tonya understood that I had intended the statement to refer to their ability, they decided that their letter grade did not show how well they can do Science 9.

Some of the other students I spoke to remained confused about what I meant by the statement, and as a result, could not provide an explanation for their questionnaire response: “I guess I don’t know what you mean. How well I can do science? I don’t really know about that” .(Angel/Szabo/I; Incomplete).

In the end, I must conclude that the statement, *It shows how well I can do Science 9*, was a very poor questionnaire item. Because students were not clear about the meaning of this statement, they might not have interpreted it being reflective of “ability”, as I had intended, when they completed their questionnaires.

Parents’ Views

Thirteen (62%) parents,⁹⁸ including four (57%) of those interviewed,⁹⁹ indicated on their questionnaires that they agreed with the statement, *It shows how well my child can do Science 9* (see Table 13, p. 222).

The parents’ comments suggest to me that they also interpreted the meaning statement in a number of different ways. For example. Mr. Marsden, spoke about the quality of a student’s work, but he did not speak about their ability:

My perception of letter grades would be — excellent work would be an “A”, very good work would be anywhere in a “B” range, good is “C+”, satisfactory ... having a good understanding would be a “C”, and anything under that would be unsatisfactory. (Mr. Marsden/Szabo/I; B)

Mr. Li seemed to refer to ability in his comment:

I think it shows how well my child can do for the reason ... because it came out from my son’s own feeling is that, if the teacher knows that you are a capable student, okay, they just automatically give you a desirable grade. (Mr. Li/Reid/I; A)

And Mrs. Mann seemed to think the statement referred to how well her son *was doing* in Science 9, not how well her son *can do* Science 9:

Well, he’s got below average, so I’d say he’s not passing. So, to me, that’s showing me he’s not doing well. (Mr. Mann/Szabo/I; D)

As these comments show, parents interpreted the “ability” meaning statement in different ways.

⁹⁸ Two parents from Wade Mitchell’s class, one from David Turner’s, two from Elena Kovac’s, six from Henry Szabo’s, and two from Robert Reid’s.

⁹⁹ Three parents interviewed from Henry Szabo’s class and one from Robert Reid’s.

As I discussed the meaning statement with them, I tried to clarify what I had meant by it. The following excerpt of my conversation with Mrs. Knight illustrates just how confused some parents were about the meaning of the statement, *It shows how well my child can do Science 9*:

- Sue: You agree that the letter grade shows how well your child can do science. In what way does that letter grade show you that?
- Mrs. Knight: It shows how well my child can do Science 9. Mmm, I might have misinterpreted that one. I might have thought — because reading it now back — no, it didn't.
- Sue: Okay, good.
- Mrs. Knight: I'm sorry!
- Sue: No, that's one of my real problem questions, don't worry about it.
- Mrs. Knight: I read it wrong.
- Sue: No, I said it wrong. So, you would say "No" it doesn't show how well Tonya can do science?
- Mrs. Knight: No! I'm sorry.
- Sue: No need to be sorry. So, how are you interpreting that statement, right now?
- Mrs. Knight: No, it's not indicative of what Tonya can do. No, what I was thinking is "has done". I misread it.
- Sue: No, that's fine. It's a question that I don't think was clear because everybody changed their mind — just about everybody.
(Mrs. Knight/Szabo/I; C+)

Other parents also concluded that the letter grade did not show how well a student can do Science 9.

Just as it had for the teachers and the students, this meaning statement proved to be confusing for the parents, too, and I must conclude that this was a poor questionnaire item.

Letter Grade Shows the Achievement of a Student

Teachers' Views

The meaning statement, *It shows how much Science 9 a student knew at the end of the reporting period*, is intended to convey the idea that the letter grade shows the achievement of a student. Four teachers indicated on their questionnaires that a letter grade showed how much Science 9 a student knew at the end of the reporting period; one indicated that it did not (see Table 13, p. 222).

When I spoke with the teachers who answered "Yes" for the "achievement" meaning statement on their questionnaires, three of them spoke about how a letter grade reflected more than just how much a student knew. For example, Henry Szabo had this to say:

[The letter grade] shows how much they knew. It is a combination of everything, though. You can't take one aspect separately. It's a combination of how hard they tried, it's a combination of how much effort they put into their work, and the biggest thing that pulls down, like, with the kids around here, the biggest thing that pulls down the mark is homework not being done, and assignments not coming in. So, the mark's showing, to an extent, how much they knew because the tests are factored into it, but on the other aspect of this is, also showing how much effort they've put in by the fact that some of the assignments weren't done, or some of the questions weren't. (Henry Szabo/I)

Henry believed a letter grade in Science 9 reflected a number of things about a student, including achievement and effort; Robert Reid's view was very similar. Although she expressed a somewhat different point of view, Elena Kovac also believed that a letter grade reflected a number of things:

Yes, it shows how much a student knew, but, really, I think that a letter grade should not be looked upon as only one thing. I think it reflects a lot of different things, and if you look at a number itself, without any reference to a person, the meaning is lost. I think that the reason that all of these things [meanings] are in there [the letter grade] is because of the work that you have done behind it, and the person that is the one that is achieving that letter grade. So, I think that the number itself, would not have the meaning in it, but because that number goes with the person that you've been working with, and with all the work that has been gathered — so in a way, you need to see the portfolio, the student, and the grade, and the percentage, or whatever you might want to call it, as a package. That's what I have been looking at when I set the meaning of a student's report card. To me, a letter grade is not just a solid number [sic]. Again, the letter grade does give you some information to start with by itself, but you need more information about the person. (Elena Kovac/I)

Elena considered a lot of information about a student when she determined letter grades (see Chapter 7), and she believed a letter grade showed more about a student than just achievement. Moreover, because she viewed each student as an individual, the meaning she attributed to a letter grade seems to have varied somewhat from student to student.

David Turner was the only teacher, who indicated that a letter grade showed how much Science 9 a student knew, who did not speak about the grade meaning a combination of things:

It shows how much a student knew, yes. ... I think it shows that because most of the letter grade comes from their test results and if a student knows the stuff, he'll do well on the tests. If he doesn't know it, it'll show up on the test. (David Turner/I)

David explained that he believed tests measured what a student knows. David based 70% of a letter grade on test results, and believed a letter grade in his Science 9 class showed how much Science 9 a student knew at the end of the reporting period.

Wade Mitchell expressed another point of view:

No, it doesn't show how much Science 9 a kid knew. There's a lot of kids that have a lot more science knowledge because they watch a lot of stuff on TV and they go down to Science World and that type of stuff. So this encompassing — when I see 'science knowledge', I see it as something very broad, like the boy that was just in, Mike. There's stuff he blows me away on, he knows far more than I because, he just, he lives it. And the kid's going to be an aeronautical engineer, I'm sure, because he lives that kind of stuff. So, his breadth of science is far beyond what I can teach in Science 9. (Wade Mitchell/I)

Because Wade was of the opinion that students may know a lot more science than what he taught (and, I infer, assessed) in Science 9, he did not feel a letter grade showed how much science a student knew.

Students' Views

Thirty-two (74%) of the 43 students who completed questionnaires indicated that the letter grade showed how much Science 9 they knew at the end of the reporting period,¹⁰⁰ while

¹⁰⁰ Eight students from Wade Mitchell's class, four from David Turner's, two from Elena Kovac's, ten from Henry Szabo's, and eight from Robert Reid's.

14 (88%) of the 16 students interviewed indicated that the letter grade showed how much Science 9 they knew at the end of the reporting period (see Table 13, p. 222).¹⁰¹

Nearly all of the students I spoke to believed their letter grade showed how much Science 9 they knew at the end of the reporting period. Here are some of the things they said when we discussed the “achievement” meaning statement:

Well, he evaluated all of our work that we did. He evaluated all the work and, um, added it up into a percent that showed how much percent of the course that we knew. And then he changed [the percent] into a letter grade. (Tonya/Szabo/I; C+)

Well, yeah ... ‘cuz the work we do, like, I think that’s what he basically bases our marks on. So to get a higher mark, you have to know what you’re doing and everything. (Olivia/Szabo/I; B)

[The letter grade] shows how well you can take it in. Like, if you don’t understand, then you’ll get a bad grade, and if you understand it, you’ll get a good grade” (Jackie/Mitchell/I; C-)

Well, on the exam I didn’t do so good, so I got a lower mark. So, it shows that I didn’t know that much of it, or didn’t know some of it. (Sean/Reid/I; C+)

Most of the students I interviewed believed that their tests and assignments showed how much Science 9 they knew. They also knew that their letter grade was based mainly on the work they did and the tests they wrote. As a consequence, they believed a letter grade showed how much they knew, or their achievement, in Science 9.

Angel, however, did not believe her letter grade showed how much Science 9 she knew because she had received an “Incomplete” on her report card: “Well, no, it doesn’t [show how much Science 9 I knew] because it doesn’t tell me anything. It’s just an ‘Incomplete’ and I don’t know why he gave me that” (Angel/Szabo/I; Incomplete). Angel was very confused about why she had received an “Incomplete” (I) on her report card, and did not seem to understand what it was supposed to mean; as a consequence, she did not believe her letter grade showed how much Science 9 she knew at the end of the reporting period. According to BCME documents (e.g., BCME, 1986; BCME, 1994a), an “I” on a report card must be accompanied

¹⁰¹ Four students from Wade Mitchell’s class, six from Henry Szabo’s, and four from Robert Reid’s.

by a written description of what the student must do to change the "I" to a letter grade, and a timeline for doing it. However, this does not seem to have been the case for Angel. During her interview, Angel explained that the written report card comment for Science 9 said that she had received an "I" because she had missed some tests and failed to hand in several assignments. As far as I could ascertain, the report card comment had not described what she had to do, and by what date, in order to get the "I" changed to a letter grade. Given this situation, it is not surprising that she had difficulty interpreting her letter grade.

Parents' Views

Fourteen (67%) parents,¹⁰² including five (71%) of the seven who were interviewed,¹⁰³ indicated on their questionnaires that the letter grade showed how much Science 9 their children knew at the end of the reporting period (see Table 13, p. 222).

Some parents, who believed that a letter grade showed how much a student knew at the end of the reporting period, discussed how the letter grade was based on tests and written work:

Given most of the marks are from pencil-on-paper tests on what the book covers, I'd say [that] if you score highly — at least at the time you wrote the test — you knew quite a bit. If you get a low score, you don't know much.
(Mr. Marsden/Szabo/I; B)

Yes, I think it does [show how much she knew] because I have looked at her quizzes, and whatnot, and her written work and everything and I ask her questions about what she's learned, and I'd say her "C+" shows about what she knows. (Mrs. Knight/Szabo/I; C+)

These comments show that some parents viewed the written work and tests done by their children as indicators that show how much Science 9 a student knows. Because parents believed that letter grades were based mainly on written work and test results, they believed the letter grades showed how much Science 9 they knew.

¹⁰² Three parents from Wade Mitchell's class, one from David Turner's, two from Elena Kovac's, six from Henry Szabo's, and two from Robert Reid's.

¹⁰³ Four parents interviewed from Henry Szabo's class and one from Robert Reid's.

On the other hand, Mrs. Downey did not believe her son's letter grade indicated how much he knew:

No, [the letter grade does not show how much science he knew] because Jimmy doesn't do so well on tests. He fell apart, you know, so his grade went down. But, yet, if you orally ask him something, he can answer it, so I know he knows what he learned. (Mrs. Downey/Reid/I; C)

Mrs. Downey believed that because her son had difficulty writing tests, he knew more Science 9 than he demonstrated to the teacher. She, therefore, did not feel the letter grade showed how much Science 9 he knew.

Mrs. McIsaac, also did not believe the letter grade showed how much Science 9 her son knew:

Well, no. It doesn't show me how much he knows. A lot of the stuff that Sean has done, the assignments I've seen, like, a month later, I've asked him about them and he can't remember how he did it, or what it was about. So I don't know how much Science 9 he's retained. (Mrs. McIsaac/Reid/I; C+)

Mrs. McIsaac did not believe her son's letter grade showed how much he knew, because, when she asked him a question about something he had done in the past, he did not appear to have an answer. She seemed to view this as an indication that he had not learned what was required of him in science.

Letter Grade Shows How Much a Student Improved

Teachers' Views

Two teachers indicated on their questionnaires that a letter grade showed how much a student improved in Science 9 from the beginning to the end of the reporting period; three indicated that it did not (see Table 13, p. 222).

Both Robert Reid and Elena Kovac believed a student's improvement could be seen by comparing letter grades from term to term: "It would be an indication of improvement if the grade goes up" (Robert Reid/I); "Yes, it can show improvement. A student may go from a 'B' to

an 'A'. In which case the grade shows that they have improved" (Elena Kovac/I). Neither of them, however, assigned letter grades on the basis of student improvement.

None of the other teachers used student improvement as a basis for comparison when they assigned letter grades either. David Turner, who answered "No" for the "improvement" meaning statement, said: "The improvement should show up in the mark, but I don't base it on the size of their improvement compared, to say, somebody else's" (David Turner/I). Henry Szabo also selected "No" for the "improvement" meaning statement:

[The letter grade] can show improvement. Yeah, it can show improvement. If a kid's been putting out, say, a "C+" in the first term or a "C-" in the first term, and they've popped up to a "B" — my standards get tougher as it goes along throughout the year, for number one, and number two it does show marked improvement — but I don't give a kid a letter grade according to whether he's improved or not. I'll talk. If a kid's improved, I'll send a note home to the parents saying, "This kid is working a lot better that they did. I've noticed a marked improvement." Stuff like that. I'll be honest with you — I'm too scientific. I like having data for what I'm basing my judgments on. I don't like making a value judgment. (Henry Szabo/I)

Henry made comments when a student showed improvement, but he did not use improvement as a basis for assigning letter grades. Wade Mitchell also did not base a letter grade on improvement. Like Henry, he used comments to indicate when a student had improved: "When a kid improves on a test, I'll often put a little comment, 'way to go' or 'nice improvement'. On an interim, I'll put a comment about that, but when they get their grade at the end of term, it's what they have done for that term" (Wade Mitchell/I).

Students' Views

Thirty-six (84%) students,¹⁰⁴ including 13 (81%) of those interviewed,¹⁰⁵ indicated on their questionnaires that the letter grade showed how much they had improved in Science 9 from the beginning to the end of the reporting period (see Table 13, p. 222).

¹⁰⁴ Ten students from Wade Mitchell's class, five from David Turner's, two from Elena Kovac's, 13 from Henry Szabo's, and six from Robert Reid's.

¹⁰⁵ Four students interviewed from Wade Mitchell's class, seven from Henry Szabo's, and two from Robert Reid's.

Most of the students I spoke to said their letter grade showed how much they improved in Science 9. Here are some of their comments:

It tells you if you have improved from first term, or if you went down. (Jackie/Mitchell/I; C-)

Well, it depends. If your letter grade changes, it does. But, say, if you've had the same letter grade — like, I've had the same letter grade first term and second term — then I ask for my percentage and I figure out if I've done better or if I've done worse. (Kim/Mitchell/I; A)

Well, because the term before I got a lower percentage, but I still got a "B". But, then, I improved more as I went along so it shows that I improved. (Jennifer/Reid/I; B)

Yeah, my percentage went from a 36% to a 52%, so I improved (Walley/Szabo/I; D)

As these comments show, some students compared their letter grades and/or percentages from term to term to determine whether or not they had improved in Science 9.

Even though neither Bradley nor Jimmy answered "Yes" for the "improvement" meaning statement, their comments suggest that they, too, compared their letter grades from one term to the next to see if they had improved: "Well, this one it didn't show that I improved, but it would show if you improved if you got a worse mark that last term" (Bradley/Szabo/I; C-); "Oh, I said 'No' 'cuz I got a 'C'. I had a 'C+' and I dropped down to a 'C', so it doesn't show that I improved" (Jimmy/Reid/I; C).

Nearly all of the students I interviewed answered "Yes" for the "improvement" meaning statement on their questionnaires, however, as I spoke with them, I concluded that none of them believed that their letter grade was based on how much they had improved or that it was directly factored into their letter grade.

Parents' Views

Thirteen (62%) parents,¹⁰⁶ including four (57%) of the interviewed parents,¹⁰⁷ indicated on their questionnaires that the letter grade showed how much their children had improved in Science 9 from the beginning to the end of the reporting period (see Table 13, p. 222).

The following comments illustrate some of the things the parents, who indicated "Yes" to the "improvement" meaning statement, had to say when they discussed their questionnaire responses with me:

There's a percentage each term and, if it's up or down, consequently, you know.
(Mrs. Black/Szabo/I; C)

Well, the grade itself, just by going up, shows me that he's improved.
(Mrs. Downey/Reid/I; C)

If his mark goes up, he's improved — if it goes down, he hasn't, or it's getting harder. (Mr. Marsden/Szabo/I; B)

Parents often determined whether or not a student had improved by comparing their children's letter grades from one term to the next.

Some parents indicated "No" to the "improvement" meaning statement because their children's letter grades had not improved:

It hasn't shown an improvement when — I mean if he went from a "C+" to an "A", it would show an improvement. (Mrs. McIsaac/Reid/I; C+)

No, because he hasn't improved — he's gone down. That's why I answered that that way. (Mrs. Mann/Szabo/I; D)

As a result of talking with them, I concluded that none of the interviewed parents believed that improvement was the basis of comparison for a letter grade. Instead, they believed that by comparing letter grades from term to term they could see if their children had improved or not.

¹⁰⁶ Two parents from Wade Mitchell's class, two from David Turner's, two from Elena Kovac's, four from Henry Szabo's, and three from Robert Reid's.

¹⁰⁷ Two parents interviewed from Henry Szabo's class and two from Robert Reid's.

Letter Grade Compares a Student to Ministry Standards

Teachers' views

When they assign letter grades, teachers may compare student performance to absolute standards, other than their own expectations, such as standards set by the BCME. Two teachers indicated on their questionnaires that a letter grade showed how a student compared to standards set by the BCME for Science 9, and three indicated that it did not (see Table 13, p. 222).

Teachers, like Elena Kovac and David Turner, felt that their letter grades showed how students compared to BCME standards because they based their Science 9 courses on BCME documents. Elena, for instance, viewed the ILOs (Intended Learning Outcomes) as the standards set by the BCME: "I am using the ILOs, you know, the outcomes as prescribed by the Ministry [as the standards]" (Elena Kovac/I); while David turned to the curriculum guides for the BCME standards: "I go back to what the Ministry has in the curriculum guide for the junior grades" (David Turner/I).

On the other hand, teachers who indicated that they did not intend the letter grade to show how a student compared to BCME standards felt no such standards existed:

No, it doesn't show how a student compared to Ministry standards, since we don't really have a defined junior curriculum in place, you know. There's only the suggested thing to do. (Wade Mitchell/I)

When you say "compared to standards set" — now, I'm not familiar with the "standards set", if you like, by the Ministry for Science 9. I have the intended learning outcomes. That's what I use. But there are no Ministry standards that I know of. (Robert Reid/I)

Yeah, because I really couldn't care less what the Ministry sets for their standards. [The] only thing that I use as a standard is the curriculum guide. I look at what they should learn and I figure how I'm going to teach it to them. I don't give a damn what the Ministry says. I don't really think they have a set of standards. ... Anytime you try to corner them, like, in that new policy document [it says students] have — "to achieve high standards". Well, what's a high standard? They don't know. (Henry Szabo/I)

Because these teachers did not feel that the BCME provided a set of standards that could be used for the purpose of grading student performance in Science 9, they did not intend a letter grade to

show how a student compared to standards set by the BCME. However, all of these teachers said that they referred to the expected learning outcomes outlined in the BCME junior science curriculum guide when they described how they determined what to assess and grade in Science 9 (see Chapter 6). All five teachers used the BCME's expected learning outcomes, yet only two considered them to be "standards". Hence, the letter grades assigned by all five teachers probably showed how well students achieved compared to the expected learning outcomes for Science 9 whether the teachers meant them to or not.

Students' views

Twenty-six (60%) students,¹⁰⁸ including 12 (75%) of the 16 interviewed students,¹⁰⁹ indicated on their questionnaires that they believed the letter grade showed how they compared to standards set by the BCME for Science 9 (see Table 13, p. 222).

As Emily explained why she answered "Yes" on her questionnaires, she referred to the descriptions of the letter grades written on the report card as the BCME standards: "Yeah, it shows [how I compare to the Ministry standards] because on the back of the report card, it says, 'A' is excellent, 'B' is good, 'C' is satisfactory. I think that's what he goes to" (Emily/Mitchell/I; A). There were others who also believed that their letter grade showed how they compared to BCME standards, and that the standards were the letter grade descriptions printed on their report cards.

Other students believed that, since the BCME was responsible for the Science 9 curriculum, their letter grade must show how they compare to BCME standards: "Because the tests and everything are probably done by the Ministry of Education and they probably have a

¹⁰⁸ Six students from Wade Mitchell's class, three from David Turner's, two from Elena Kovac's, nine from Henry Szabo's, and six from Robert Reid's.

¹⁰⁹ Two students interviewed from Wade Mitchell's class, seven from Henry Szabo's, and three from Robert Reid's.

course outline ... so that's why" (Heather/Szabo/I; B); "Well, he gave us the work in the curriculum, or whatever, right? That we had to do. And, um, if we did it right, we got good marks and, if we didn't, then we didn't get the marks" (Bradley/Szabo/I; C-).

Several students explained that they did not understand what was meant by the term "Ministry standards", and they really didn't know why they had answered as they had. For example, Lisa answered "Yes" on her questionnaire, but during her interview said: "Um. I don't really know why I said that. I don't know. I don't really understand the question" (Lisa/Szabo/I; C+). During their interviews some students remained confused about whether or not their letter grade showed how they compared to BCME standards.

Parents' views

Six (29%) of the 21 parents who completed questionnaires,¹¹⁰ including one (14%) who was interviewed,¹¹¹ indicated that the letter grade showed how a student compared to "standards set by the Ministry of Education for Science 9" (see Table 13, p. 222).

Most of the interviewed parents answered "No" to BCME standards on their questionnaires because, they explained, they did not think there were BCME standards:

No, I don't really believe that the kids are compared to any standards because the quality of education varies from school to school. And so, I mean, kids don't get provincial exams [in Grade 9], so you don't know — compared to provincial expectations or whatever — what they're doing. (Mrs. McIsaac/Reid/I; C+)

Well, I've never seen any standards set down by the Ministry at the beginning of the year, that says, "This is what your child needs to know in the school year." (Mrs. Knight/Szabo/I; C+)

Like these two women, some parents who did not believe a letter grade shows how a student compared to BCME standards were not aware of any such standards.

¹¹⁰ One parent from Wade Mitchell's class, one from David Turner's, two from Elena Kovac's, one from Henry Szabo's, and one from Robert Reid's.

¹¹¹ One parent from Robert Reid's class.

Only one of the parents I spoke with thought the letter grade showed how his child compared to BCME standards. Here is an excerpt of my discussion with Mr. Marsden about BCME standards:

Sue: And you say it shows how a student compared to standards set by the Ministry of Education for Science 9?

Mr. Marsden: Yes, because there's standardized testing, and so to some extent, [the letter grade] would show how a student compared to the Ministry's standards.

Sue: Is there standardized testing in Grade 9?

Mr. Marsden: Ah ... I doubt it, but then the teacher would tend to draw, I'd guess, a lot of his test scores from old test questions, from old tests, from tests that go along with the science program. He must borrow as much as I do from whatever is out there, and so, there would be some sort of standardization to a lot of the exam questions. (Mr. Marsden/ Szabo/I; B)

Mr. Marsden felt that his son's teacher would assess students in a manner similar to the way he assessed his students; that is, by using tests and test questions from other sources. He felt that this method of testing students provided "some sort of standardization" that would allow a letter grade to show how a student compared to BCME standards.

Letter Grade Compares a Student to Other Students

Teachers' views

Teachers may compare a student's performance in Science 9 to that of other students when they assign letter grades. To find out if teachers used other students as the basis for comparison when they assigned grades, and which reference group (i.e., class, school, district, province) they used for comparison purposes, four statements, varying only by reference group, were listed on the questionnaire. According to their questionnaire responses, two of the teachers intended a letter grade to show how well a student had done in Science 9 compared to other students in the class, as well as to other students in the school, district, and province; the other three did not (see Table 13, p. 222).

Teachers who said that the letter grade did not show how well a student had done compared to other students in the class interpreted the meaning statement as being reflective of norm-referenced grading and argued that they did not grade in that manner. Henry Szabo, for instance, was emphatic that he did not compare students to one another:

First of all, I don't "bell-curve". I don't look at curves. I don't even do totals! I look at each assignment, I put it in the mark book, and then two weeks before report card period I do them all up. If 40% of my class fails 'cuz they didn't work, 40% of them fail. If 80% of my kids on that semester got As, I'll give them all As. I don't believe in "bell-curving", or "normalizing", or comparing to any other kid. It's what you got is what you got. (Henry Szabo/I)

Wade Mitchell and Robert Reid were also definite that they did not use norm-referenced grading:

"I use an absolute standard. I've never bell-curved and I've never been a big fan of that, you know, put them all in a normal distribution. No, I've never been big on that" (Wade Mitchell/I);

"No, I don't make any comparisons. I don't compare the students to one another when I grade them" (Robert Reid/I).

When I mentioned norm-referenced grading to Elena Kovac, she modified her answer:

"It's not so much compared to the rest of the class, in that sense. But a student with an 'A' has definitely done better than one with a 'C'. That's what I meant by that" (Elena Kovac/I).

Likewise, David Turner explained that he had not meant to suggest that he used norm-referenced grading: "When you put it that way, I'd have to say 'No' because I don't grade on a curve, if that's what you mean. However, because you are grading 'A', 'B', 'C', there's going to be some comparison" (David Turner/I).

As a result of my discussions with the teachers, I found that none of them said that they assigned letter grades by explicitly comparing students to one another; that is, none of them said that they assigned norm-referenced letter grades. Furthermore, the teachers did not intend a letter grade to show how a student compared to other students in the class, nor did they intend it to show how well a student had done in Science 9 compared to other students taking the same course in the school, district, or the province. They observed, however, that letter grades are often used by the students and their parents for comparison purposes.

Students' views

Seventeen (40%) of the 43 students,¹¹² including six (38%) of the seven interviewed,¹¹³ indicated on their questionnaires that the letter grade showed how well they had done in Science 9 compared to the other students in the class (see Table 13, p. 222). To find out if students attributed a norm-referenced meaning to the statement, I asked them if they thought their teacher assigned letter grades to students by comparing them to the other students in the class.

As I spoke with them, I discovered that students did not believe their teacher assigned letter grades by comparing students to one another: "I don't think Mr. Mitchell compares us to each other, — to other students. He doesn't do that" (Emily/Mitchell/I; A); "It doesn't matter what the other kids in the class do, what my mark is. He just gives me a mark for my work" (Bradley/Szabo/I; C-); "They don't compare students, I don't think. They don't compare students to each other" (Angel/Szabo/I; Incomplete).

Even students who answered "Yes" on their questionnaires did not believe that their teacher compared them to other students when they assigned letter grades: "Mr. Mitchell doesn't really compare students, but I do. Like, I'll look to see what my friends got" (Ravi/Mitchell/I; A); "Yeah, it shows how I compared because I know some kids got lower than me and others got higher" (Walley/Szabo/I; D). Like these two boys, students who said "Yes" on their questionnaires did not say they believed that their teacher had assigned their letter grades by comparing them to other students; rather, they spoke about comparing their letter grades with those of other students.

In the end, none of the students I spoke with seemed to believe that the teacher intended their letter grade to show how they compared to other students in the class, the school, the

¹¹² Four students from Wade Mitchell's class, two from David Turner's, one from Elena Kovac's, five from Henry Szabo's, and five from Robert Reid's.

¹¹³ One student interviewed from Wade Mitchell's class, three from Henry Szabo's, and two from Robert Reid's.

district, or the province; that is, they did not believe that their teacher used other students as a basis for comparison when assigning letter grades.

Parents' views

Eight (38%) parents,¹¹⁴ including three (43%) of those interviewed,¹¹⁵ indicated on their questionnaires that a letter grade showed how well a student had done in Science 9 compared to the other students in the class (see Table 13, p. 222).

Parents who agreed on their questionnaires that the letter grade showed how their children compared to other students expressed a couple of different points of view. For example, Mr. Marsden believed the teacher assigned letter grades by comparing students, but not by ranking them:

I don't think he ranks them, if that's what you mean. I think that it's probably based on a comparison with the kids in the class and what they are doing. I'd think that when he marks their work, he compares it. (Mr. Marsden/Szabo/I; B)

Mrs. Downey, however, answered "Yes" not because she thought the teacher assigned letter grades by comparing students, but because she thought the letter grade could be used for comparison purposes: "I wasn't sure about that [statement] because I don't know what the other kid's grades are, but if they posted everybody's grades, then you'd see where he'd fit in with everybody" (Mrs. Downey/Reid/I; C).

Parents who answered "No" on their questionnaires seemed very sure that the teacher did not assign letter grades by comparing students to one another. Mrs. McIsaac went so far as to say that she didn't think students were graded on a curve:

I don't think they mark on a bell curve anymore saying the top two get As, the bottom two get Es, and you spread out the rest. I assume that if they get a certain percentage on the work that's expected of them, they get a set mark. Now, if the top mark in the class is a 55%, they'd get a "C+", not an "A" for it. (Mrs. McIsaac/Reid/I; C+)

¹¹⁴ One parent from Wade Mitchell's class, one from David Turner's, three from Elena Kovac's, one from Henry Szabo's, and two from Robert Reid's.

¹¹⁵ Two parents interviewed from Henry Szabo's class and one from Robert Reid's.

Other parents, including Mrs. Black, simply stated that their children were not compared to other students in the class: "I feel her grade is an average of her work. He averages her marks. I don't think he compared her to the rest of the class, no" (Mrs. Black/Szabo/I; C).

Like the students, the parents I spoke with did not believe that the teacher intended a letter grade in Science 9 to show how a student compared to other students in the class. Nor did they believe that the letter grade showed how a student compared to other students studying Science 9 in the school, school district, or province. Parents, it would seem, did not believe that the teacher used other students as a basis for comparison when assigning letter grades.

Summary

The meanings of Science 9 letter grades were discussed in this chapter. To begin with, the questionnaire data were used to identify the meanings teachers, students, and parents attribute to a Science 9 letter. The interview data were then used to verify and clarify the questionnaire results.

The analyses and discussion of the questionnaire data suggest that the teachers in this study attributed multiple meanings to a Science 9 letter grade. While the number of meanings attributed to a letter grade varied from teacher to teacher, all of them indicated that they intended a letter grade to show how a student compared to their expectations for students studying Science 9; agreement with this statement is taken to mean that an absolute standard (i.e., teacher expectations) served as the basis for comparison for assigning a letter grade. Of the ten possible meanings listed on the questionnaires, this meaning is closest to the BCME's stated meaning of letter grades which is that a letter grade show a student's performance compared with the widely held expectations for the course.

Four of the five teachers also indicated on their questionnaires that a letter grade shows how hard a student tried to learn Science 9, how well a student can do Science 9, and/or how much Science 9 a student knew at the end of the reporting period. Because each of these meaning statements is intended to reflect a different basis for comparison for a letter grade, when

a teacher indicates on the questionnaire that s/he intends a letter grade to have a number of different meanings, it is taken to mean that a number of different bases for comparison were used to assign a letter grade. In some instances, it is possible for a letter grade to reflect two meanings. For example, a letter grade could show how much Science 9 a student knew compared to the teacher's expectations. In other instances, the meanings attributed to a letter grade could be incompatible such as when a letter grade is intended to show how a student compared to both teacher expectations (a criterion-referenced meaning) and to the other students in the class (a norm-referenced meaning). Some teachers attributed meanings to a Science 9 letter grade that were possibly logically incompatible with one another.

Analyses of the questionnaire data indicate that the meanings students attributed to a letter grade varied from student to student. Students most often indicated that a letter grade shows how much a student improved in Science 9; however, many of them also indicated that it shows how hard a student tried to learn Science 9, and how well a student can do Science 9. According to their questionnaire responses, all of the students attributed more than one meaning to a letter grade, and some of the students attributed meanings that were logically incompatible with one another (e.g., both norm-referenced and criterion-referenced meanings). When students' questionnaire responses for the meaning statements are compared to those of their teacher, the results show a high level of inconsistency between students and teacher in the ways letter grades assigned by the same teacher are interpreted.

Like the teachers and students, parents attributed multiple meanings to a Science 9 letter grade. Although parents most often indicated on their questionnaires that a letter grade shows how a student compared to the teacher's expectations, a majority of them also attributed several other meanings to a letter grade. In some cases, parents attributed meanings that were incompatible with one another (e.g., both norm-referenced and criterion-referenced meanings). When parents' and teachers' questionnaire responses are compared to one another, the results show a high level of inconsistency between teacher and parents in the ways letter grades from the same Science 9 class are interpreted.

The analyses and discussion of the interview data help clarify participants' questionnaire responses because they help us understand why participants selected the various responses on their questionnaires. For instance, the interview data show that the teachers attributed multiple meanings to letter grades because they believed many factors contributed to a student's achievement in Science 9, and therefore, these factors themselves, rather than the overall achievement, should be reported. One important factor for teachers was student effort. Most of the teachers' comments suggest that they indicated on their questionnaires that a letter grade shows how hard a student tried to learn Science 9 because they believed the more effort a student expended, the more work would be completed and/or the more they would learn, and as a consequence, the higher the letter grade would be. None of the teachers said they used effort as a basis for comparison for a letter grade.

Not only do the interview data provide depth and detail to the study, but also they highlight two problems with the questionnaire items. First, the interview data show that not all participants interpreted each meaning statement in the way in which I had intended. The ways in which participants interpreted the statement *It shows how well a student can do Science 9* is a good example of this. In my mind, this statement referred to "student ability" — that is, a letter grade is assigned based on the ability of a student compared to their achievement — however, some participants thought it referred to "student achievement" — that is, how much a student knows and can do. Such discrepancies in the interpretations of the meaning statements by the respondents decreases both the reliability of the questionnaire items and compromises the validity of any inferences made based on the participants' responses to those questionnaire items.

A second problem with the questionnaire items also has to do with the interpretation of the meaning statements. I viewed each meaning statement as representing a particular basis for comparison that might be used by a teacher when assigning letter grades. However, my interview discussions suggest that people did not necessarily, or always, view the statements in this way. As an example, I expected that a person who agreed with the statement, *It shows how*

hard a student tried to learn Science 9, believed that effort had been used as the basis for comparison when the letter grade was assigned. However, this proved not to be the case. Some people said that they had agreed with the meaning statement because they believed effort influenced a letter grade in that, the harder a student tried, the more work they would get done, and the better their marks would be. Others had not agreed with the statement because a letter grade was based on a student's effort. Other people said that they had agreed with the statement because they could see how much a student had improved by comparing letter grades from term to term. Such interpretations make it difficult to clearly identify the meanings attributed to a letter grade.

The results presented in this chapter help us understand the meanings people attribute to Science 9 letter grades, and identify some problems with some of the questionnaire items used to collect the data for this chapter.

CHAPTER 9

THE EFFECTS OF SCIENCE 9 PROGRESS REPORTS: PERCEPTIONS OF STUDENTS AND PARENTS

Introduction

The purpose of this chapter is to present the results of the analyses of the data collected to answer the question:

What are students' and parents' perceptions about some possible effects of student progress reports in Science 9

Two reasons that information about student progress in school is communicated to students and parents are: 1) to improve student learning; and 2) to help students and their parents make educational and vocational decisions (Gronlund & Linn, 1990; Worthen et al., 1993). To explore the effect of student progress reports on several factors affecting student learning (e.g., amount of work done in class, amount of homework done) and educational and vocational decisions, students and parents were asked to complete several Likert-type items on their questionnaires. To better understand their responses to the Likert-type questions, respondents were encouraged to provide written explanations; however, very few chose to do so.

The goal of this chapter is to identify and describe some of the perceptions students and parents have about several possible effects of reports of student progress in Science 9. Students' and parents' questionnaire responses and interview comments were used to prepare this chapter; however, because very few people wrote explanatory comments on their questionnaires, the descriptions presented below are based mainly on the interviews.

Effects of Progress Reports on Students' Feelings About Studying Science in School

Students' were asked: *Has the last Science 9 report affected how you feel about studying science in school?* Parents were asked: *Has the last Science 9 report affected how your*

child feels about studying science in school? Their questionnaire responses and interview comments are discussed in this section.

Students' Perceptions

When students were asked if the Science 9 report had affected how they felt about studying science in school, 19 (44%) of the 43 students who completed questionnaires answered "Yes", 19 (44%) answered "No", and five (12%) answered "I do not know". Of the 16 students who were interviewed, five (31%) answered "Yes", nine (56%) answered "No", and two (13%) answered "I do not know" on their questionnaires.

Students who explained how they had been affected by their progress report explained that it had motivated them to work harder. Emily, for instance, planned to work harder because she wanted to maintain her "A" in Science 9: "I should work harder to get a high steady 'A'" (Emily/Mitchell/Q; A). Tonya was motivated to work harder because she wanted a higher letter grade: "I'll keep trying harder and harder so that I'll get a better mark" (Tonya/Szabo/I; C+). Leanne also wanted to improve her letter grade: "I think I will study more and try harder to get a higher grade, but science isn't really of interest to me" (Leanne/Turner/Q; D). None of the students said their letter grade had negatively affected them; that is, no one suggested that they would do less work in science as a result of their progress report.

Students who explained why their progress report had not affected how they felt about studying science seemed to be of three types: those who planned a career in science, those who did not like science, and those who felt neutral about studying science in school. Even though Olivia was not pleased with her "B" in Science, she told me that she liked science and planned a medical career: "No, it hasn't affected how I feel because I know I'm going to need it so I'm going to keep going at it until I get it right" (Olivia/Szabo/I; B). On the other hand, Jennifer was pleased with her "B" in science, liked science, and planned a science-related career: "No, [it hasn't affected how I feel] because I'd still like to go more into a science job and stuff like that" (Jennifer/Reid/I; B). Both of these students had their minds firmly set — they wanted science

careers and were not going to let their report card affect how they felt about studying science in any way.

Shari's mind was also firmly set. She knew that she did not like science: "It didn't affect me. I don't like science! I find it very hard to understand and that is why my grades are not very good." (Shari/Turner/Q; C). It would seem, that Shari's "C" reinforced what she already knew — science is hard and she was not good at it. Bradley also said that his progress report had not affected how he felt about studying science: "It doesn't make any difference — it's still science, like it hasn't changed" (Bradley/Szabo/I; C-). During his interview, Bradley did not say whether he liked or disliked science, rather, he seemed to be resigned to the fact that he had to study science in school.

Justin, who indicated on the questionnaire that he did not know if his progress report had affected how he felt about studying science in school was just as noncommittal during his interview. When asked if he could explain his answer, he replied, "Not really, no." (Justin/Reid/I; B). As none of the other students who answered "I do not know" explained their answer, it is not possible to know their reasons for answering this way on their questionnaires.

Students who indicated that their report had affected how they felt about studying science — and explained their answer — said they were motivated to work harder in science because they wanted to maintain or improve their letter grade. Students who indicated they had not been affected by their progress report continued to feel the same as they always had about science. Students who indicated they didn't know if their progress report had affected how they felt about studying science in school did not give enough information to know why any of them had answered this way.

Parents' Perceptions

When parents were asked if the previous Science 9 report had affected how their children felt about studying science in school, nine (43%) answered "Yes", eight (38%) answered "No", and four (19%) answered "I do not know". Four (57%) of the interviewed

parents answered "Yes", two (29%) answered "No", and one (14%) answered "I do not know" on their questionnaires.

Parents who believed that the progress report had affected how their children felt about studying science in school described how their children's motivation had been affected.

Mr. Marsden, for example, spoke about the motivating effect of the progress report on his son:

His report card proved to him that he was doing as well as he thought, you know. It certainly made him want to do better. He didn't say, "Oh, I'm going to quit working because I didn't get high enough." His mark is a driving force with him. If it's not an "A", it's not good enough, and he's going to do better on it. (Mr. Marsden/Szabo/I; B)

Mrs. Knight also believed the progress report had had a motivating effect on her daughter:

Well, now that she thinks she's not working to her ability, it's almost like a challenge to her at this point, knowing that she can do so much better — and she has done so much better — so she's working harder. (Mrs. Knight/Szabo/I; C+)

Both Mr. Marsden and Mrs. Knight believed that their children had been motivated to work harder by their progress reports because they wanted to improve their letter grades in Science 9. That is, they believed that the progress reports had positively affected their children.

Most parents who explained why they believed the progress report had affected how their children felt about studying science in school, however, spoke about its negative effect. In particular, they explained how their children seemed less motivated to work in science.

Mrs. Pierre — who explained on her questionnaire that her daughter planned a medical career and needed an "A" average in science — clearly stated that her daughter felt discouraged: "It discourages my child as she wants to carry on into the medical science field"

(Mrs. Pierre/Szabo/Q; B). And, although Mrs. Downey did not directly say that her son felt discouraged, her comments seem to suggest that she believed that he did:

The reason I said "Yes" was because he says that if they're going to keep grading him the way they do and not looking at everything, he's not going to bother trying because the grade's going to be the same anyway. He says, "I work really hard, you know. I hand in stuff and I get "As" and "Bs" on them, and my final grade's a 'C'?" He says, "I might as well just do 'C' work, Mum." And he's right — well, I don't think he's right, but he thinks he's right. (Mrs. Downey/Reid/I; C)

Mrs. Downey's view that her son felt discouraged because he believed the letter grade on his report did not accurately reflect how well he had done in science was echoed in the comments of other parents.

Two of the parents who believed that the report had not affected how their children felt about studying science wrote comments on their questionnaires. Mrs. Smith wrote: "My son genuinely likes science. He has, of course, a definite preference for certain parts and does not apply himself always to his abilities" (Mrs. Smith/Kovac/Q; A); while Mrs. McIsaac wrote: "No, he's usually still bored" (Mrs. McIsaac/Reid/Q; C+). Mrs. Smith and Mrs. McIsaac believed their children would continue to feel the same way about science as they had before, in spite of the progress report.

Mrs. Levett, who selected the "I do not know" response option on her questionnaire, wrote: "The mind of a 14-year-old works in mysterious ways" (Mrs. Levett/Szabo/Q; D). Mrs. Levett's comment seems to suggest that she had difficulty understanding her 14-year-old and his feelings about studying science in school. None of the other parents who chose the "I do not know" option explained their choice.

Parents who indicated that their children had been affected by the Science 9 progress report — and explained their answer — either spoke about the motivating effects or the discouraging effects of the report. Parents who felt their children's feelings about studying science in school had not been affected believed their children continued to like science or continued to find it boring.

Effects of Progress Reports on the Amount of Work Done in Science Class

Students were asked to indicate on a four-point Likert-type scale how they thought the Science 9 report would affect the amount of work they would do in science class. Parents were asked to indicate on a four-point Likert-type scale how they thought the Science 9 report would affect the amount of work their children would do in science class. Their beliefs about the effect of the progress report on the amount of work done in science class are presented below.

Students' Perceptions

Twenty-two (51%) students who completed questionnaires thought they would probably do more work in science class, 14 (33%) thought they would probably do about the same amount of work, two (5%) thought they would probably do less work, and five (12%) were not sure how the progress report would affect the amount of work they would do in science class. Nine (56%) of the interviewed students thought they would probably do more work in science class, five (31%) thought they would probably do about the same amount of work, only one (6%) thought she would probably do less work, and one (6%) was not sure how the report would affect the amount of work he would do in science class.

Students who explained why they would probably do more work in science wanted to either improve or maintain their current letter grade. Most students wanted to improve their letter grade and believed that by doing more work in class they would be able to do so. Here are some examples of what they had to say: "I will probably do more work because that way I can get a better mark than a 'C'" (Jimmy/Reid/I; C); "I am more capable than just a 'C+''" (Sean/Reid/Q; C+); "I want to get a better grade on the next term's report card. I really like science, so I'm always going to try really hard to get a better mark." (Tonya/Szabo/I; C+). On the other hand, Emily was pleased with her "A" and planned to do more work in order to maintain it: "It makes me try to work harder to keep an 'A'" (Emily/Mitchell/I; A).

As these comments show, students who thought they would continue to do about the same amount of work in science class said they were satisfied with their letter grade and believed they would be able to maintain the same grade if they continued to do about the same amount of work: "I will continue to do the same exactly 'cuz I did good on the first terms" (Ravi/Mitchell/I; A); "If I do the same amount of work, I should be able to get the same grade" (Julie/Kovac/Q; A); "I will do the same because I did well doing that amount and I am passing" (Heather/Szabo/Q; B).

Angel, who received an "Incomplete" in Science 9 on her report card, was the only student to explain why she would probably do less work in class:

I will probably do less work because I need to know more about what I need to do. Like, they just say, 'Take it home and finish it!' Well, sometimes I don't understand that, so I do less work and it doesn't really help me do science.
(Angel/Szabo/I; Incomplete)

Angel argued that she needed more information on her report card that explained what she had to do to get a letter grade. She seemed frustrated because she didn't understand why she had been given an "Incomplete" on her report card. Her frustration seemed to reduce her motivation to work in science class.

Only one of the five students who indicated that they didn't know how their progress report would affect the amount of work they would do in science class was interviewed, and none of the others wrote comments to explain their answer. When asked to discuss his questionnaire response, Walley realized that the progress report had, in fact, affected the amount of work he did in science class:

Sue: Now, Walley, you said that you don't know how your last report will affect the amount of work you will do in class this term. Has it affected it in any way?

Walley: Well. Sort of.

Sue: In what way?

Walley: Well, I don't know. I guess I get down to work, now. And I try to get all my work done so I can finish the year and not have to do Science 9 again next year. (Walley/Szabo/I; D)

During the interview Walley changed his mind about his answer and concluded that he had been doing more work in class since his last report card because he wanted to pass Science 9.

For the most part, students who explained their answers said they would do the same amount of work, or more, in science as a result of the previous report because they wanted to maintain or improve their letter grade. An exception was Angel, who felt that she would probably do less work because she didn't know what she had to do to get a letter grade.

Parents' Perceptions

Six (29%) of the parents who completed questionnaires thought their children would probably do more work in science class, 12 (57%) thought they would probably do about the same amount of work, and three (14%) were not sure how the report would affect the amount of work their children would do; none of the parents thought their children would do less work in class. Of the seven parents interviewed, two (29%) thought their children would do more work, three (43%) thought their children would do about the same amount of work, and two (29%) were not sure how the report would affect the amount of work their children would do in science class.

Parents who explained why they thought their children would probably do more work in science class spoke about their children's desire to improve their letter grades. For example, Mrs. Black explained: "My daughter will do more work because she looked at her letter grade on her report card and said, 'I've got to work a little harder.' She wants more" (Mrs. Black/Szabo/I; C).

Some parents who thought their children would do about the same amount of work felt their children always worked hard and could work no harder: "He only has one speed — full throttle" (Mr. Marsden/Szabo/I; B); "She tries hard most of the time" (Mrs. Rice/Mitchell/Q; A). Other parents felt their children had done very little work in science the previous term and would continue to do so, in spite of the previous report: "I don't think he'll try to do better. He did very little work and still got a passing grade, so he doesn't think he has to do more" (Mrs. Downey/Reid/I; C); "[My son] will probably continue to do the minimum required to have work accepted as satisfactory" (Mrs. McIsaac/Reid/I; C+).

Parents who said they didn't know how the report would affect the amount of work their children would do in class seemed to find it difficult to explain why they felt this way. Mrs. Mann's comment is typical of the comments of parents who did not know how the progress report would affect their children: "It's hard to say why I'm not sure. I can't really say, no." (Mrs. Mann/Szabo/I; D).

Most parents felt their children would continue to do about the same amount of work in science as a result of the previous report. Some of these parents felt their children always worked hard and would continue to do so; others felt their children would continue to do only enough to pass Science 9.

Effects of Progress Reports on the Amount of Homework Done in Science

Students indicated on a four-point Likert-type scale how they thought the Science 9 report would affect the amount of science homework they would do. Parents indicated on four-point Likert-type scale how they thought the progress report would affect the amount of science homework their children would do.

Students' Perceptions

Sixteen students (37%) indicated that, as a result of their previous Science 9 report, they probably would do more homework in science, 22 (51%) indicated they would probably do about the same amount of homework, one (2%) indicated she would probably do less homework, and four (9%) were not sure how the report would affect the amount of homework they would do in science. Six (38%) of the interviewed students thought they would do more homework, eight (50%) thought they would do the same amount of homework, one (6%) student thought she would do less homework, and one (6%) student was not sure how the progress report in science would affect the amount of homework he would do in science.

Several students explained why they thought they would probably do more science homework as a result of their Science 9 progress report. Jennifer, for example, explained:

I don't usually do homework in science, but I've started to because I need to pick up my mark a little bit for the last term. I want to see if I can get an "A". I got an "A" the first term, so I want to see if I can get an "A" the last term.
(Jennifer/Reid/I; B)

Similarly, Jackie explained: "I never used to do homework. I have done more homework this term to try to get a better mark" (Jackie/Mitchell/I; C-). Jennifer and Jackie both wanted to

improve their letter grades. On the other hand, Kim was an "A" student who hoped to improve her overall percentage by doing more homework in science:

Well, I always try to do more. See, I don't do the same. Each report card I'll try harder and harder, no matter what. Like, even if I have an "A", you know, I just want that higher percentage because it makes me feel better. (Kim/Mitchell/I; A)

As might be expected, students' reasons for saying they would probably do more science homework were similar to their reasons for doing more work in science class — they wanted to improve or maintain their letter grade.

Students gave a number of different reasons why they believed they would probably continue to do the same amount of homework in science. Some argued that, because they already completed all their homework assigned to them, they couldn't do any more: "I will do the same because I do all my homework so I can't do more and I am passing so I don't need to" (Heather/Szabo/I; B); "I already get my homework done and in on time" (Julie/Kovac/Q; A). Because Ravi was happy with his performance in science, he didn't feel a need to change the amount of homework he was doing: "I'll do exactly the same 'cuz I did good last term" (Ravi/Mitchell/I; A). Jimmy, however, had a different point of view:

I don't do much homework 'cuz I've got two jobs when I get home. I mostly mow people's lawns and I work at a gas station, so I don't get much time for homework. I try to get it done in class. (Jimmy/Reid/I; C)

Jimmy thought he would probably do the same amount of homework as before even though, by his own admission, he did little homework because he tried to finish it at school and didn't have time to do any more.

Only one student, Angel, felt she would probably do less homework in science: "I'll probably do less [homework] because I need to know more so I can do more work on the areas I have problems in" (Angel/Szabo/Q; Incomplete). As discussed in the previous section, because Angel had received an "Incomplete" in Science 9 on her report card and didn't seem to know what she had to do to get a letter grade in Science 9, she appeared to be frustrated and little motivated to study science.

Walley indicated on the questionnaire that he didn't know how his progress report would affect the amount of science homework he would do; however, during his interview he said: "Well, I guess I'm staying pretty much the same. You can only do so much in a day" (Walley/Szabo/I; D). During his interview, it became apparent that Walley was not particularly fond of school; nevertheless, when asked to explain why he didn't know how his progress report would affect the amount of science homework he would do, he admitted that he would probably continue to do as much homework as he had before, which, by his estimation, was very little.

The majority of the students wished to improve or maintain their Science 9 letter grade, so they indicated on their questionnaires they would do either more homework, or the same amount of homework in science as a result of the previous progress report.

Parents' Perceptions

According to their questionnaire responses, nine (43%) parents thought their children would probably do more homework in science, eight (38%) thought their children would do the same amount of homework, one (5%) thought her child would do less homework, and three (14%) were not sure how the report would affect the amount of homework done in science by their children. Of the seven parents who were interviewed, three (43%) thought their children would do more homework, two (29%) thought their children would do the same amount of homework, none (0%) of them thought their children would do less homework, and two (29%) were not sure how the progress report in science would affect the amount of homework done by their children in science.

Parents who believed their children would do more science homework often spoke about their children wanting to improve their letter grades. For example, Mrs. Black observed: "She'll do more homework because she looked at her mark and wanted to do better" (Mrs. Black/Szabo/I; C). Mrs. McIsaac, however, gave a different reason:

He is doing more homework because he was told that he had to do all his assignments or he would not be playing on teams. And I told his teacher that if he

was not doing assignments, I wanted to be told immediately.
(Mrs. McIsaac/Reid/I; C+)

Mrs. McIsaac believed her son would do more homework, not because he wanted to, but because there would be other consequences if he didn't.

Two parents explained why they believed their children would probably do about the same amount of science homework as before. Mr. Marsden knew that because his son wanted to do well in school he always completed his homework and could do no more: "He'll probably do about the same because he's paranoid about homework. It always gets done. Again, he has just one speed and that's full out, full throttle, just go, go, go" (Mr. Marsden/Szabo/I; B). On the other hand, Mrs. Downey didn't believe her son, Jimmy, did any homework: "Well, he doesn't do any homework now. That's why I said he would probably do the same. He never seems to have any to do." (Mrs. Downey/Reid/I; C). Since her son never seemed to have any to do, Mrs. Downey believed her son would continue to not do any science homework.

Only Mrs. Cragg explained why she believed her son would probably do less science homework: "My child is at the stage where conforming is important. He is happy with an 'A', but wants to be cool. Doing homework is not cool [emphasis in original]" (Mrs. Cragg/Kovac/Q; A). In Mrs. Cragg's view, her son would do less science homework because he wanted to gain the approval of his peer group.

Parents who explained why they did not know how the progress report would affect the amount of homework done by their children differed in their reasons for saying this. Mrs. Sidhu suggested that the amount of homework done by her son would depend upon the expectations placed upon him: "It depends upon whether the term is harder or easier" (Mrs. Sidhu/Mitchell/Q; A). In her written comment, Mrs. Mann wrote: "He seems that he doesn't want to do it but if I knew each time its [sic] not done I could get on his case at home and have him do it" (Mrs. Mann/Szabo/Q; D). When interviewed, she explained that he rarely brought any homework home, but if he did, she would make sure that he did it.

Most of the parents believed that their children would do the same amount of, or more, homework as a result of the previous report card because they wanted to maintain or improve their letter grade.

Effects of Progress Reports on Students' Confidence in Ability to do Science

Students were asked: *Has the last Science 9 report affected your confidence in your ability to do science?* Parents were asked: *Has the last Science 9 report affected your child's confidence in her or his ability to do science?* Students' and parents' responses to these questions are discussed in this section.

Students' Perceptions

When asked if their confidence in their ability to do science had been affected, 20 (47%) students answered "Yes", 18 (42%) answered "No", and five (12%) answered "I do not know". Seven (44%) of the interviewed students answered "Yes", eight (50%) answered "No", and one (6%) answered "I do not know" on their questionnaires.

Some students, who answered "Yes" on their questionnaires, said they felt more confident in their ability to do science as a result of their previous progress report. Both Carrie and Jennifer, for example, felt more confident: "It helps your self-confidence if you do well" (Carrie/Mitchell/Q; A); "I got an 'A', and then I got a 'B', and then I got another 'B'. And, like, I think I'm doing well. I'm more confident because I know I can do it for sure" (Jennifer/Reid/I; B). Each of these students felt more confident in her ability to do science because she believed her progress report had shown that she was doing well in science. Each of these students had been positively affected by the previous progress report.

Not all of the students who indicated that their confidence had been affected described a positive effect. As Leanne's written comment illustrates, a progress report can have a strong negative effect upon a student's confidence: "I don't feel confident anymore. I am scared to answer questions because it feels like he is judging you on everything" (Leanne/Turner/Q; D). It would seem that Leanne's "D" undermined her confidence to such an extent that she felt

“scared” to participate in class. Even though Olivia was a “B” student, she also was negatively affected by her report:

Now, I don’t think I can do science that well. In elementary school I was doing really good in all my classes and, then, last year I was doing pretty good, but this year I can’t seem to do my tests. Like, I’ll know what I’m doing, but come to the test, my mind goes blank. I know my test results have brought my grade down quite a bit. (Olivia/Szabo/I; B)

Because Olivia liked science and planned a career in science (see previous section), she did not think her “B” was good enough. As a consequence, she felt less confident in her ability to do science.

Heather was one of several students who answered “No” on their questionnaires.

Heather’s confidence was not affected because she believed that she had done well and her letter grade reinforced this belief: “Not really because I still think that I’m pretty good at science and it says that I am (Heather/Szabo/I; B). Bradley also indicated on his questionnaire that his confidence had not been affected by his report in science. He wrote: “No, because I got a mark the same as the terms before so it didn’t affect me” (Bradley/Szabo/Q; C-). Even though Bradley had not done particularly well in science, during his interview he observed: “It didn’t affect me because I know that I can do it. It’s just that I wasn’t doing it” (Bradley/Szabo/I; C-). Bradley’s comment shows that he felt confident in his ability to do science, and suggests that he believed that if had done more work he would have achieved a higher letter grade. On the other hand, Brennon wrote on his questionnaire: “No, [it hasn’t affected how I feel about my confidence] because I know I’m no good at it” (Brennon/Szabo/Q; D). It would seem that Brennon’s confidence in his ability to do science had not been affected by his report card because he had little confidence to affect.

None of the students who answered “I do not know” on their questionnaires explained their answers. Only one student who didn’t know if his confidence had been affected was interviewed and he was unable to explain why he answered this way: “I dunno. I’m not sure” (Justin/Reid/I; B). As a result, it is not possible to know some of the reasons students answered “I do not know” to this question.

A fairly large proportion of the students indicated on their questionnaires that the previous report had affected their confidence in their ability to do science; some of these students said they felt more confident, others said they felt less confident. Slightly less than half of the students felt there had been no effect upon their confidence as a result of the previous report card.

Parents' Perceptions

When asked to indicate whether or not their children's confidence in their ability to do science had been affected by their previous progress report, four (19%) parents said "Yes", 14 (67%) said "No", and three (14%) answered "I do not know". None of the interviewed parents answered "Yes", five (71%) answered "No", and two (29%) answered "I do not know" on their questionnaires.

Two of the four parents who indicated that their children's confidence in their ability to do science had been affected wrote comments on their questionnaires. Mr. Ahmed wrote: "She feels good about it" (Mr. Ahmed/Mitchell/Q; A); Mrs. Sidhu wrote: "He tries harder to do his best" (Mrs. Sidhu/Mitchell/Q; A). Both of the parents seem to be suggesting that the progress report had increased their children's confidence.

Most parents indicated that their children's confidence in their ability to do science had not been affected. Parents who chose to explain their questionnaire responses believed their children felt confident in their abilities and, therefore, had not been affected by the previous progress report. For example, Mrs. Knight wrote of her daughter: "I believe my daughter knows her abilities and was not affected by her report card" (Mrs. Knight/Szabo/Q; C+); while Mr. Marsden said of his son: "He's totally self-confident in everything he does regardless of his marks" (Mr. Marsden/Szabo/I; B). During her interview, Mrs. McIsaac laughed as she explained: "He's very confident that he can do it, but he just doesn't want to do it" (Mrs. McIsaac/Reid/I; C+).

Effects of Progress Reports on Parent-Child Relationship

Students were asked: *Has your last report on your progress in Science 9 had any effect on your relationship with your parent(s)?* Conversely, parents were asked: *Has the last Science 9 report had any effect on your relationship with your child?* Their responses to, and comments about, these questions are discussed next.

Students' Perceptions

In all, 12 (28%) students said "Yes" their Science 9 report had affected their relationship with their parent, 23 (53%) said "No", and eight (19%) said "I do not know". Three (19%) of the interviewed students answered "Yes", 10 (63%) answered "No", and three (19%) answered "I do not know" on their questionnaires.

A minority of the students indicated on their questionnaires that their progress report had affected their relationship with their parents. Students who explained their answer spoke about their relationship being negatively affected. For example, Leanne wrote this on her questionnaire: "They were disappointed in my grade and very upset because they know I could do better" (Leanne/Turner/Q; D). Leanne's comment doesn't describe how her relationship with her parents changed, but suggests there could have been some conflict with them as a result of her progress report if her letter grade had been different. Lisa, however, described how her relationship with her mother had been affected:

- | | |
|-------|--|
| Sue: | On your questionnaire you wrote, "They are stricter." In what way are they stricter? |
| Lisa: | Well, my mum, she really nags at me lots of times that I have to get my homework done and stuff. She kind of cuts off my TV and stuff like that. Makes sure I get in gear and everything. (Lisa/Szabo/I; C+) |

Students who explained how their Science 9 progress report had affected their relationship with their parents spoke about their parents being disappointed or more strict with them.

Most students indicated that their relationship with their parents had not been affected. Tonya did not believe her relationship with her parents had been affected because they always

encouraged her to work in school: "They continue to tell me to concentrate and get good grades" (Tonya/Szabo/Q; C+). Similarly, Olivia wrote: "They know how I feel and everything, so they support whatever I'm doing" (Olivia/Szabo/I; B). And Carrie wrote: "They know I work hard no matter what my grade is" (Carrie/Mitchell/Q; A). These students felt supported by their parents and did not feel their previous report had affected their relationship with their parents.

Heather also did not believe her relationship with her parents had been affected, however, her comments suggest that, had her report been different, this may not have been the case: "No, because my parents did not ground me or anything because I did well so I'm not mad at them" (Heather/Szabo/Q; B). When asked to explain her written comment, Heather said, "Cuz usually if your parents don't like how well you did, they'll usually punish you somehow and my parents didn't, so I must have done pretty good" (Heather/Szabo/I; B). Heather's comments suggest that if her parents had thought she had not done well they might have punished her, and, as a result, she would have been "mad" at them.

Students who indicated on their questionnaires that they didn't know if their relationship with their parents had been affected by the previous progress report were still not sure about the effect when they were interviewed, so it is not possible to describe some of the reasons why students indicated "I do not know" on the questionnaire.

Parents' Perceptions

When parents were asked if the previous report had affected their relationship with their children, five (24%) answered "Yes" and 16 (76%) answered "No" on their questionnaires; none of them answered "I do not know". Three (43%) of the interviewed parents answered "Yes" on their questionnaires and four (57%) answered "No".

Parents who explained how their relationships with their children had been affected by the progress report had less trust in their children. For example, Mrs. McIsaac, who wrote on her questionnaire, "I tend to trust him less" (Mrs. McIsaac/Reid/Q; C+), explained during her interview how she had learned from his progress report that her son had not completed a number

of his science assignments the previous term even though he had told her he had done them. As a result, Mrs. McIsaac said she no longer trusted her son, had reinstated a set time for homework, and continually checked to see if it was done. Mrs. Levett also described how she spent more time monitoring her son's homework, and even though she did not explicitly state it, her comment indicates that her trust in her son had also been affected by the previous report:

We help him more and offer him more encouragement. We check his homework and send homework sheets to be signed by the instructor so we know what he is supposed to do. (Mrs. Levett/Szabo/Q; D).

As their comments show, each of these parents felt that the previous report had had a negative effect upon their relationship with their child. However, it could also be argued that there was also a positive effect in that these mothers were now more involved in their children's schooling.

Parents who indicated that their relationships with their children had not been affected, and commented on their answer, explained how their relationships with their children did not depend on their performance in school. Mrs. Knight, for example, wrote: "Our relationship is not built on being the best in the class, but striving to reach her potential and being comfortable within herself" (Mrs. Knight/Szabo/Q; C+). Mrs. Knight's comment suggests that she preferred to focus on the overall well-being of her daughter and not just on her performance in school. When asked to comment on his questionnaire response, Mr. Marsden observed:

It hasn't had any effect upon my relationship with Adam, but I can remember going through great traumatic situations with my oldest child until I finally decided that a report card wasn't entirely relevant to the whole spectrum of life. My children had to make their own decisions, and if they decided they weren't going to study and they weren't going to get the marks they could, well, down the road they'd have to live with the consequences. So I'm past worrying about them and now it doesn't affect my relationship with them.
(Mr. Marsden/Szabo/I; B)

Although Mr. Marsden's relationship with his son had not been affected by the previous progress report, his comment shows that, in the past, a progress report had affected his relationship with one of his children.

Most parents believed their relationships with their children had not been affected by the previous progress report. Parents who explained why they believed the progress report had

affected their relationship with their children did not seem to trust their children to complete their school work on their own and, as a consequence, had become more involved in their children's schooling.

Effects of Progress Reports on Educational Decisions

To learn about the effect of Science 9 progress reports on educational decisions, students and parents were asked to indicate if the progress reports were taken into consideration when a student's future schooling was discussed or planned.

Students' Perceptions

Twenty-three (53%) of the students who completed questionnaires said "Yes" they took their progress report into consideration when they discussed or planned their future schooling, and 20 (47%) said "No". Of the students who were interviewed, 10 (63%) said "Yes" and six (38%) said "No" on their questionnaires.

Students who explained why they considered reports about their progress in Science 9 when discussing or planning their future schooling gave several different reasons for their answer. A number of students considered their Science 9 report because they planned to pursue a career in a scientific field and needed good grades in science to do so: "I need good grades in science to become a veterinarian" (Sandra/Mitchell/Q; B), "If I don't do good in science — the field I want to go into — I won't be able to go into it until I get good science marks. So I might have to think of a different career if I can't do my science well" (Olivia/Szabo/I; B). Other students viewed good grades in science as being necessary for admission into a post-secondary institution: "If I get Ds and stuff in my science, now, and then if I go for university, it won't matter what I want to do, it will be harder to get in. Right? I want to go to some post-secondary place" (Sean/Reid/I; C+); "I want to be a teacher so I need to do well in science to get into college or university" (Jackie/Mitchell/I; C-).

One student used her progress reports in science to help her make decisions about which courses to take in school: "[I consider my report in science because] it helps to know if science

is a strength or may/may not help determine what courses to take in high school”

(Leanne/Turner/Q; D). Apparently, Leanne viewed a letter grade as being a predictor of future performance in school. Another student used his science progress report to identify areas of science he needed to work on to be successful in Science 10: “[I consider my report] to see if I need to practice some parts of science to understand it next year” (Michael/Kovac/Q; A).

Some of the students who explained why they did not consider their Science 9 report when planning their future schooling did not believe science would be part of their future: “Well, the future schooling I would like to take doesn’t need science because I plan to be a lawyer or something in family psychology” (Leanne/Turner/Q; D), “I do not intend to go into a scientific field” (Kevin/Turner/Q; B), “Well, not really ‘cuz I don’t really need science for what I’m going to do or what I want to do” (Walley/Szabo/I; D). Other students weren’t sure about their future: “No, because I don’t have an idea what I’m going to be doing” (Bradley/Szabo/I; C-), “I haven’t really thought about it yet” (Adam/Szabo/I; B).

Overall, slightly more than half of the students indicated on their questionnaires that they took their Science 9 progress report into consideration when planning their future schooling. They did so because they planned a science-related career, or because they felt good grades in science were necessary for admission to a post-secondary institution. Students who did not take their progress report into consideration did not plan to pursue a science-related career, or were not sure what they would do in the future.

Parents’ Perceptions

When parents were asked if they took their children’s Science 9 progress report into consideration when they discussed or planned their children’s future schooling, 15 (71%) of them answered “Yes”, and six (29%) answered “No”. Five (71%) of the interviewed parents answered “Yes” and two (29%) answered “No” on their questionnaires.

Parents gave two main reasons for taking their children’s Science 9 progress report into consideration when discussing or planning future schooling. Some parents considered the report

because their children planned a career in a scientific field: “He plans to do sciences at the university, therefore, to have a ‘B’ on the report card is simply not good enough”

(Mrs. Smith/Kovac/Q; A), “She is interested in studying medicine” (Mrs. Rice/Mitchell/Q; A),

“He wants to be a mechanic or an engineer — basic science is so important”

(Mrs. Levett/Szabo/Q; D). Others viewed good grades in science as being necessary for admission to a post-secondary institution: “All post secondary education needs sciences”

(Mr. Atkins/Turner/Q; C), “My child is determined to attend post secondary education. I have [told him that] ‘poor marks’ in ‘important’ subjects (i.e., math/science/English) may affect which university you could be accepted. [I have used this as a] goad to increase [his] effort (usually doesn’t work!)” (Mrs. McIsaac/Reid/Q; C+). Mr. Li took his son’s Science 9 progress report into consideration for another reason:

I feel it’s [the Science 9 progress report] very important. Science 9 and 10 is very important because that’s the basic understanding of science. If they don’t have a good grasp — if they don’t have a good interest in it, they might not necessarily do well when it comes to Grade 11 and 12. (Mr. Li/Reid/I; A)

Mr. Li believed that if his son was successful in Science 9 he would have a better chance of being successful in his future secondary school science courses.

Three parents explained why they did not consider their children’s progress reports in Science 9 when discussing future schooling. Two of them suggested they did not discuss future schooling with their children because they believed such decisions were up to the child: “What he feels like to be he can. It’s up to him” (Mrs. Sidhu/Mitchell/Q; A); “Like I said before, he has to make his own choices” (Mr. Marsden/Szabo/I; B). One parent said a progress report in science was not considered because her daughter planned a future that “doesn’t have anything to do with science” (Mrs. Black/Szabo/I; C). However, she went on to say, “Now, should she change her mind about what she wants to do — which she very possibly could — then I would change my answer to ‘Yes’” (Mrs. Black/Szabo/I; C).

A majority of the parents took the Science 9 progress report into consideration when they discussed their children’s future schooling. Parents, who explained their answers, took the

progress report into consideration for two reasons: either their child planned a science-related career, or they viewed good grades in science as a requirement for university admission. Parents who did not take the progress report into consideration suggested that the Science 9 progress report wasn't relevant because their children planned future careers, and, by implication, future schooling, outside the field of science; or they did not want to "interfere" in their children's decisions.

Effects of Progress Reports on Vocational Decisions

To find out if Science 9 progress reports influence vocational decisions, students and parents were asked if Science 9 progress reports were taken into consideration when a student's future career was planned or discussed.

Students' Perceptions

Eighteen (42%) of the students who completed questionnaires said "Yes", they took their progress report into consideration when they discussed or planned their future career and 25 (58%) said "No". Nine (56%) of the interviewed students answered "Yes" and seven (44%) answered "No" on their questionnaires.

All of the students who explained why they took reports about their progress in Science 9 into consideration when they discussed their future career planned to pursue a career in a scientific field. For them, good grades in science were key to attaining their career goals: "Because to get into vet school, now, you have to have good marks or you can't get in" (Heather/Szabo/I; B); "I want to become a doctor, so science is very important" (Kim/Mitchell/I; A).

Students who explained why they did not take reports about their progress in Science 9 into consideration when they discussed their future career either did not view science as being necessary for their career: "I want to be a mechanic. It's more math than science for mechanics" (Jimmy/Reid/I; C), "If I were to have gotten an 'A', I still don't think that I would have gone into a science field" (Sean/Reid/I; C+); or they were not sure what their future career would be:

“I don’t know what I’m going to do. I’ve thought about it lots — I just haven’t decided, but when I decide what I want to do, then I’ll work hardest in the classes that I need to achieve that” (Bradley/Szabo/I; C-).

Fewer than half of the students who completed questionnaires considered their Science 9 progress report when they discussed their future career. Those who did and explained their answers planned a science-related career. Students who did not consider their progress report did not plan a science-related career, or were not sure about their future career plans.

Parents’ Perceptions

When parents were asked if they took their child’s Science 9 progress report into consideration when they discussed or planned their child’s future career, 13 (62%) of them said “Yes”, and eight (38%) said “No”. Four (57%) of the interviewed parents answered “Yes” and three (43%) answered “No” on their questionnaires.

Parents tended to consider their child’s Science 9 progress report when discussing future career plans for the same reasons they considered them when discussing future schooling — either their child planned to pursue a science-related career, or they viewed good grades in science as being necessary for admission to a post-secondary institution. Mrs. Levett was one parent who viewed science as being necessary for her child’s future career as well as for “everyday living”: “We try to impress on our children the importance of science in everyday living. He wants to be a mechanic or an engineer. Basic science is so important.” (Mrs. Levett/Szabo/Q; D). Mrs. Enns felt good grades in science were necessary for post-secondary education: “As she gets into higher grades — and she has more sciences to choose from — we have discussed the benefits of taking science as an entrance to many programs for post-secondary education” (Mrs. Enns/Mitchell/Q; A).

Parents who explained why they did not take reports about their children’s progress in Science 9 into consideration mentioned that their child had not yet decided upon a career: “So far, Sean hasn’t shown any inclination in the scientific field — or anything else for that matter”

(Mrs. McIsaac/Reid/I; C+); or they observed that their children planned to pursue careers that did not require them to study science: "Her interest is towards schooling horses. I'm trying to get her to incorporate a bit of business management, if she wants to do something like that, but science isn't important" (Mrs. Black/Szabo/I; C).

A majority of the parents who completed questionnaires said they considered the Science 9 progress report when they discussed their child's future career. They did so because they believed their child wished to pursue a science-related career, or because they believed good grades in science were important for admission to a post-secondary institution. Parents who did not take the progress report into consideration had children who did not plan a science-related career, or had not yet made any career plans.

Summary

In this chapter, I used questionnaire and interview data to describe students' and parents' perceptions of the effects of reports of student progress on several factors that can affect student learning, and their educational and vocational decisions.

Nearly half of the students said they were affected by their previous Science 9 progress report and planned to do more work in class and/or more homework because they wanted to either maintain or improve their letter grade. Nearly half of the students also said their progress report had affected their confidence in their ability to do science. Some of these students felt more confident because their report proved they could do science; others felt less confident because their letter grade showed they were doing less well than they had thought. While most students did not feel their progress report had affected their relationship with their parents, some felt their parents were more strict as a result of the report. Students who took their Science 9 progress report into consideration when they planned their future schooling and/or career tended to do so because they planned a career in a scientific field, or because they believed a good grade in science was necessary for admission into a post-secondary institution.

Slightly less than half of the parents thought their children had been affected by the previous Science 9 progress report. Some of these parents felt the progress report had positively affected their children, but more thought it had had a negative effect. Because they thought their children wanted to maintain their letter grades or improve them, about half of the parents thought that their children would do more work in class and/or more homework for Science 9. Although most parents did not feel that their relationship with their children had been affected by the report, a few were less trustful of their children and more strict because of it. Parents of students who planned a career in science or intended to pursue post-secondary education considered their children's Science 9 progress report when they discussed future schooling and/or career plans.

CHAPTER 10

CONCLUSION

Introduction

The purpose of this study was to investigate the reporting and grading, as well as the meaning of letter grades of students in Science 9 from the perspectives of teachers, students, and parents. The findings reported here are clearly limited by the characteristics of the participants of the study in that all of them were volunteers, only a fraction of the students and parents invited to participate agreed to complete questionnaires, and even fewer students and parents were interviewed. Hence, the findings are not generalizable across all teachers, students, and parents. Caution, therefore, must be taken when making generalizations to other educational settings.

Although information gleaned through document analysis was important to the study, the data were primarily collected through written survey questionnaires and individual, audio-taped interviews. Questionnaire data were used to identify participants' beliefs and opinions about grading and reporting in Science 9. Interview data (and to a much lesser extent, written questionnaire comments) were used to both verify and clarify participants' questionnaire responses.

In this final chapter, I present and discuss the findings related to the research questions *as they apply to the participants of this study*, issues arising from the research questions, issues arising from the methodology of the study, and the implications for practice and further research.

Findings Related to the Research Questions

The study was organized around four research questions. In this section, I summarize the findings related to those questions as they pertain to the people of this study.

Question 1: What reporting methods do teachers use to communicate information about student learning in Science 9 to students and parents, and what are teachers', students', and parents' opinions of those reporting methods?

This question was included in the study because the methods used to convey a message help give meaning to that message and students' and parents' opinions of those methods affect how letter grades are interpreted.

Findings Concerning Teacher Participants

- Teachers use a variety of methods to inform students and parents about student performance in Science 9.
- Contrary to BCME policy, teachers assign letter grades by converting students' overall percentage scores for the term into letter grades rather than assigning percentages based on letter grades that represent their judgment of student performance.
- Teachers prefer to communicate student progress in Science 9 using letter grades and/or percentages in combination with a method that allows them to discuss aspects of student performance not considered when a letter grade is assigned (e.g., written comments, conferences).
- Teachers prefer to report student progress via percentages rather than letter grades because they believe that percentages are more precise (i.e., more accurate).

Findings Concerning Student Participants

- Students prefer to learn about their progress in Science 9 via letter grades and/or percentages combined with another method such as written comments or conferences.

- Students prefer percentages over letter grades because they believe they are more accurate.
- Students are generally satisfied with the methods used to report their progress in Science 9.
- Students would like written report card comments that are more informative and personal.

Findings Concerning Parent Participants

- Parents prefer to learn about their children's progress in Science 9 via letter grades and/or percentages combined with another method such as written comments or conferences.
- Parents prefer percentages over letter grades because they believe they are more accurate.
- Parents are not always satisfied with the methods used to report their progress in Science 9.
- Parents would like their children's written report card comments to be more personal and informative.

Question 2: What grading components do teachers incorporate into Science 9 letter grades, and what grading components do students and parents believe teachers incorporate into Science 9 letter grades?

This question was included in the study on the premises that the grading components a teacher incorporates into a letter grade help give meaning to a letter grade, and students' and parents' beliefs about the components of a letter grade affect how they interpret that grade. The findings that emerged as I endeavoured to answer this question are listed below.

Findings Concerning Teacher Participants

- Teachers incorporate a variety of grading components into letter grades. Some components are explicitly factored into a letter grade (e.g., test results), while some components are implicit (e.g., effort).
- Teachers incorporate both achievement (e.g., test results) and non-achievement factors (e.g., effort/work habits) into a Science 9 letter grade.
- The numbers and types of grading components incorporated into a Science 9 letter grade vary from teacher to teacher.
- When assigning letter grades, the emphasis placed on the same grading component (e.g., test results) varies from teacher to teacher.
- Teachers consider only those aspects of student performance which they believe can be “objectively” assessed (e.g., test results, lab assignments, homework assignments).
- Some teachers incorporate different grading components into the letter grades of different students within the same class (e.g., test results might be not be included in the letter grades of some exceptional needs students).
- Some teachers consider non-achievement factors when making decisions about borderline cases (e.g., attitude or behaviour might be considered by a teacher when deciding if a letter grade should be “bumped up” from one letter grade to the next).
- Virtually everything a teacher marks is incorporated into the letter grade in some way, either formally or informally.

Findings Concerning Student Participants

- Students believe that a number of different components are incorporated into a Science 9 letter grade.
- Beliefs about which components are incorporated into a Science 9 letter grade vary among students within the same class and across different classes.
- Students' beliefs about the components of a Science 9 letter grade are, at times, different from their teacher's reported practices.
- Students are most knowledgeable (that is, they show highest agreement with their teacher) about components that are commonly incorporated into, or greatly contribute to, a Science 9 letter grade (e.g., test results, lab assignments, homework); they are less knowledgeable about components that are not commonly incorporated into, or contribute only slightly to, a Science 9 letter grade (e.g., performance tasks, participation).
- Students believe that teachers consider, either formally or informally, non-achievement factors (e.g., effort/work habits) when they determine letter grades.
- Students believe that everything a teacher marks is part of their letter grade.

Findings Concerning Parent Participants

- Parents believe that a number of different components are incorporated into a Science 9 letter grade.
- Beliefs about which components are incorporated into a Science 9 letter grade vary among parents with students in the same class and in different classes.

- Parents' beliefs about the components of a Science 9 letter grade at times are, at times, different from their children's teachers' reported practices.
- Parents are most knowledgeable (that is, they show highest agreement with their child's teacher) about components that are commonly incorporated into, or greatly contribute to, a Science 9 letter grade (e.g., test results, lab assignments, homework); they are less knowledgeable about components that are not commonly incorporated into, or contribute only slightly to, a Science 9 letter grade (e.g., performance tasks, participation).
- Parents believe that teachers consider, either formally or informally, non-achievement factors (e.g., effort/work habits) when they determine letter grades.
- Parents believe that everything a teacher marks is part of their children's letter grades.

Question 3: What meanings do teachers, students, and parents attribute to Science 9 letter grades?

It is an assumption of the study that the basis for comparison used by a teacher when determining a letter grade gives meaning to the letter grade. Hence, the meaning of a letter grade should reflect the basis of comparison used to assign that grade. The goal of this question was to examine the meaning(s) people attribute to a Science 9 letter grade in terms of bases for comparison.

Findings Concerning Teacher Participants

- Teachers attribute multiple meanings to the Science 9 letter grades they assign.
- The meanings attributed to Science 9 letter grades vary among teachers.
- Some teachers attribute meanings to letter grades that could be considered to be incompatible with one another (e.g., norm-referenced and criterion-referenced).

- The meanings teachers attribute to a letter grade do not necessarily reflect the basis for comparison that they used to assign those grades.

Findings Concerning Student Participants

- Students attribute multiple meanings to Science 9 letter grades.
- The meanings attributed to Science 9 letter grades vary among students within the same class and in different classes.
- The meanings students attribute to Science 9 letter grades are, at times, different from the meanings intended by their teacher.
- Some students attribute meanings to letter grades that could be considered to be incompatible with one another (e.g., norm-referenced and criterion-referenced).
- The meanings students attribute to letter grades do not necessarily reflect their beliefs about the basis of comparison their teachers use to assign their grades.

Findings Concerning Parent Participants

- Parents attribute multiple meanings Science 9 letter grades.
- The meanings attributed to Science 9 letter grades vary among parents with children in the same class, and among parents with children in different classes.
- The meanings parents attribute to Science 9 letter grades are, at times, different from the meanings intended by their child's teacher.
- Some parents attribute meanings to letter grades that could be considered to be incompatible with one another (e.g., norm-referenced and criterion-referenced).

- The meanings parents attribute to letter grades do not necessarily reflect their beliefs about the basis of comparison the teacher used to assign that grade.

Question 4: What are students' and parents' perceptions about some possible effects of student progress reports in Science 9?

This question was included to learn about students' and parents' perceptions of the effect of progress reports on several factors that can affect student learning in school (e.g., the amount of homework they do, their work habits in school), and vocational and educational decisions.

Findings Concerning Student Participants

- The effects of Science 9 progress reports on students can be positive, negative, or neutral.
- Some students work harder as a result of their progress report because they want to improve or maintain their letter grade.
- Some students feel more confident about their ability to do science as a result of their progress report; others feel less confident.
- Students who plan a career in a science-related field and/or intend to pursue post-secondary education seem to be most affected by their Science 9 progress report.
- Students who plan a career in a science-related field and/or intend to pursue post-secondary education take their Science 9 progress report into consideration when they discuss their future schooling and/or career plans.
- Students who do not plan a career in a science-related field tend not to take their Science 9 progress report into consideration when they discuss their future schooling and/or career plans.

Findings Concerning Parent Participants

- Parents described both positive and negative consequences of progress reports.
- Some parents believe that their children work harder as a result of a progress report so as to improve or maintain their letter grade.
- Some parents believe that their children's confidence in their ability to do science is affected by a progress report.
- Parents of children who plan a career in a science-related field and/or intend to pursue post-secondary education are more likely to take the Science 9 progress report into consideration when future schooling and/or career plans are discussed.
- Parents of children who do not plan a career in a science-related field tend not to take the Science 9 progress report into consideration when discussing their children's future schooling and/or career plans.

Issues Arising From the Research Findings

A number of issues arising from the research findings are discussed in this section.

Educational Measurement is Imprecise

The people in this study tended to prefer percentages over letter grades for reporting student progress because they believed that percentages are more accurate than letter grades. To them, a percentage, being a number, is precise, whereas, a letter grade, which corresponds to a range of percentages, is not.

The perception that a percentage is precise, however, is an illusion. Teachers calculate a student's percentage for a term by combining the scores a student obtained on a number of assessment devices, or activities, completed throughout the term. Assessment devices, such as tests, are measurement tools, and, as such, are imprecise. They are imprecise because we cannot

measure student performance perfectly — there will always be extraneous factors (e.g., effort, fatigue, guessing) that affect the quality of assessment scores; that is, there will always be measurement error. Measurement error causes measurement to be inconsistent, and hence, makes measurement less dependable. Measurement error affects the reliability of assessment scores.

Because there is always measurement error associated with an assessment score, teachers should interpret a score “as a band of scores’ rather than as a specific score” (Gronlund & Linn, 1990, p. 89). One way to do this is to use the standard error of measurement to construct error (or confidence) bands around a score. In this way, the upper and lower limits of the range within which “true” score lies can be estimated. If the error bands are small, then a teacher can be fairly confident that a student’s score is a dependable measure of the what the student knows or can do. As Gronlund and Linn (1990) observed:

Viewing a test score as a band of scores makes it possible to interpret and use test results more intelligently. Apparent differences in test scores between individuals and for the same individual over time, often disappear when the standard error of measurement is considered. (p. 89)

A teacher who understands the concept of the standard error of measurement, and applies it to the scores of the students in his or her class, will recognize that the precision of any score — whether it is a score from a single test or an overall percentage score based on a number of tests — is just an illusion. Once the illusion is seen for what it is, a teacher is less likely “to be dogmatic in interpreting minor differences in test scores with the result that they may find it easier to make judgments about student performance in school” (Gronlund & Linn, 1990, p. 89).

Assessment is a Subjective Process

The teachers in this study did not consider information about certain aspects of student performance (e.g., attitude) when determining letter grades because they felt that the assessment of such aspects was “subjective”. By implication, then, they must believe that the assessment of aspects of student performance, such as knowledge of subject matter, is not subjective.

However, assessment is a subjective process no matter if the purpose of the assessment is to collect information about students' knowledge of subject matter, or their attitude toward the course they are taking. Making decisions about what to assess, how to assess, and when to assess are subjective processes; deciding which questions to ask and how to score students' responses are also subjective processes; and assigning letter grades based on judgments about student performance is a subjective process. The question, therefore, is not whether a particular aspect of student performance should be excluded from the evaluation process due to assessment subjectivity, the question is whether it should be excluded because it is not an expected learning outcome. Aspects of student performance that are not described in the expected learning outcomes for a course, but are important factors in student learning, should not be considered when a letter grade is assigned — they should be systematically assessed by the teacher and the assessment results should be reported to students and parents via methods other than letter grades (*Principles for Fair Student Assessment*, 1993; Stiggins, 1994).

Multiple Methods Required for Fair and Accurate Assessment

Whether teachers compare student performance to widely held expectations (or expected learning outcomes), to make sound judgments, they must systematically gather information about what students know and are able to do. To do this, they need to use a variety of assessment methods that are clearly related to both the expected learning outcomes of the course, and their teaching methods (*Principles for Fair Student Assessment*, 1993).

Teachers should base their judgments of student performance on the results provided by a variety of assessment methods to ensure that the expected learning outcomes of a course are adequately sampled, and that students are provided with more than one opportunity, and opportunities in more than one way, to demonstrate what they know and can do (*Principles for Fair Student Assessment*, 1993). Several people in this study pointed out that some students have difficulty writing tests (i.e., they suffered from test anxiety) and, therefore, are not able to demonstrate what they know; as a consequence, their test scores are low and, they believe, their letter grades are inaccurate. Teachers should take this into consideration when they develop or

choose their assessment methods so that alternate methods are available to students who are unable to respond adequately to commonly-used assessment methods such as tests.

For the most part, the teachers in this study based Science 9 letter grades on three types of information — test results, homework, and lab assignments — with test results being the most heavily emphasized of the three. Although they also considered other types of information when determining letter grades, they seldom, if ever, used authentic assessment methods (e.g., performance tasks; portfolios). Authentic, or alternate, assessment methods provide students with different opportunities to demonstrate what they have learned. For some students, these assessments may be a welcome change from the paper-and-pencil tests they dread. When teachers use a variety of assessment methods, and provide alternate assessments for students who cannot respond to conventional methods, they help ensure that student assessment is fair and accurate (*Principles for Fair Student Assessment*, 1993).

Appropriate Methods Required for Fair and Accurate Assessment

The *Principles for Fair Student Assessment Practices for Education in Canada* (1993) state that “assessment methods should be appropriate for and compatible with the purpose and context of assessment” (p. 5). The results of this study, however, indicate that this is not always the case — teachers sometimes use inappropriate assessment methods.

For example, one’s memory is not an appropriate assessment method (e.g., Robert Reid assigned students’ marks for participation based on his memory). Because teachers must “systematically gather” information about what students know and can do in order to evaluate student performance, they cannot rely on their memory. Teachers must use devices such as paper-and pencil tests, standardized performance tasks, checklists, and rating scales to ensure that they collect the same kinds of information from and about all students. In this way, they increase the likelihood that their assessment devices will be used consistently and that, as a consequence, students will be treated fairly.

Teachers must also ensure that they score student performance using procedures that are consistently applied and appropriate for the assessment method. For example, a scale in which the lowest score possible is 5 out of 10, and the highest score possible is 9 out of 10 is probably not appropriate (e.g., Robert Reid gave a student who rarely participated a 50% and one who always participated a 90%). How can a student who demonstrates little, if any of the, assessed quality be given a score of 5 out of 10? To increase the validity and consistency of their assessment results, teachers must develop proper scoring procedures by clearly articulating the level of performance, or the quality of a product, linked to each point on the scale. Then, to ensure fairness, teachers must apply their scoring procedures to the information they have systematically collected from and about students in the same way (*Principles for Fair Student Assessment*, 1993).

Assessment Information Must be Linked to Purpose

Some of the teachers in this study considered information about non-achievement factors such as behaviour, effort, and participation when assigning letter grades. In some cases, non-achievement factors were explicitly incorporated into the letter grade (e.g., Robert Reid said that 5% of a letter grade came from a student's behaviour in class). In other cases, teachers considered information about non-achievement factors when making decisions about "borderline" cases (e.g., David Turner took non-achievement factors [e.g., behaviour] into consideration when deciding whether or not a "borderline" letter grade should be "bumped" up).

Non-achievement factors, such as student behaviour, effort, and participation, may affect student learning, however, they are not, at least in the case of Science 9, expected learning outcomes for the course. As the BCME observed:

Often a student's achievement is affected by behaviour and, as an indirect result, the letter grade will be affected. However, reducing grades as a deterrent is unfair and self-defeating. Behaviours and personal traits are best reported to parents through written comments and in conferences. (BCME, 1994a, p. 22)

Information about student behaviour and participation is important and should be communicated to students and parents. However, in B.C., teachers are expected to communicate such

information via written comments and at conferences; they are not supposed to consider it when assigning letter grades (BCME, 1994a).

Accordingly, a teacher should only consider information about achievement — that is, information about student performance in relation to the expected learning outcomes — when making grading decisions about students in general, or when making grading decisions about students who are seen as “borderline” cases. To make decisions about “borderline” cases, Stiggins (1994) suggested that

teachers collect one or two significant pieces of achievement data that overlap with other assessments, thus double-checking previous information about achievement. Hold these in reserve — don’t factor them into the grade. Then if you need “swing votes”, use them to help you decide which grade should be assigned. (p. 387)

When a teacher uses supplementary achievement information to make a decision about a “borderline” case, non-achievement factors are kept out of the grading process, and in accordance with the *Principles for Fair Student Assessment* (1993), assessment information collected from and about students is “appropriate for and compatible with the purpose and context of the assessment” (p. 5).

Assessment and Grading Practices Must be Clearly Articulated

For a letter grade to be an effective way of communicating information about student progress in school, the teacher must be clear about the meaning of the letter grade, and the student and his or her parent(s) must attribute the same meaning to it as the teacher intended. People communicate effectively when they share knowledge and beliefs (Deaux & Wrightsman, 1988). Therefore, teachers must ensure that students and parents are knowledgeable about their grading and evaluation practices. Before teachers can inform others about their practices, however, they must clarify for themselves what, and how, they will assess students; how they will use assessment results to make judgments about student performance; and what standards they will use when judging student performance (i.e., the expected learning outcomes set out in curriculum guides).

As the results of this study show, the extent to which teachers articulate their assessment and evaluation practices varies greatly. For example, Elena Kovac worked with the other members of her department to determine what to assess, and how much emphasis to place on the various components of a letter grade. On the other, Henry Szabo tended to “go with the flow” and let student reaction dictate his assessment practices (“So the assessment just comes out of what they happen to be doing. They’ll be doing something and I’ll say, ‘Hey! Maybe I can get a mark out of that’” [Szabo/I]). Good practice dictates that teachers clearly articulate the purposes, the targets (what is to be assessed), and the methods of their assessments (*Principles for Fair Student Assessment*, 1993). If teachers don’t clearly articulate their assessment and evaluation practices, they won’t be able to explain those practices to students and parents.

Once teachers have clearly articulated their assessment and evaluation practices, they must carefully and thoroughly explain those practices to students and parents. All of the teachers in this study distributed information about their grading practices to their students, but not all of them distributed such information to their students’ parents. Moreover, the information they distributed was general and not very detailed (e.g., 50% of a letter grade will be based on tests, 25% will be based on lab assignments, etc.). Based on their comments, both students and parents would like to know more about how letter grades are assigned in Science 9.

Teachers can help students and parents interpret letter grades appropriately, by adhering to the following recommendations from the *Principles for Fair Student Assessment* (1993): “The way in which summary comments and grades are formulated and interpreted should be explained to students and their parents/guardians” (p. 10); and “the individual results used and process followed in deriving summary comments and grades should be described in sufficient detail so that the meaning of the summary comment or grade is clear” (p. 11). When students and parents are knowledgeable about a teacher’s grading practices, they will be better able to interpret a letter grade as the teacher intended thereby increasing the likelihood that the communication process will be effective.

Process of Assigning Letter Grades is Problematic

The teachers in this study assigned letter grades by converting students' overall percentage scores for the term into letter grades. They explained to me that they determined which letter grade to assign for a given percentage by referring to a chart that can be found in various BCME documents (e.g., BCME, 1986; BCME, 1994a); I presented an example of such a chart in Chapter 2. To recap, the chart printed in the *Administrative Handbook* (BCME, 1986) lists, for each level of achievement (e.g., excellent, very good, satisfactory, etc.), the letter grade that corresponds to that achievement level (e.g., "A", "B", "C+", etc.), and the range of percentages associated with that letter grade (e.g., 86 - 100, 73 - 85, 67 - 72, etc.). The text which accompanies the chart describes how the BCME intended the chart to be used. A portion of the BCME's explanation, also previously presented in Chapter 2, bears repeating here:

It should be noted that it is not the Ministry's intent to set pre-determined percentages that students must obtain in order to attain certain letter grades. The intent, rather, is to standardize the reporting of different levels of achievement. Teachers may require different percentages for letter grades during the school year according to the difficulty of tests and other considerations. On the final report, however, "A" level achievement (as determined by the teacher during the year) is to be reported in the 86% to 100% range, thereby standardizing achievement reporting. ... If, as a result of that evaluation, the teacher's assessment is that the student has demonstrated (for example) an excellent level of achievement, then a score in the 86 - 100 range ("A" level of achievement) should be reported as the school mark. (BCME, 1986, pp. 70-71)

Clearly, the BCME did not intend teachers (or students, or parents, for that matter) to use the chart which, for example, is printed on many report card forms — including the one approved for use in Whitewater District — as a conversion table. In fact, the BCME stated unequivocally that it was not their intent "to set pre-determined percentages that students must obtain in order to attain certain letter grades". Nevertheless, this is how this chart was used by the teachers (and students and parents) in this study, and this, I believe, is how the chart is used inappropriately today by most teachers throughout the province.

Not only did the teachers assign letter grades by converting percentage scores into letter grades, based on the ranges provided in the chart, they also used the chart to explain to students and parents how letter grades are assigned; that is, they told their students, and parents, that if a

student obtained a certain percentage for the term, then s/he would receive the letter grade that corresponds to that percentage. Certainly, the students' and parents' comments show that they believed the teachers assigned letter grades by converting percentage scores into letter grades.

Given that teachers often explain to students and parents that they calculated a letter grade based on the student's percentage for the term, it is not surprising that students and parents are not aware that it is the letter grade assigned to a student based on their level of achievement that is supposed to determine the percentage score assigned to the student, not the other way around. It is also not surprising that one reason students and parents prefer percentages over letter grades is that they believe that they can always use the percentage to determine the letter grade, but cannot determine the "exact" percentage from a letter grade.

Based on what they told me about how they assigned letter grades, I must conclude that the teachers of this study did not know that the BCME states that it is the letter grade that determines the percentage, and not the converse. Furthermore, I would like to suggest that the vast majority of teachers presently working in this province do not know this either. At the present time, here is how teachers are expected to assign letter grades in Grades 4 to 12:

... The assessment and evaluation of the student's performance demonstrated through the learning activities is collected and recorded.

... The teacher judges the student's overall performance in relation to the outcomes for the unit or term and decides whether the overall performance is outstanding, very good, good, satisfactory, minimally acceptable, progressing but needs more time to complete requirements or not demonstrating minimally acceptable performance.

The Ministry-approved letter grades that correspond to the level of performance demonstrated by the student are assigned. (BCME, 1994a, p. 20)

The process outlined by the BCME in 1994 is similar to the process teachers were expected to use throughout the 1980s (see previous excerpt) — teachers are expected to determine the overall level of performance first, and then assign the appropriate letter grade. However, it is not clear in the *Guidelines* how teachers are to assign percentages for Grade 11 and 12 courses. Given that, throughout the 1980s and early 1990s, the BCME said that students were to be

assigned percentages in the appropriate range for their level of achievement, I assume that this is the method that they expect teachers to employ today.¹¹⁶

I would like to suggest that even if teachers become familiar with, and proficient in, the method outlined above, it will be difficult for them to assign letter grades in this way. After all, teachers feel comfortable assigning letter grades based on percentages because, for the most part, students and parents do not question this grading method. As it now stands, when asked to explain why a particular letter grade has been assigned, all a teacher has to do is turn to the grade book, show the student's assessment scores collected throughout the term — and the overall percentage calculated based on those scores — and convert that percentage to a letter grade. They can use the scores and overall percentage to justify the letter grade because people seem to believe that a number has meaning in and of itself, and they do not seem to understand that it is up to the user to ascribe meaning to that number.

Unless teachers, students, and parents can be convinced that a percentage should be based on a letter grade that represents the teacher's judgment of a student's level of performance compared to expected learning outcomes — for example, a student who demonstrated “marginally acceptable” performance in relation to the expected learning outcomes for Science 9 should be assigned a “C-” — and not the other way around, I believe that teachers will continue to assign letter grades using the method to which they have become accustomed. Unless there is a concerted effort on the part of the BCME, and teacher educators, to teach teachers to assign letter grades based on their judgments first, and then assign percentages based on letter grades, the status quo will remain. Without proper education, I believe that teachers will continue to assign letter grades by calculating percentages scores that are converted to letter grades according to what, they mistakenly believe, are the BCME standards; that is, “A” = 86% - 100%, “B” = 72% - 85%, etc. Moreover, the BCME will have to help teachers explain their method to students and parents — which, in my opinion, will be difficult to do given the extent to which

¹¹⁶ In April 1998, a secondary school administrator I know confirmed that the Ministry still expects a teacher to assign percentages to students using the method advocated by the Ministry throughout the 1980s.

percentages are used to determine letter grades — because, if people do not understand the method used to assign letter grades, they will not understand, nor accept, the grades that are assigned, and letter grades will not effectively communicate information about student performance in school to students and parents.

Judgment is an Integral Part of the Grading Process

A very important part of a teacher's job is to judge student performance in school. A letter grade is a symbol that summarizes a teacher's judgment about student performance. In 1994, teachers in B.C. were expected to judge student performance (for the purpose of assigning letter grades) in relation to the "widely held expectations" for a given course; in 1998, they are expected to judge student performance in relation to "expected learning outcomes". If a teacher does not make judgments about students' performance, then s/he will not be able to assign the appropriate letter grades.

As discussed above, when a teacher assigns letter grades as the BCME intended, s/he is required to make a judgment about a student's performance first, assign a letter grade to represent that judgment, and then assign a percentage based on the letter grade. Yet, it appears as though some teachers do not feel comfortable about judging students. Henry Szabo, for example, said explicitly that he did not like "making a value judgment". Moreover, all of the teachers said that when they assign a letter grade, they calculate a student's percentage for the reporting period and convert it into a letter grade. A teacher who assigns a letter grade in this way does not have to make a judgment about a student's performance — s/he lets the number (e.g., 89%) dictate the letter grade (e.g., "A") which, in turn, communicates the judgment made about student performance (e.g., excellent achievement in relation to expected learning outcomes).

When teachers assign letter grades in this way, they abrogate their responsibility to make judgments about student performance in school. They do not take responsibility for the judgments represented by letter grades — "Don't blame me! Look at what the numbers say!" — and they justify letter grades with numbers (e.g., students' test scores). Teachers seem to

believe that a percentage, based on assessment scores, has meaning in and of itself. Yet, this is not the case — a percentage is a number that must be given meaning by the teacher. One way to ascribe meaning to the percentage assigned on a report card is to assign letter grades and percentages using the method outlined by the BCME; that is, the teacher should make a judgment about a student's level of performance in relation to the expected learning outcomes, convert that judgment into a letter grade, and assign a percentage from the range of percentages that corresponds to that letter grade. In this way, teachers can do what they are expected to do — use their professional judgment to determine the adequacy of student performance in relation to the expected learning outcomes.

Meaning Arises From Comparison Basis Used to Assign Letter Grade

The definition printed on the report card form used by the Whitewater District teachers was as follows:

Comparative Achievement grades show the pupil's progress in comparison with the widely held expectations for the subject/course/grade/level at which the pupil is working.

This is the same as the BCME's 1986 definition for letter grades. There was no general definition of letter grades printed on the Cityside District report card forms, however, the definition given for the symbol, "P", was:

The pupil has achieved the basic standard of performance widely expected for the subject/course/grade/level and is considered capable of handling subsequent work.

Given that no general definition of letter grades was printed on the Cityside form, the people of that district would have had to base their understanding of the meaning of a letter grade on this definition. Therefore, it is possible that some people were not fully aware of the meaning ascribed to letter grades by the BCME.

All of the teachers said that a letter grade showed how a student compared to their expectations for students studying Science 9. They also said that they assessed and evaluated student performance based on the objectives stated in the junior science curriculum guide, and

their own expectations of what students should be able to do in Science 9. Given that the curriculum guide and teachers' knowledge about what Science 9 students should know, and be able to do, are the logical sources for the "widely held expectations" for Science 9, the meanings attributed to a letter grade by the BCME and by the teachers seem to be similar.

The meanings attributed to letter grades by the teachers in this study and the BCME would have been similar, that is, had the teachers intended a letter grade to only show how a student compared to their expectations for students studying Science 9. However, they also intended a letter grade to show a number of other things about a student, such as how hard s/he worked, how much s/he knew, or how s/he compared to other students. Each of these meanings represents a different basis for comparison a teacher might use when assigning letter grades (Hills, 1981; Worthen et al., 1993). Hence, when more than one meaning is attributed to a letter grade, it implies that more than one basis for comparison was used to assign that grade. For example, when a teacher says that s/he intends a letter grade to show how a student compared to their expectations for students studying Science 9 and to the other students in the class, it implies that the bases for comparison were, respectively, "teacher expectations" and "other students".

When the bases for comparison are compatible with one another, the multiple meanings attributed to the letter grade do not lead to confusion. In other cases, however, different bases for comparison may lead to different letter grades. For example, a teacher may judge a student's performance, compared to other students in the class, as excellent ("A"), and, at the same time, she may judge that same student, compared to her expectations for student's studying Science 9, as satisfactory ("C"). In this case, confusion of the meaning of any letter grade selected is unavoidable. If the final grade assigned is an "A", then it radically overestimates or overstates the student's achievement when compared to the teacher's expectations. If the grade assigned is a "C", then achievement compared to the other students is not accurately reported. Assigning an average or mid-point grade of "B", indicating good achievement, is not an appropriate solution either as it misrepresents achievement on both comparisons and is not

accurate for either one. As the number of meanings a teacher has for letter grades increases from two to as many as five or six meanings, the potential for mis-communication rises exponentially until the possibility of accurate interpretations becomes almost non-existent.

When the basis of comparison for a teacher's judgment about a student's performance — as communicated via a letter grade — is something other than the expected learning outcomes for the course, the meaning of the letter grade diverges from the meaning the BCME intends a letter grade to have. If the meaning of a letter grade differs from the BCME's definition (as defined on a BCME- or district-approved report card form, for example), then it is possible that students and parents might misinterpret the letter grade. As a result, the inferences drawn upon that letter grade may not be appropriate, meaningful, and/or useful; that is the validity of the inferences based on the letter grade will be compromised.

The possibility that a letter grade will be misinterpreted increases when it has been assigned based on information other than student achievement in relation to expected learning outcomes. Also, the more a teacher relies on information about such things as work habits, effort, attitude, and behaviour when assigning letter grades, the greater the likelihood those letter grades will be misinterpreted. Such misinterpretation could have negative consequences for students. I will discuss some of those consequences here.

First, when a student who has not demonstrated "minimally acceptable" performance in relation to the expected learning outcomes for the course, is given a pass, because s/he has behaved in class, tried hard, and/or always attended class, s/he may develop false expectations about their ability to do science. False expectations could lead to inappropriate decisions. For example, the student might enroll in a subsequent course with the expectation that they will be able to succeed even though they need remediation before going on.

On the other hand, when a student who has demonstrated "excellent" or "very good" performance in relation to the expected learning outcomes (as assessed by valid and reliable methods) is assigned a letter grade lower than his or her performance warrants, because s/he has

not always behaved, attended, and/or tried hard, there can also be negative consequences. The student could become less motivated and, therefore, work less; the student's relationship with the teacher could be affected if the student feels his or her letter grade is unfair; the student's relationship with his or her parents could be affected due the parents' expectations about their child; or the student might not be accepted into a program of study because, according to their letter grade, they have not met admission requirements.

To make inferences about student performance in school that are appropriate, meaningful, and useful, people must know the basis upon which the letter grade was assigned. If people expect a letter grade to show how a student compared to the expected learning outcomes of the course, but it really shows how hard they worked, or how much they improved, then they have misinterpreted the letter grade. To ensure that the inferences based on letter grades are appropriate, meaningful, and useful, teachers need to find out from students and parents how the letter grades they assign are interpreted and what, if any, consequences there are. One way to do this might be to prepare a short questionnaire that asks students (and parents) to give their opinions of the teacher's grading and reporting practices, and their opinions about some of the possible consequences of their practices. In this way, they can find out if people are interpreting letter grades as the teacher intended, and if the actions based on those interpretations are appropriate. In the event that teachers find that letter grades are not communicating what they intended, they should modify their practices.

If letter grades are to be interpreted appropriately, then teachers must attribute meanings to them that are clear and consistent. To ensure that the meanings of letter grades assigned to students for the same course are clear and consistent, teachers must use a comparison basis (or set of standards) that is clear and consistent — in B.C., teachers are expected to compare student performance to the expected learning outcomes. And to ensure that students and parents interpret letter grades appropriately, teachers must inform them of the type of comparison used to assign a letter grade.

Consequences of Evaluation can be Positive, Negative, or Neutral

The results of this study demonstrate that the consequences of reporting information about student progress in school can be positive, negative, or neutral. Given that the main reason progress reports are issued is to improve student learning, it is heartening to learn that the consequences of a progress report can be positive: Tonya, for example, was motivated to do more work so that she could improve her letter grade; Emily planned to do more work in science so that she would maintain her “A”; and Jennifer felt more confident about her ability to do science because of the “B” on her report card. At the same time, it is dismaying to learn that, in some cases, the consequences are negative: Angel felt frustrated and unmotivated because she did not understand what she had to do to get a letter grade instead of an “Incomplete” on her report card; Mrs. Downey felt that her son had become discouraged because he did not believe that his letter grade accurately reflected how well he had done in science; and Mrs. McIsaac no longer trusted her son due to his progress report. It is also dismaying to find out that progress reports seemed to have had little or no effect on a large proportion of the students, including those who had received less than satisfactory letter grades, and, presumably, needed to improve their learning. For example, Brennon’s lack of confidence in his ability to do science seemed to have been reinforced by his letter grade (“D”), and the fact that he answered on his questionnaire that he would probably continue to do the same amount of classwork and homework in science, suggest that, in Brennon’s case, the progress report had not promoted student learning.

Teachers assess, evaluate, and report student progress so that they, their students, and their students’ parents can monitor student learning. When student progress is carefully and appropriately monitored, actions can be taken to ensure that students succeed in school. If, as a result of their progress reports, students feel less motivated to work and less confident about their abilities, then they are less likely to succeed. Some students in this study said that they did not understand why they had been given a particular letter grade, and that they believed that they had done better than their letter grade indicated. As a consequence, these students were less motivated to study science and suggested that they would either continue to do the same amount of work (which would likely lead to the same letter grade), or less (which could lead to failure in

the course). For these students, the consequences of the progress reports were negative — when the consequences are negative, it is possible that a student will not succeed. But how can teachers increase the likelihood that the consequences of their reporting practices will be positive?

First, teachers must make sure that students and parents understand how they assess, evaluate, and report student progress. Second, teachers should discuss, either at conferences or via the telephone, students' assessment results, and their judgments (i.e., letter grades) based on those results with all of students and parents on an on-going basis throughout the year. During these discussions, they should determine whether or not students and parents are interpreting assessment results and progress reports appropriately, monitor the effects of their practices, and clarify misconceptions. And if, as a result of their discussions with students and parents, they discover problems associated with their practices, they should address those problems and, modify their practices when necessary.

In B.C., students, parents, and teachers are considered to be “partners in education”. As partners, we must work together to ensure that assessment and evaluation are positive experiences for students. I believe that when teachers make their assessment, evaluation, and reporting practices transparent, teachers will assess and evaluate their students fairly and appropriately; students will better understand teachers' expectations of them, and how to meet those expectations; and parents will be better able to help their children improve their learning. That is, the consequences will be positive.

Discussion

Teachers prepare reports cards to communicate information about student progress in school to students and their parents. In B.C., the letter grades, work habits ratings, written comments, attendance records, and in some cases, percentages on a report card paint a picture of a student's performance in school. While many people find the descriptive information communicated via written comments and/or conferences useful, most people prefer letter grades and/or percentages.

A letter grade is a symbol that summarizes a teacher's judgment of a student's performance in a particular course or grade. Its meaning is informed by the method used to communicate it (e.g., on a report card, orally at a conference, in conjunction with written comments and work habits ratings), the components incorporated into it, and the meaning attributed to the letter grade as reflected by the basis for comparison used by the teacher to assign it. For this reason, the method used to report student progress should be acceptable to the users of the letter grade, and the components and meaning of the letter grade must be clearly articulated by the teacher and understood by students and parents.

The results of this study show that most people are generally satisfied with the methods used to report student progress in Science 9. They also show that different teachers incorporate different components into a Science 9 letter grade, and that teachers are not always clear and consistent about what they intend letter grades to mean. At the same time, students' and parents' beliefs about the grading components and meanings of Science 9 letter grades vary widely. These results clearly indicate that the information communicated by a letter grade is confused. It is, therefore, likely that a letter grade could be misinterpreted by a student and his or her parents. When letter grades are misinterpreted, effective communication about student progress in school will be compromised.

As previously stated, a letter grade is a symbol that is used to communicate the teacher's judgment of a student's performance in school. Measurement specialists (e.g., Worthen et al., 1993) assert that a letter grade should be assigned on the basis of some sort of comparison, or set of standards. In order to judge student performance, a teacher must compare that performance to something else; that is, there must be a basis for comparison, or a set of standards, if you will. In B.C. those standards are the expected learning outcomes for the course and grade-level. However, after discussing the meaning of a Science 9 letter grade with teachers, I have to ask myself how do teachers use standards when they assign letter grades? What basis for comparison do teachers use when they assign letter grades? It appears as though teachers do not always compare the information they collect about student performance in school

to a consistent set of standards. Yes, they refer to the expected learning outcomes when they decide what to teach and assess, but they do not appear to explicitly compare assessment information collected from, and about, students to those outcomes. It is as though they assume that the standards are built into their assessment devices, so that all they have to do is add up a student's scores, convert the total score into a percentage, look at what they erroneously believe to be the BCME guidelines for letter grades, and give a student their grade. I found no evidence that teachers ascertained what a student's scores on an assessment device, for example, a chapter test, represented vis-à-vis the quality of student performance. I found no evidence that teachers compare student assessment data to a clearly articulated set of standards. This result could be an artifact of my research methodology, however, if it is indeed the case, it is no wonder that the meaning of a letter grade is not always clear.

That the meaning of a letter grade is not always clear has implications for the ways in which letter grades are used by students and parents. The results of this study indicate that some students' attitudes, behaviours, and decisions could be affected by the grades they receive in Science 9. However, in order for students' attitudes, behaviours, and decisions to be appropriate, their interpretations of the meanings of letter grades must be appropriate. Given the multiple meanings attributed to a letter grade, it is hard to believe that peoples' inferences and actions based on a letter grade will always be appropriate.

I cannot claim to have been surprised by the findings of my study — my experiences as a teacher, student, and parent had already made me suspect many of them. I'm sure that many readers will not be surprised by the findings, either. If this is the case, then, one might ask what is the contribution of this study? From my perspective, there are several. I discuss them next.

Contribution of the Study

This study extends, in a number of ways, the work of others who have investigated teachers' grading and reporting practices, and the meaning of letter grades (e.g., Stiggins & Conklin, 1992; Waltman & Frisbie, 1993, 1994). To begin with, the study helps us better understand how teachers learn to assess students and determine letter grades. It also helps us

understand the methods teachers use to report students' progress in Science 9 to students and parents, and teachers', students', and parents' opinions of these methods. The study contributes to our understanding of teachers' grading practices with respect to the assignment of Science 9 letter grades, and it provides information about students' and parents' understandings of those grading practices. The study provides insight into teachers', students', and parents' understandings of the meaning of letter grades. And the results of this study also help us understand some possible consequences of reports of student progress from the perspectives of students and parents.

Another contribution is a direct result of the methodology of the study — by interviewing a subset of the questionnaire respondents after they had completed the questionnaires, it was possible to learn more about how different people interpreted the questionnaire items; that is, it was possible to explore the internal validity of the study. The results of this study offer evidence about the value of employing more than one data collection method when conducting research.

Issues Arising Out of the Methodology of Study

As I administered the questionnaires, conducted the interviews, and analyzed the data, I identified the following issues pertaining to the methodology of the study:

- There are a number of errors and omissions in the written survey questionnaires that could have made it difficult for some respondents to answer the questions (e.g., the grading component daily written assignments was omitted).
- Respondents sometimes confused letter grades, written comments, and work habits ratings as they completed their questionnaires; as a result, their questionnaire responses sometimes represent their beliefs about a reporting method other than the letter grade.
- Respondents did not always interpret a questionnaire item in the way in which it was intended.

- Respondents did not always understand the terms used on the questionnaires.
- During their interviews, participants often changed their answers to a questionnaire item once they understood the intended meaning of the item.
- Participants were not always able to articulate their points of view during their interviews or on their questionnaires.

Taken together, these issues highlight the value of combining different data collection methods in educational research. They point out the need for researchers to question their interpretations of questionnaire data because, no matter how carefully questionnaire items are developed, there will probably always be people who misinterpret those items. They emphasize the fact that a researcher must be a good interviewer, for s/he must be able to ask the right questions to ensure that interviewees are able to express their beliefs and opinions. When researchers employ well-formulated data collection methods that compliment one another, they are better able to verify and clarify the opinions and beliefs of the people they are trying to learn more about.

In the persona of Halcolm, Michael Quinn Patton (1980) articulated *Halcolm's Laws of Evaluation Research à la Murphy* in his book *Qualitative Evaluation Methods*. Here are two of those laws:

- The moment you turn off the tape recorder, say goodbye and leave the interview, it will become immediately clear to you what perfect question you should have asked to tie the whole thing together ... but didn't.
 - The moment you begin data analysis it will become perfectly clear to you that you're missing the most important pieces of information, and that without those pieces of information there is absolutely no hope of making any sense of what you have.
- (1980, p. 295)

Even though these laws were formulated with qualitative program evaluation in mind, they are relevant to qualitative research in general, and to this study in particular, for I now recognize the many things I could have, and should have, done differently. There are many revisions I would now make to the questionnaire to ensure that the items are very clear to the people who complete them. There are also many questions I would now ask to ensure that I understood, to the best of my ability, what it is that people have to say about grading and reporting in Science 9. I now know that this study would have been better had I contacted all of the people that I interviewed at least once to allow them to clarify some of their answers and to verify my interpretations of their answers. However, for a variety of reasons, this was not possible to do. Nevertheless, I have learned from this process, and I believe that the issues arising out of the methodology of this study can help inform future educational research.

Implications for Teacher Education and Professional Development

The results of this study indicate that teachers' grading practices are informed by their life experiences. How they were graded as students, what they were taught in their teacher education programs, what they learn from their colleagues, the reaction of students to their grading practices, what they read, school and department policies, and time constraints are some of the factors that inform their practices. Given the variation in teachers' experiences, it is not surprising that their grading practices and the meanings they attribute to letter grades differ. Yet, if letter grades are going to be used as the primary method for communicating student progress in school — as is the present policy in B.C. — then the meanings of those grades should be consistent from teacher to teacher. One way to promote consistency in letter grades is to provide adequate instruction to preservice teachers through mandatory courses dedicated to assessment and grading, and through ongoing professional development for practicing teachers. Such instruction must provide teachers with the knowledge and skills they need to be able to assess and grade students practically and appropriately.

I undertook this study because I was concerned about how my children were graded in school and how I had graded the students I taught. When I began, I thought I might discover,

through my reading, the “right way” to grade students. Instead, I discovered that there is no one “right way” to grade students, but there are “better ways”. There are practices that one should avoid (e.g., incorporating non-achievement factors into letter grades) and practices that should follow (e.g., basing letter grades only on achievement factors), and teachers need to be made aware of these practices. Teacher education and professional development programs must be designed that encourage teachers to think about many important issues including: the implications of incorporating various components into a letter grade: the implications of using, or not using, a clearly articulated basis for comparison when assigning letter grades; the purposes of letter grades; and the possible effects of letter grades on students.

Implications for Reporting Student Progress

Teachers prepare a student progress report to communicate information about what a student is able to do, is working toward, and needs help with. The primary purpose of such information is to improve student learning. A report card letter grade is supposed to be a summary symbol that represents the teacher’s judgment of a student’s performance in a particular course or grade. However, a letter grade will only be useful if the teacher, student, and parent are all clear about, and agree on, the meaning of the grade. Yet, as Wiggins (1994) observed:

Grades are clear if clear standards and criteria are used in a consistent way, by each teacher. Grades are unclear if they represent idiosyncratic values and inconsistency from teacher to teacher. (p. 30)

The results of this study indicate that clear standards and criteria are not consistently used by teachers, and that grades, do indeed, represent “idiosyncratic values and inconsistency from teacher to teacher”. To ensure that their practices and meanings are consistent, teachers must be encouraged to clearly articulate how a letter grade is determined and what they intend a letter grade to mean. They must follow the BCME guidelines for assigning letter grades that requires them to assign letter grades based on a student’s level of achievement in relation to expected learning outcomes, not on a percentage score that is converted to a letter grade. And they must carefully describe to students and parents how a letter grade is determined, and what it means,

so they will know how to interpret it. When letter grades in particular, and progress reports in general, are interpreted correctly, students and parents will be better able to make educational and vocational decisions that are appropriate.

I believe that teachers want to see their students succeed. For that reason, I believe that teachers do everything they can to give students the benefit of the doubt when they assign letter grades. To that end, they explicitly incorporate non-achievement factors into letter grades, so that students who “try hard”, yet do not demonstrate the required knowledge, skills, and attitudes will pass and not become discouraged. They reward students who try hard because hard work is valued in our society, yet when teachers incorporate a non-achievement factor like effort into a letter grade, they distort the meaning of the grade which is supposed to reflect achievement, not both achievement and effort.

But how can we encourage teachers to limit the meaning of a letter grade to achievement? One way might be to modify the definitions of the letter grades printed on the report card forms so that teachers are forced to reflect upon the meaning of the grade in terms of achievement only. For example, as it stands now, the BCME definition printed on a report card for a “C-” is:

- C- The student demonstrates marginally acceptable performance in relation to expected learning outcomes for the course and grade. (BCME, 1994a, p. 8)

I would like to suggest a definition for “C-” that is similar to the BCME’s second-to-last definition:

- C- The student demonstrates marginally acceptable performance in relation to expected learning outcomes for the course and grade *and will likely need to complete additional work and/or need additional support in order to succeed at the next level of the course, or in the next grade.*

I chose “C-” as an example because a student with a “C-” in Science 10, for instance, can pass the course and proceed onto Biology 11. In my experience, however, it is likely that a student who receives a “C-” in Science 10 does not possess the knowledge and skills necessary for success in Biology 11. I believe that by adding the phrase, *and will likely need to complete additional work and/or need additional support in order to succeed at the next level of the course,*

or in the next grade, the definition provides a more realistic appraisal of a “C-” student’s achievement. The addition of such a phrase might encourage teachers to reflect upon the meanings of the letter grades they assign, and make the meaning of letter grades clearer to students and parents.

Implications for Further Research

Researchers have only recently begun to investigate teachers’, students’, and parents’ perceptions of the grading and reporting of student progress in school, so there are many possibilities for further research in this area. Some of them are discussed below.

This study focussed on Science 9 progress reports issued part-way through a course at the end of a term to ensure that the beliefs and opinions expressed by the participants applied to a specific letter grade given in a particular course rather than to letter grades in general. Further research is needed to find out if the meanings attributed to Science 9 letter grades assigned at the end of the course differ from those attributed to letter grades assigned part way through a course. Research that focusses on teachers’ grading and reporting practices for other courses (e.g., English, mathematics) is also needed to identify the similarities and differences across subject areas.

The results of this study show that teachers assign letter grades using methods that are contrary to the method advocated by the BCME. Because the BCME states that it is the letter grade that determines the percentage, not the percentage that determines the letter grade, as most people believe, research should be conducted to 1) see if teachers are able to assign, according to the BCME guidelines, letter grades that are accurate and appropriate; and 2) students and parents are able to understand this grading process and the letter grades that result from it.

Part of this research focussed on teachers’ grading practices in Science 9. I have tried to describe some of these practices. However, I did not observe how teachers graded students, I relied on their descriptions of their practices. As a consequence, it is not possible to know, from this study, how closely their reported practices are aligned with their actual practices.

Furthermore, it is not possible to understand the intricacies and subtleties of their practices in terms of how they assess student performance in Science 9, combine assessment data, and determine letter grades. Therefore, further research is needed to examine teachers' grading practices in detail and in the field. Such research should probably be naturalistic and long-term, and should enable the researcher to become thoroughly knowledgeable about the teachers' grading practices.

Also, since teachers' standards are reflected in their assessment instruments, and since by allowing the "scores to speak for themselves" their instruments become the de facto standards, a study of how teachers' beliefs about science standards affect their assessment techniques and strategies would contribute greatly to our understanding of teachers' grading practices.

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Appendix A: Teacher Letter of Explanation

February, 1994

Dear Science 9 Teacher:

I am a graduate student at the University of British Columbia conducting a study entitled *The Meaning of Report Card Letter Grades in Science 9: Perceptions of Students, Parents, and Teachers* in your school district; I am conducting this study under the guidance of my advisor, Dr. David Bateson. The purpose of my study is to learn more about what letter grades in Science 9 mean to students and their parents, and to compare students' and parents' understandings of letter grades to the meaning(s) intended by the teacher. I believe that the results of this study will help us better understand some of the ways in which grades are interpreted and used by students and their parents — with a better understanding of what letter grades mean to students, parents, and teachers, we may be better able to communicate with each other about students' progress in Science 9.

Your school district has already given me permission to conduct my research; however, I now need to meet approximately 6 teachers who would like to participate in the study. The purpose of this letter, therefore, is to briefly describe the study, and to invite you to contact me if you are interested in participating.

There will be two parts to the study.

- 1) Shortly after the next report card is sent home, students, parents/guardians, and teachers, who agree to participate, will be asked to complete questionnaires about their views on the meaning of Science 9 letter grades, how Science 9 letter grades are determined, how student progress in Science 9 is reported, and some of the effects that reports of student progress in Science 9 can have.

Students, who have parental permission, will complete their questionnaires during a Science class under my direction; the questionnaire will take about 30 to 40 minutes to complete.

Parents, who consent to participate in the study, will be sent a questionnaire to complete at home and then return it, in a sealed envelope, to the teacher to give to the researcher; the questionnaire will take 30 to 40 minutes to complete.

Teachers, who consent to participate in the study, will be given a questionnaire to complete and then return to the researcher in a sealed envelope; the questionnaire will take about 1 hour to complete.

- 2) Soon after the questionnaires have been completed and returned to me, some students, some parents, and all participating teachers will take part in individual, audio-taped interviews. During these interviews, students, parents, and teachers will have the opportunity to talk more about their views on the meaning of Science 9 letter grades.

Only those students and parents who complete and sign the Interview Request Form at the back of the questionnaire booklet will be contacted about an interview.

Appendix B: Teacher Consent Form

August 12, 1998

Insert Address Here

Dear _____:

Thank you for volunteering to participate in my study *The Meaning of Report Card Letter Grades in Science 9: Perceptions of Students, Parents, and Teachers*. As you know, I am a UBC graduate student in the Department of Mathematics and Science Education working on a doctorate under the guidance of Dr. David Bateson. You will recall that the purpose of my study is to learn more about what letter grades in Science 9 mean to students and their parents, and to compare students' and parents' understandings of letter grades to the meaning(s) intended by the teacher. I believe that the results of this study will help us better understand some of the ways in which grades are interpreted and used by students and their parents — with a better understanding of the similarities and differences in meanings attached to letter grades by students, parents, and teachers, we may be better able to communicate with each other about students' progress in Science 9.

The purpose of the letter is to describe, my research project, and to formally request your permission to include you and your students in my study.

There will be two parts to the study.

- 1) Shortly after the next report card is sent home, students, parents/guardians, and teachers, who agree to participate, will be asked to complete questionnaires about their views on the meaning of Science 9 letter grades, how Science 9 letter grades are determined, how student progress in Science 9 is reported, and some of the effects that reports of student progress in Science 9 can have.

Students, who have parental permission, will complete their questionnaires during a Science class under my direction; the questionnaire will take about 30 to 40 minutes to complete.

Parents, who consent to participate in the study, will be sent a questionnaire to complete at home and then return, in a sealed envelope, to you to give to me; the questionnaire will take 30 to 40 minutes to complete.

Teachers, who participate in the study, will be given a questionnaire to complete and then return to me in a sealed envelope; the questionnaire will take about one hour to complete.

- 2) Soon after the questionnaires have been completed and returned to me, some students, some parents, and all participating teachers will take part in individual, audio-taped interviews. During these interviews, students, parents, and teachers will have the opportunity to talk more about their views on the meaning of Science 9 letter grades.

Only those students and parents who complete and sign the Interview Request Form at the back of the questionnaire booklet will be contacted about an interview.

The Meaning of Report Card Letter Grades in Science 9:
Teacher Project Consent Form

I, *(please print)* _____, have received a copy of Susan Brigden's description of her study *The Meaning of Report Card Letter Grades in Science 9*. I have read the description, and have kept one copy of this consent form for my own records. I understand that my students, who have parental permission, and I will be asked to answer questions about our views on the meaning of Science 9 letter grades, how Science 9 letter grades are determined, how student progress in Science 9 is reported, and some of the effects reports of student progress in Science 9 can have.

Signature _____

| | |
|--------------------------|--|
| <input type="checkbox"/> | I, _____, consent to participate in the study <i>The Meaning of Letter Grades in Science 9</i> . |
| <input type="checkbox"/> | I, _____, DO NOT consent to participate in the study <i>The Meaning of Letter Grades in Science 9</i> . |

Signature _____

I understand that participation is entirely voluntary, and that non-participation or withdrawal from the project at any time will in no way affect me. I also understand that my confidentiality will be assured by the use of pseudonyms.

Signature _____

Date _____

*Please keep this copy of the consent form for your own records.
Thank you for your time and consideration.*

***The Meaning of Report Card Letter Grades in Science 9:
Teacher Project Consent Form***

I, *(please print)* _____, have received a copy of Susan Brigden's description of her study *The Meaning of Report Card Letter Grades in Science 9*. I have read the description, and have kept one copy of this consent form for my own records. I understand that my students, who have parental permission, and I will be asked to answer questions about our views on the meaning of Science 9 letter grades, how Science 9 letter grades are determined, how student progress in Science 9 is reported, and some of the effects reports of student progress in Science 9 can have.

Signature _____

☐ I, _____, consent to participate in the study *The Meaning of Letter Grades in Science 9*.

☐ I, _____, **DO NOT** consent to participate in the study *The Meaning of Letter Grades in Science 9*.

Signature _____

I understand that participation is entirely voluntary, and that non-participation or withdrawal from the project at any time will in no way affect me. I also understand that my confidentiality will be assured by the use of pseudonyms.

Signature _____

Date _____

Please return this copy of the consent form to Sue Brigden as soon as possible.

Thank you for your time and consideration.

Appendix C: Student/Parent Consent Form

March 1994

Dear Parents or Guardians of a student in Science 9:

I am a graduate student at the University of British Columbia conducting a study entitled *The Meaning of Report Card Letter Grades in Science 9: Perceptions of Students, Parents, and Teachers* in your school district; I am conducting this study under the guidance of my advisor, Dr. David Bateson. The purpose of my study is to learn more about what letter grades in Science 9 mean to students and their parents, and to compare students' and parents' understandings of letter grades to the meaning(s) intended by the teacher. I believe that the results of this study will help us better understand some of the ways in which grades are interpreted and used by students and their parents — with a better understanding of what letter grades mean to students, parents, and teachers, we may be better able to communicate with each other about students' progress in Science 9.

There are three purposes for this letter. The first purpose is to briefly describe the study to you, the second is to obtain your permission to ask your child to participate in the study, and the third is to ask you to also participate in the study.

There will be two parts to the study.

- 1) Shortly after the next report card is sent home, students, parents/guardians, and teachers, who agree to participate, will be asked to complete questionnaires about their views on the meaning of Science 9 letter grades, how Science 9 letter grades are determined, how student progress in Science 9 is reported, and some of the effects that reports of student progress in Science 9 can have.

Students, who have parental permission, will complete their questionnaires during a Science class under my direction; the questionnaire will take about 30 to 40 minutes to complete.

Parents, who consent to participate in the study, will be sent a questionnaire to complete at home and then return, in a sealed envelope, to the teacher to give to me; the questionnaire will take 30 to 40 minutes to complete.

- 2) Soon after the questionnaires have been completed and returned to me, some students, some parents, and all participating teachers will take part in individual, audio-taped interviews. During these interviews, students, parents, and teachers will have the opportunity to talk more about their views on the meaning of Science 9 letter grades.

Only those students and parents who complete and sign the Interview Request Form at the back of the questionnaire booklet will be contacted about an interview.

Each student or parent interview will take about one hour to complete and will take place outside of school time at the convenience of the students and parents who are willing to be interviewed.

The Meaning of Report Card Letter Grades in Science 9:
Student and Parent Project Consent Form

I, (please print), have received a copy of Susan Brigden's description of her study *The Meaning of Report Card Letter Grades in Science 9*. I have read the description, and have kept one copy of this consent form for my own records. I understand that my child, and I, will be asked to answer questions about our views on the meaning of Science 9 letter grades, how Science 9 letter grades are determined, how student progress in Science 9 is reported, and some of the effects reports of student progress in Science 9 can have.

Signature _____

| | |
|--------------------------|---|
| <input type="checkbox"/> | I give permission for my child, <u>(please print)</u> , to participate in the study <i>The Meaning of Letter Grades in Science 9</i> . |
| <input type="checkbox"/> | I DO NOT give permission for my child, <u>(please print)</u> , to participate in study <i>The Meaning of Letter Grades in Science 9</i> . |

Signature _____

| | |
|--------------------------|--|
| <input type="checkbox"/> | I, <u>(please print)</u> , consent to participate in the study <i>The Meaning of Letter Grades in Science 9</i> . |
| <input type="checkbox"/> | I, <u>(please print)</u> , DO NOT consent to participate in the study <i>The Meaning of Letter Grades in Science 9</i> . |

Signature _____

I understand that participation is entirely voluntary, and that non-participation or withdrawal from the project at any time will in no way affect my child or me. I also understand that my child's, and my confidentiality, will be assured by the use of pseudonyms.

Signature _____

Date _____

Please keep this copy of the consent form for your own records.
Thank you for your time and consideration

The Meaning of Report Card Letter Grades in Science 9:
Student and Parent Project Consent Form

I, (please print) _____, have received a copy of Susan Brigden's description of her study *The Meaning of Report Card Letter Grades in Science 9*. I have read the description, and have kept one copy of this consent form for my own records. I understand that my child, and I will, be asked to answer questions about our views on the meaning of Science 9 letter grades, how Science 9 letter grades are determined, how student progress in Science 9 is reported, and some of the effects reports of student progress in Science 9 can have.

Signature _____

☐ I give permission for my child, (please print) _____, to participate in the study *The Meaning of Letter Grades in Science 9*.

☐ I **DO NOT** give permission for my child, (please print) _____, to participate in study *The Meaning of Letter Grades in Science 9*.

Signature _____

☐ I, (please print) _____, consent to participate in the study *The Meaning of Letter Grades in Science 9*.

☐ I, (please print) _____, **DO NOT** consent to participate in the study *The Meaning of Letter Grades in Science 9*.

Signature _____

I understand that participation is entirely voluntary, and that non-participation or withdrawal from the project at any time will in no way affect my child or me. I also understand that my child's, and my confidentiality, will be assured by the use of pseudonyms.

Signature _____

Date _____

Please return this copy of the consent form to your school as soon as possible.
Thank you for your time consideration.

THE MEANING OF LETTER GRADES IN SCIENCE 9:
STUDENT QUESTIONNAIRE

A. Background Information

The following information is required for statistical purposes only and will NOT be used to identify you in any way. However, your answers to these questions will help in the analysis of the results. All of your answers will be completely confidential and will be combined with the answers of other students when the results are reported.

1. **Are you female or male?** (*Please CIRCLE the letter of your answer.*)
 - a. Female
 - b. Male
2. **How old are you?** (*Please CIRCLE the letter of your answer.*)
 - a. 13
 - b. 14
 - c. 15
 - d. 16
 - e. Other _____
(*please specify*)
3. **How long have you lived in CANADA?** (*Please CIRCLE the letter of your answer.*)
 - a. All of my life
 - b. 1-5 years
 - c. 6-10 years
 - d. More than 10 years
4. **What language did you first learn to speak?** _____
5. **What language is most often spoken in your home now?** _____
6. **What letter grade did you get in Science 9 on your last report card?** _____
7. **What work habits mark did you get in Science 9 on your last report?** _____

B. What do you think your teacher means by the letter grade assigned to you in Science 9 for the last term?

A report card letter grade may mean several things all at the same time. The following statements show some of the meanings a report card grade could have. For each statement, **CIRCLE** either **YES** or **NO** to show what you think the teacher probably intended your letter grade to mean.

| My Teacher's Meaning of My Report Card Letter Grade in Science 9 Last Term | YES, it probably means this | NO, it probably does NOT mean this |
|---|------------------------------------|---|
| 1. It shows how well I can do Science 9. | YES | NO |
| 2. It shows how well I did in Science 9 compared to the other students in my <u>class</u> . | YES | NO |
| 3. It shows how well I did in Science 9 compared to other students taking the same course in the <u>school</u> . | YES | NO |
| 4. It shows how well I did in Science 9 compared to the other students taking the same course in the <u>school district</u> . | YES | NO |
| 5. It shows how well I did in Science 9 compared to other students taking the same course in <u>British Columbia</u> . | YES | NO |
| 6. It shows how much I improved in Science 9 from the beginning to the end of the reporting period. | YES | NO |
| 7. It shows how I compared to my teacher's expectations for students studying Science 9. | YES | NO |
| 8. It shows how much Science 9 I knew at the end of the last reporting period. | YES | NO |
| 9. It shows how hard I tried to learn Science 9. | YES | NO |
| 10. It shows how I compared to standards set by the Ministry of Education for Science 9. | YES | NO |

11. Use the space below to write any additional comments you may have about what you think your teacher meant by your Science 9 letter grade for the last term. (*Use the back of the booklet if you need more space.*)

C. What types of information do you think your teacher considered when determining your letter grade in Science 9 for the last term?

Here is a list of some of the types of information that might be considered by a teacher when determining a student's letter grade. **CIRCLE** either **YES** or **NO** to show whether you think your teacher probably DID or DID NOT consider that type of information when determining your letter grade in Science 9 for the last term.

| When determining my letter grade in Science 9 for the last term, I think my teacher considered my... | YES, the teacher probably DID consider | NO, the teacher probably DID NOT consider |
|---|---|--|
| 1. Test results | YES | NO |
| 2. Project work | YES | NO |
| 3. Participation in class activities | YES | NO |
| 4. Attendance | YES | NO |
| 5. Lab assignments | YES | NO |
| 6. Homework | YES | NO |
| 7. Attitude | YES | NO |
| 8. Self-evaluation | YES | NO |
| 9. Learning journal or log | YES | NO |
| 10. Performance tasks/demonstrations | YES | NO |
| 11. Behaviour in class | YES | NO |
| 12. Effort/work habits | YES | NO |
| 13. Notebook | YES | NO |
| 14. Work portfolio | YES | NO |
| 15. Learning ability | YES | NO |

16. If there is any information that you believe the teacher considered when determining your Science 9 letter grade that is not on the list above, please write it in the space below.

D. What types of information do you think a teacher SHOULD consider when determining a student's letter grade in Science 9?

Please indicate whether you feel a teacher **SHOULD** or **SHOULD NOT** consider each type of information when determining a student's letter grade in Science 9. **CIRCLE** the number of the answer that best describes your opinion.

1—Definitely should consider 2—Probably should consider 3—Probably should NOT consider 4—Definitely should NOT consider

| When determining my letter grade in Science 9, I think my teacher <u>should</u> consider my... | Definitely should consider | Probably should consider | Probably should NOT consider | Definitely should NOT consider |
|--|----------------------------|--------------------------|------------------------------|--------------------------------|
| 1. Test results | 1 | 2 | 3 | 4 |
| 2. Project work | 1 | 2 | 3 | 4 |
| 3. Participation in class activities | 1 | 2 | 3 | 4 |
| 4. Attendance | 1 | 2 | 3 | 4 |
| 5. Lab assignments | 1 | 2 | 3 | 4 |
| 6. Homework | 1 | 2 | 3 | 4 |
| 7. Attitude | 1 | 2 | 3 | 4 |
| 8. Self-evaluation | 1 | 2 | 3 | 4 |
| 9. Learning journal or log | 1 | 2 | 3 | 4 |
| 10. Performance tasks/demonstrations | 1 | 2 | 3 | 4 |
| 11. Behaviour in class | 1 | 2 | 3 | 4 |
| 12. Effort/work habits | 1 | 2 | 3 | 4 |
| 13. Notebook | 1 | 2 | 3 | 4 |
| 14. Work portfolio | 1 | 2 | 3 | 4 |
| 15. Learning ability | 1 | 2 | 3 | 4 |

16. If there is any information that you think a Science 9 teacher should consider that is not given in the list above, please write it in the space below.

17. If there is any information that you believe your Science 9 teacher considers that is not in the above list, and that you think should not be considered, please write it in the space below.

E. Methods Used to Report Your Progress in School

Some methods used to report student progress are listed below. Please use the letters of these methods **or** supply your own answer to complete questions 1 & 2 below, then answer the remaining questions.

- | | |
|------------------------------------|---|
| a. Letter grades | f. Student-led student/parent conferences |
| b. Written comments on report card | g. Student-led student/parent/teacher conferences |
| c. Written anecdotal reports | h. Student-led student/teacher conferences |
| d. Interim report cards | i. Scores or percentages on report card |
| e. Parent-teacher conferences | j. Informal contact from teacher |
1. Which method **or** combination of methods was used to report your progress in Science 9 for the last term? *(You may use the letters from the list above **or** supply your own answer.)*
2. Which method **or** combination of methods for reporting your progress in Science 9 do you find the most useful? *(You may use the letters from the list above **or** supply your own answer.)* You may use the space below to explain your choice.
3. Are you satisfied with the method used to report your progress to you in Science 9 for the last term? *(Check one.)*
- _____ Yes _____ No You may use the space below to explain your choice.
4. Do you have any concerns about how your progress in Science 9 was assessed and reported this past term? Are there any changes you would like to see made?

F. Importance of Reports of Student Progress

Please **CIRCLE** one of the numbers to answer the following questions.

1 — Very Important

2 — Fairly Important

3 — Fairly Unimportant

4 — NOT Important

| Importance of Reports of Student Progress | Very Important | Fairly Important | Fairly Unimportant | NOT Important |
|---|----------------|------------------|--------------------|---------------|
| 1. How important is a report about your progress in Science to you? | 1 | 2 | 3 | 4 |
| 2. How important is your letter grade in Science to you? | 1 | 2 | 3 | 4 |
| 3. How important are written comments about your progress in Science to you? | 1 | 2 | 3 | 4 |
| 4. How important is a report about your work habits in Science to you? | 1 | 2 | 3 | 4 |
| 5. How important is a report about your <u>overall progress in school</u> to you? | 1 | 2 | 3 | 4 |

G. Consequences of Reporting Student Progress

Most of the remaining questions have to do with some of the possible consequences of reporting student progress. Any information that you can provide to explain your choice will make the results of this questionnaire more meaningful; the extra time you take to write an explanation will be greatly appreciated.

1. Do you believe that your letter grade in Science 9 on your last report card accurately shows how well you did last term? (Check one.)

☐ Yes ☐ No ☐ I do not know *You may use the space below to explain your choice.*

2. Do your parents believe that your letter grade in Science 9 on your last report card accurately shows how well you did last term? (Check one.)

☐ Yes ☐ No ☐ I do not know *You may use the space below to explain your choice.*

3. **Has your last Science 9 report affected how you feel about studying science in school?** *(Check one.)*
____ Yes ____ No ____ I do not know You may use the space below to explain your choice.
4. **How do you think your last Science 9 report will effect the amount of work you will do in science class this term?** *(Please CIRCLE the letter of your choice.)*
a. I will probably do more work in science class.
b. I will probably continue to do about the same amount of work in science class as before.
c. I will probably do less work in science class.
d. I am not sure how this report will affect the amount of work I will do in science class.
You may use the space below to explain your choice.
5. **How do you think your last Science 9 report in will affect the amount of homework you will do in science this term?** *(Please CIRCLE the letter of your choice.)*
a. I will probably do more homework in science.
b. I will probably continue to do about same amount of homework as before in science.
c. I will probably do less homework in science.
d. I am not sure how the grade will affect the amount of homework I will do in science.
You may use the space below to explain your choice.
6. **Has your last Science 9 report affected your confidence in your ability to do science?** *(Check one.)*
____ Yes ____ No ____ I do not know You may use the space below to explain your choice.

7. Has your last report on your progress in Science 9 had any affect on your relationship with your parent(s)? (Check one.)
____ Yes ____ No ____ I do not know You may use the space below to explain your choice.
8. Do you take into consideration reports on your progress in Science 9 when you discuss or plan your future schooling? (Check one.)
____ Yes ____ No If so, how?
9. Do you take into consideration reports on your progress in Science 9 when you discuss your plans for a future career? (Check one.)
____ Yes ____ No If so, how?
10. Did you receive any information from your teacher that explained how letter grades in Science 9 would be, or are, determined? (Check one.)
____ Yes ____ No ____ I do not know You may use the space below to explain your choice.
11. Please use the space below to write down any additional comments you have about the meaning of letter grades in Science 9, or any comments you may have about this questionnaire. (Use the back of the questionnaire if you need more space.)

Thank you for taking the time to complete this questionnaire.

INTERVIEW REQUEST FORM

Are you interested in talking, in confidence, about the meaning of Science 9 letter grades some more?

Are you willing to be interviewed about this topic?

If you are interested in talking more about the questions in this questionnaire and are willing to participate in an audio-taped interview, please fill in the information below. I will contact you about a possible interview in the near future.

If you agree to be interviewed, your comments will be held in confidence, and, in the event that direct quotations from your interview are used in any reports of this research, a pseudonym will be used.

Thank you,

Susan Brigden, Doctoral Student, UBC
Department of Mathematics and Science Education

DO NOT fill in this form if you do NOT wish to be interviewed.

NAME _____

SCHOOL _____

Signature _____

THE MEANING OF LETTER GRADES IN SCIENCE 9:
PARENT QUESTIONNAIRE

A. Background Information

The following information is required for statistical purposes only and will NOT be used to identify you in any way. However, your answers to these questions will help in the analysis of the results. All of your answers will be completely confidential and will be combined with the answers of other parents when the results are reported.

1. CIRCLE the letter of the answer that best indicates your relationship to the child to whom this questionnaire refers. (The child enrolled in Science 9.)

- | | |
|----------------------------|--------------------------|
| a. Mother | d. Legal guardian (male) |
| b. Father | e. Other |
| c. Legal guardian (female) | |

(please specify)

2. CIRCLE the letter of the category that includes your age.

- | | |
|----------|------------|
| a. 20-29 | c. 40-49 |
| b. 30-39 | d. Over 49 |

3. How long you have lived in Canada? (CIRCLE the letter of the best answer.)

- | | |
|-------------------|-----------------------|
| a. All of my life | c. 6-10 years |
| b. 1-5 years | d. More than 10 years |

4. What language did you first learn to speak ? _____

5. What language is most often spoken in your home now? _____

6. Which of the following BEST describes your level of education?

- | | |
|-----------------------------------|------------------------------------|
| a. Not a high school graduate | e. Bachelor's degree |
| b. High school graduate | f. Graduate or professional degree |
| c. Some college after high school | g. Other |
| d. A college diploma/certificate | |

(please specify)

7. Please indicate what you do for a living. _____

8. Is the child taking Science 9 male or female? (CIRCLE the letter of your answer.)

- | | |
|---------|-----------|
| a. Male | b. Female |
|---------|-----------|

9. Do you have, or are you the guardian for, any children who have already completed Science 9? (Check one.)

____ Yes ____ No

10. What letter grade did your child get in Science 9 on the last report card? _____

11. What work habits mark did your child get in Science 9 on the last report? _____

B. What do you think your child's teacher means by the letter grade assigned to your child in Science 9 for the last term?

A report card letter grade may mean several things all at the same time. The following statements show some of the meanings a report card grade could have. For each statement, **CIRCLE** either **YES** or **NO** to show what you think the teacher probably intended the letter grade to mean.

| Teacher's Meaning of My Child's Report Card Letter Grade in Science 9 Last Term | YES, it probably means this | NO, it probably does NOT mean this |
|--|------------------------------------|---|
| 1. It shows how well my child can do Science 9. | YES | NO |
| 2. It shows how well my child did in Science 9 compared to the other students in the <u>class</u> . | YES | NO |
| 3. It shows how well my child did in Science 9 compared to other students taking the same course in the <u>school</u> . | YES | NO |
| 4. It shows how well my child did in Science 9 compared to the other students taking the same course in the <u>school district</u> . | YES | NO |
| 5. It shows how well my child did in Science 9 compared to other students taking the same course in <u>British Columbia</u> . | YES | NO |
| 6. It shows how much my child has improved in Science 9 from the beginning to the end of the reporting period. | YES | NO |
| 7. It shows how my child compared to the teacher's expectations for students studying Science 9. | YES | NO |
| 8. It shows how much Science 9 my child knew at the end of the last reporting period. | YES | NO |
| 9. It shows how hard my child tried to learn Science 9. | YES | NO |
| 10. It shows how my child compared to standards set by the Ministry of Education for Science 9. | YES | NO |

11. Use the space below to write any additional comments you may have about what you think the teacher meant by your child's Science 9 letter grade for the last term. (*Use the back of the questionnaire if you need more space.*)

C. What types of information do you think your child's teacher considered when determining your child's letter grade in Science 9 for the last term?

Here is a list of some of the types of information that might be considered by a teacher when determining a student's letter grade. **CIRCLE** either **YES** or **NO** to show whether you think your child's teacher probably **DID** or **DID NOT** consider that type of information when determining your child's letter grade in Science 9 the last term.

| When determining the letter grade in Science 9 this past term, I think the teacher considered my child's... | YES, the teacher probably DID consider | NO, the teacher probably DID NOT consider |
|--|--|---|
| 1. Test results | YES | NO |
| 2. Project work | YES | NO |
| 3. Participation in class activities | YES | NO |
| 4. Attendance | YES | NO |
| 5. Lab assignments | YES | NO |
| 6. Homework | YES | NO |
| 7. Attitude | YES | NO |
| 8. Self-evaluation | YES | NO |
| 9. Learning journal or log | YES | NO |
| 10. Performance tasks/demonstrations | YES | NO |
| 11. Behaviour in class | YES | NO |
| 12. Effort/work habits | YES | NO |
| 13. Notebook | YES | NO |
| 14. Work portfolio | YES | NO |
| 15. Learning ability | YES | NO |

16. If there is any information that you believe the teacher considered when determining your child's Science 9 letter grade that is not on the above list, please write it in the space below.
(Use the back of the booklet if you need more space.)

D. What types of information do you think a teacher should consider when determining a student's letter grade in Science 9?

Please indicate whether you feel a teacher **SHOULD** or **SHOULD NOT** consider each type of information when determining a student's letter grade in Science 9. **CIRCLE** the number of the answer that best describes your opinion.

1 — Definitely should consider 2 — Probably should consider 3 — Probably should NOT consider 4 — Definitely should NOT consider

| When determining a letter grade in Science 9, I think my child's teacher <u>should</u> consider my child's... | Definitely should consider | Probably should consider | Probably should NOT consider | Definitely should NOT consider |
|---|----------------------------|--------------------------|------------------------------|--------------------------------|
| 1. Test results | 1 | 2 | 3 | 4 |
| 2. Project work | 1 | 2 | 3 | 4 |
| 3. Participation in class activities | 1 | 2 | 3 | 4 |
| 4. Attendance | 1 | 2 | 3 | 4 |
| 5. Lab assignments | 1 | 2 | 3 | 4 |
| 6. Homework | 1 | 2 | 3 | 4 |
| 7. Attitude | 1 | 2 | 3 | 4 |
| 8. Self-evaluation | 1 | 2 | 3 | 4 |
| 9. Learning journal or log | 1 | 2 | 3 | 4 |
| 10. Performance tasks/demonstrations | 1 | 2 | 3 | 4 |
| 11. Behaviour in class | 1 | 2 | 3 | 4 |
| 12. Effort/work habits | 1 | 2 | 3 | 4 |
| 13. Notebook | 1 | 2 | 3 | 4 |
| 14. Work portfolio | 1 | 2 | 3 | 4 |
| 15. Learning ability | 1 | 2 | 3 | 4 |

16. If there is any information that you think a Science 9 teacher should consider that is not given in the list above, please write it in the space below.

17. If there is any information that you believe your child's Science 9 teacher considers that is not in the above list, and that you think should not be considered, please write it in the space below.

E. Methods Used to Report Your Child's Progress in School

Some of the methods used to report student progress are listed below. Please use the letters of these methods **or** supply your own answer to complete questions 1 & 2 below, then answer the remaining questions.

- | | |
|------------------------------------|---|
| a. Letter grades | f. Student-led student/parent conferences |
| b. Written comments on report card | g. Student-led student/parent/teacher conferences |
| c. Written anecdotal reports | h. Student-led student/teacher conferences |
| d. Interim report cards | i. Scores or percentages on report card |
| e. Parent-teacher conferences | j. Informal contact from teacher |
1. Which method **or** combination of methods was used to report your child's progress in Science 9 for the last term? *(You may use the letters from the list above **or** supply your own answer.)*
2. Which method **or** combination of methods for reporting your child's progress in Science 9 do you find the most useful? *(Use the letters from the list above **or** supply your own answer.) You may use the space below to explain your choice.*
3. Are you satisfied with the method used to report your child's progress in Science 9 to you for the last term?
____ Yes ____ No You may use the space below to explain your choice.
4. Do you have any concerns about how your child's progress in Science 9 was assessed and reported this past term? Are there any changes you would like to see made?

F. Importance of Reports of Student Progress

Please **CIRCLE** one of the numbers to answer the following questions.

1 — Very Important

2 — Fairly Important

3 — Fairly Unimportant

4 — NOT Important

| Importance of Reports of Student Progress | Very Important | Fairly Important | Fairly Unimportant | NOT Important |
|---|----------------|------------------|--------------------|---------------|
| 1. How important is a report about your child's progress in Science to you? | 1 | 2 | 3 | 4 |
| 2. How important is your child's letter grade in Science to you? | 1 | 2 | 3 | 4 |
| 3. How important are written comments about your child's progress in Science to you? | 1 | 2 | 3 | 4 |
| 4. How important is a report about your child's work habits in Science to you? | 1 | 2 | 3 | 4 |
| 5. How important is a report about your child's <u>overall progress in school</u> to you? | 1 | 2 | 3 | 4 |

G. Consequences of Reporting Student Progress

Most of the remaining questions have to do with some of the possible consequences of reporting student progress. Any information that you can provide to explain your choice will make the results of this questionnaire more meaningful; the extra time you take to write an explanation will be greatly appreciated.

1. Does your child believe that the letter grade given in Science 9 on their last report card accurately shows how well she or he did last term? (Check one.)

____ Yes ____ No ____ I do not know *You may use the space below to explain your choice.*

2. Do you believe that the letter grade on your child's last report card accurately shows how well your child did in Science 9 last term? (Check one.)

____ Yes ____ No ____ I do not know *You may use the space below to explain your choice.*

3. **Has the last Science 9 report affected how your child feels about studying science in school? (Check one.)**
____ Yes ____ No ____ I do not know You may use the space below to explain your choice.

4. **How do you think the last Science 9 report will effect the amount of work your child will do in science class this term? Please CIRCLE the letter of your choice.**
- a. He/she will probably do more work in science class.
 - b. He/she will probably continue to do about the same amount of work in science class as before.
 - c. He/she will probably do less work in science class.
 - d. I am not sure how this report will affect the amount of work my child will do in science class.

You may use the space below to explain your choice.

5. **How do you think the last Science 9 report will affect the amount of homework your child will do in science this term? Please CIRCLE the letter of your choice.**
- a. He/she will probably do more homework in science.
 - b. He/she will probably continue to do about same amount of homework as before in science.
 - c. He/she will probably do less homework in science.
 - d. I am not sure how the grade will affect the amount of homework my child will do in science.

You may use the space below to explain your choice.

6. **Has the last Science 9 report affected your child's confidence in her or his ability to do science?**
____ Yes ____ No ____ I do not know You may use the space below to explain your choice.

7. Has the last report on your child's progress in Science 9 had any affect on your relationship with your child?

☐ Yes ☐ No ☐ I do not know *You may use the space below to explain your choice.*

8. Do you take into consideration reports on your child's progress in Science 9 when you discuss or plan his or her future schooling?

☐ Yes ☐ No If so, how?

9. Do you take into consideration reports on your child's progress in Science when you discuss his or her plans for a future career?

☐ Yes ☐ No If so, how?

10. Did you receive any information from your child's teacher that explained how letter grades in Science 9 would be, or are, determined?

☐ Yes ☐ No ☐ I do not know *You may use the space below to explain your choice.*

11. Please use the space below to write down any additional comments you have about the meaning of reports of student progress in Science 9, or any comments you may have about this questionnaire. *(Use the back of the questionnaire if you need more space.)*

| |
|---|
| Thank you for taking the time to complete this questionnaire. |
|---|

INTERVIEW REQUEST FORM

Are you interested in talking, in confidence, about the meaning of Science 9 letter grades some more?

Are you willing to be interviewed about this topic?

If you are interested in talking more about the questions in this questionnaire and are willing to participate in an audio-taped interview, please fill in the information below. I will contact you about a possible interview in the near future.

If you agree to be interviewed, your comments will be held in confidence, and, in the event that direct quotations from your interview are used in any reports of this research, a pseudonym will be used.

Thank you,

Susan Brigden, Doctoral Student, UBC
Department of Mathematics and Science Education

DO NOT fill in this form if you do NOT wish to be interviewed.

NAME _____

ADDRESS _____

PHONE _____

Signature _____

THE MEANING OF LETTER GRADES IN SCIENCE 9:
TEACHER QUESTIONNAIRE

A. Background Information

The following information is required for statistical purposes only and will NOT be used to identify you in any way. However, your answers to these questions will help in the analysis of the results. All answers are completely confidential and will be combined with the answers of other teachers when the results are reported.

1. **Are you female or male?** *(Please CIRCLE the letter of your answer.)*
 - a. Female
 - b. Male
2. **Please CIRCLE the letter of the category that includes your age.**
 - a. 25-29
 - c. 35-39
 - e. 45-49
 - b. 30-34
 - d. 40-44
 - f. Over 49
3. **Which of the following BEST describes your level of education?**
 - a. B. A.
 - e. Master's degree
 - b. B. Sc.
 - f. Graduate or professional degree
 - c. B. Ed.
 - g. Other *(please specify)*
 - d. Bachelor's + teacher training
4. **How many years will you have taught as of July 1, 1994?**_____
5. **How many years will you have taught Science as of July 1, 1994?**_____
6. **Please list the Science courses you have taught and indicate how many years you have taught each course.**
7. **Have you taken coursework that included student assessment, evaluation, and reporting as a major topic?** *(Check one.)*
Yes_____ No_____ *If yes, please briefly describe this coursework below.*

8. Have you ever taken any in-service training on student assessment, evaluation, and reporting

Yes _____ No _____ *If yes, please briefly describe this coursework below.*

B. What did you intend a letter grade in Science 9 to mean last term?

A report card letter grade may mean several things all at the same time. The following statements show some of the meanings a report card grade could have. For each statement, **CIRCLE** either **YES** or **NO** to show whether you intended a letter grade to mean that or not.

| The Meaning of a Student's Report Card Letter Grade in Science 9 Last Term | YES, it means this | NO, it does NOT mean this |
|---|-------------------------------|--|
| 1. It shows how well a student can do Science 9. | YES | NO |
| 2. It shows how well a student did in Science 9 compared to the other students in the <u>class</u> . | YES | NO |
| 3. It shows how well a student did in Science 9 compared to other students taking the same course in the <u>school</u> . | YES | NO |
| 4. It shows how well a student did in Science 9 compared to the other students taking the same course in the <u>school district</u> . | YES | NO |
| 5. It shows how well a student did in Science 9 compared to other students taking the same course in <u>British Columbia</u> . | YES | NO |
| 6. It shows how much a student improved in Science 9 from the beginning to the end of the reporting period. | YES | NO |
| 7. It shows how a student compared to my expectations for students studying Science 9. | YES | NO |
| 8. It shows how much Science 9 a student knew at the end of this reporting period. | YES | NO |
| 9. It shows how hard a student tried to learn Science 9. | YES | NO |
| 10. It shows how a student compared to standards set by the Ministry of Education for Science 9. | YES | NO |

11. Use the space below to write any additional comments you may have about what you intended a letter grade in Science 9 to mean last term. (*Use the back of the booklet if you need more space.*)

C. What types of information did you consider when determining a letter grade in Science 9 for the last term?

Here is a list of some of the types of information that might be considered by a teacher when determining a student's letter grade. **CIRCLE** either **YES** or **NO** to show whether you **DID** or **DID NOT** consider that type of information when determining a student's grade in Science 9 this term. Please indicate the percentage, if any, each type of information contributes to the overall letter grade.

| When determining a letter grade in Science 9 for the last term, I considered a student's... | YES, I DID consider this | NO, I DID NOT consider this | Percentage of Letter Grade |
|--|---------------------------------|------------------------------------|-----------------------------------|
| 1. Test results | YES | NO | |
| 2. Project work | YES | NO | |
| 3. Participation in class activities | YES | NO | |
| 4. Attendance | YES | NO | |
| 5. Lab assignments | YES | NO | |
| 6. Homework | YES | NO | |
| 7. Attitude | YES | NO | |
| 8. Self-evaluation | YES | NO | |
| 9. Learning journal or log | YES | NO | |
| 10. Performance tasks/demonstrations | YES | NO | |
| 11. Behaviour in class | YES | NO | |
| 12. Effort/work habits | YES | NO | |
| 13. Notebook | YES | NO | |
| 14. Work portfolio | YES | NO | |
| 15. Learning ability | YES | NO | |

16. If there is any information that you considered when determining a student's letter grade that is not on the above list, write it in the space below. Please indicate the percentage you assign to this factor. (*Use the back of the questionnaire if you need more space.*)

D. What types of information do you think a teacher should consider when determining a student's letter grade in Science 9?

Please indicate whether you feel a teacher **SHOULD** or **SHOULD NOT** consider each type of information when determining a student's letter grade in Science 9. **CIRCLE** the number of the answer that best describes your opinion.

1 — Definitely should consider 2 — Probably should consider 3 — Probably should NOT consider 4 — Definitely should NOT consider

| When determining a letter grade in Science 9, I think a teacher <u>should</u> consider a student's... | Definitely should consider | Probably should consider | Probably should NOT consider | Definitely should NOT consider |
|---|----------------------------|--------------------------|------------------------------|--------------------------------|
| 1. Test results | 1 | 2 | 3 | 4 |
| 2. Project work | 1 | 2 | 3 | 4 |
| 3. Participation in class activities | 1 | 2 | 3 | 4 |
| 4. Attendance | 1 | 2 | 3 | 4 |
| 5. Lab assignments | 1 | 2 | 3 | 4 |
| 6. Homework | 1 | 2 | 3 | 4 |
| 7. Attitude | 1 | 2 | 3 | 4 |
| 8. Self-evaluation | 1 | 2 | 3 | 4 |
| 9. Learning journal or log | 1 | 2 | 3 | 4 |
| 10. Performance tasks/demonstrations | 1 | 2 | 3 | 4 |
| 11. Behaviour in class | 1 | 2 | 3 | 4 |
| 12. Effort/work habits | 1 | 2 | 3 | 4 |
| 13. Notebook | 1 | 2 | 3 | 4 |
| 14. Work portfolio | 1 | 2 | 3 | 4 |
| 15. Learning ability | 1 | 2 | 3 | 4 |

16. If there is any information that you think a Science 9 teacher should consider that is not given in the list above, please write it in the space below. (*Use the back of the booklet if you need more space.*)

E. Methods Used to Report Student Progress in School

Some of the methods used to report student progress are listed below. Please use the letters of these methods **or** supply your own answer to complete questions 1 & 2 below, then answer the remaining questions.

- | | |
|------------------------------------|---|
| a. Letter grades | f. Student-led student/parent conferences |
| b. Written comments on report card | g. Student-led student/parent/teacher conferences |
| c. Written anecdotal reports | h. Student-led student/teacher conferences |
| d. Interim report cards | i. Scores or percentages on report card |
| e. Parent-teacher conferences | j. Informal contact from teacher |
1. Which method **or** combination of methods did you use to report student progress in Science 9 for the last term? *(Use the letters from the list above **or** supply your own answer.)*
2. Which method **or** combination of methods do you prefer to use to report student progress in Science 9 to students? *(Use the letters from the list above **or** supply your own answer.) Please explain your choice.*
3. Which method **or** combination of methods do you prefer to use to report student progress in Science 9 to parents? *(Use the letters from the list above **or** supply your own answer.) Please explain your choice.*

4. Did you distribute any information to students that explained how their progress in Science 9 was to be assessed, evaluated, and/or reported?

Yes _____ No _____

If YES, please describe what kind of information you distributed to the students and when you gave it to them. Any documents that you distribute to students would be appreciated and can be attached to this questionnaire.

5. Did you distribute any information to parents that explained how their children's progress in Science 9 was to be assessed, evaluated, and/or reported?

Yes _____ No _____

If YES, please describe what kind of information you distributed to the parents and when you gave it to them. Any documents that you distribute to parents would be appreciated and can be attached to this questionnaire.

6. Are there any school district, school, or department policies that affect how you assess, evaluate, and report student progress in Science 9?

Yes_____ No_____ *If yes, please describe those policies in the space below.*

Any documents that you have that explain this policy would be appreciated and can be attached to this questionnaire.

7. Please use the space below to write down any additional comments you have about the meaning of reports of student progress in Science 9, or any comments you may have about this questionnaire.

Thank you for taking the time to complete this questionnaire.

Appendix G: Student Interview Schedule

Each interview will be semi-structured and will be conducted by the investigator, Sue Brigden. With the students' and their parents' permission, the interviews will be recorded on audio tape; the taped interviews will be transcribed and responses will be coded and analyzed. Once the study is completed, the tapes will be destroyed.

The purpose of the interview is to explore any issues that may arise as a result of the analyses of the responses to the written questionnaires. During the interview, students will have the opportunity to elaborate on and explain the choices they made on the Student Questionnaire. Before conducting the interviews, the investigator will complete an interview schedule for each student, recording, where necessary, their questionnaire responses. As such, the student's questionnaire will serve as the focal point of the interview and, in addition to a few background questions, the interview will be organized around the following themes.

- Students' perceptions of what they believe the teacher intended the Science 9 letter grade to mean.
- Students' beliefs about the types of information considered by the teacher when their letter grade was determined.
- Students' beliefs about the types of information a teacher should and should NOT consider when determining a letter grade in Science 9, and their reasons for those beliefs.
- Students' opinions about the various methods used to report student progress in Science 9, and their reasons for those opinions.
- Students' opinions about the importance of reports of student progress in Science 9, and their reasons for those opinions.
- Students' beliefs about some of the consequences of reports of student progress in Science 9, and their reasons for those beliefs.

The following questions will be used to guide the interview.

- A. Background Information.
 - You have already completed a written survey about the meaning of your Science 9 letter grade. Do you think that filling out that questionnaire has had any affect on the way you look at how your progress is assessed, evaluated, and reported in Science 9? Can you explain why you feel that way?
- B. Students' understanding(s) of the meaning(s) of their letter grade in Science 9.
 - How did you do in Science 9 this past term?
Can you explain why you think that? How do you know that?
 - You indicated on your questionnaire that you received a (letter grade) in Science 9 on last report card. What does that letter grade tell you about your progress in Science 9?
 - You also indicated that you received a (*grade*) for your work habits in Science 9 on your last report card. What does this tell you about yourself?
- C. Students' understandings about the types of information a teacher used to determine their Science 9 letter grade.
 - Do you know how your letter grade in Science 9 was determined last term?
How do you know this?
 - On the questionnaire, fifteen types of information that a teacher might consider when determining a student's letter grade in Science 9 were listed. You were asked to indicate whether or not you thought the teacher had considered each type of information when determining your letter grade. How did you decide whether or not the teacher had considered each type of information?
 - You indicted that the teacher also considers your (*supply answer to #16, page 3*) — how do you know this?

- D. Students' beliefs about the types of information a teacher should and should NOT use to determine their Science 9 letter grade, and the reasons for those beliefs.
- The questionnaire also asked you to indicate whether or not you feel the teacher should consider the different types of information when determining your letter grade. Why do you feel the way you do about each of the various types of information. (*The student's belief about the use of each type of information will then be discussed.*)
 - You have indicated that you think that the teacher should also consider your (supply answer from #16 page 4). Why do you think that this is important?
 - You also indicate that you do not think that the teacher should consider your (supply answer from #16 page 4) as is presently done. Can you explain why you feel this way?
- E. Students' opinions about the methods used to report their progress in Science 9, and their reasons for those opinions.
- You indicated on the questionnaire that you find it most useful when your progress is reported to you by (supply answer from #2 page 5). What make this method (these methods) most useful to you?
 - You have also indicated the *you are/are not* (supply answer from # 3 page 5) satisfied with the way your progress in Science 9 was reported to you this past term. Can you explain why this is so?
 - I see from the questionnaire that *you do/do not* (see answer to #4 page 5) have concerns about the way your progress in Science 9 was assessed and reported last term. Would you like to make a comment about this?
 - You have indicated that you *would/would not* like to see changes made in the way your progress is assessed and reported. Do you have any further comments about this?
- F. Students' opinions about the importance of reports of their progress in Science 9, and their reasons for those opinions.
- You have indicated that a report about your progress in Science 9 is (see answer to #F1 page 6) to you. Can you explain why you feel this way?
 - You indicate that a report about your letter grade in Science 9 is (see answer to #F2 page 6) to you. Will you please explain why you feel this way?
 - I see by your questionnaire that written comments about your progress in Science 9 are (see answer to #F3 page 6) to you. Can you explain why you indicated this?
 - According to your questionnaire, a report about your work habits in Science 9 is (see answer to #F4 page 6) to you. Would you like to make a comment about that?
 - You have indicated that a report about your overall progress in school is (see answer to #F5 page 6) to you. Can you explain why you feel this way?
- G. Students' beliefs about some of the consequences of reports of student progress in Science 9, and their reasons for those beliefs.

The questions asked during this part of the interview will depend upon how the student answered the questionnaire and the written explanations they provided. Before each interview is conducted, the investigator will analyze the student's written questionnaire and then construct questions which reflect the written answers previously provided by the student; however, the following questions will serve as a guideline for this portion of the interview.

- You say that you *do/do not* (*see answer to #G1 page 6*) believe that the letter grade in Science 9 accurately shows how well you did last term. Why do you say this?
or
You indicated on the questionnaire that you *do not know* if the Science 9 letter grade accurately shows how well you did last term. Would you like to make any further comments about this?
- I see that you think that your parents *do believe/do not believe/do not know if* (*see answer to #G2 page 6*) the Science 9 letter grade accurately shows how well you did last term. Would care to make a comment about this?
- When asked if your last report affected how you feel about studying Science 9 in school, you indicated(*refer to answer for #G3 page 7*) . Can you tell me more about this?
- When asked to indicate what effect your last report will have on the amount of work you will do in Science 9 class, you indicated (*refer to answer for #G4 page 7*) . Why did you indicate this?
- When asked to indicate what effect your last report will have on the amount of homework you will do in Science 9, you indicated (*refer to answer for #G4 page 7*) . Why did you indicate this?
- With respect to the effect the last report had on your confidence in your ability to do Science, you indicated(*refer to answer for #G36 page 7*) . Why did you indicate this?
- In response to the question "Has this report on your progress in Science 9 affected your relationship with parent(s)?" you indicated (*refer to answer for #G7 page 8*) . Can you explain your answer?
- I see that you *do/do not* (*refer to answer for #G8 page 8*) take into consideration reports on your progress in Science 9 when you discuss or plan your future schooling. Why is this?
- I also see that you *do/do not* (*refer to answer for #G9 page 8*) take into consideration reports on your progress in Science 9 when you discuss your plans for the future. Why did you indicate this?
- When asked if you received any information from the teacher that explained how letter grades in Science 9 were to be determined, you indicated (*refer to answer for #G10 page 8*) .
If yes, what kind of information did you receive? Do you have any comments about this information?
- Is there anything that you would like to add about the meaning of your child's letter grade in Science 9?

Appendix H: Parent Interview Schedule

Each interview will be semi-structured and will be conducted by the investigator, Sue Brigden. With the parents' permission, the interviews will be recorded on audio tape; the taped interviews will be transcribed and responses will be coded and analyzed. Once the study is completed, the tapes will be destroyed.

The purpose of the interview is to explore any issues that may arise as a result of the analyses of the responses to the written questionnaires. During the interview, parents will have the opportunity to elaborate on and explain the choices they made on the Parent Questionnaire. Before conducting the interviews, the investigator will complete an interview schedule for each parent, recording, where necessary, their questionnaire responses. As such, the parent's questionnaire will serve as the focal point of the interview and, in addition to a few background questions, the interview will be organized around the following themes.

- Parents' perceptions of what they believe the teacher intended the Science 9 letter grade to mean.
- Parents' beliefs about the types of information considered by the teacher when their child's letter grade was determined.
- Parents' beliefs about the types of information a teacher should and should NOT consider when determining a letter grade in Science, and their reasons for those beliefs.
- Parents' opinions about the various methods used to report student progress in Science 9, and their reasons for those opinions.
- Parents' opinions about the importance of reports of student progress in Science 9, and their reasons for those opinions.
- Parents' beliefs about some of the consequences of reports of student progress in Science 9, and their reasons for those beliefs.

The following questions will be used to guide the interview.

A. Background Information.

- You have already completed a written survey about the meaning of your child's Science 9 letter grade. Do you think that filling out that questionnaire has had any affect on the way you look at how your child's progress is assessed, evaluated, and reported in Science 9? Can you explain why you feel that way?
- Is your child a boy or a girl?
- How old is your child?
- What is your child's name? *(The student's name will be kept anonymous in any papers written as a result of this research; however, the child's name will be used by the investigator during the interview to ensure that the interview goes smoothly. Each parent will be told that the name of their child will be kept in confidence.)*

B. Parents' understanding(s) of the meaning(s) of their child's letter grade in Science 9.

- How do think your child did in Science 9 this past term?
Can you explain why you think that? How do you know that?
- You indicated on your questionnaire that(child's name) received a (letter grade) in Science 9 on his/her last report card. What does that letter grade tell you about (child's name) progress in Science 9?
- You also indicated that (child's name) received a (grade) for his/her work habits in Science 9 on his/her last report card. What does this tell you about (child's name) ?

C. Parents' understanding(s) about the types of information a teacher used to determine their child's Science 9 letter grade, and their reasons for those beliefs.

- Do you know how your child's letter grade in Science 9 was determined last term? How do you know this?
 - On the questionnaire, fifteen types of information that a teacher might consider when determining a student's letter grade in Science 9 were listed. You were asked to indicate whether or not you thought the teacher had considered each type of information when determining your child's letter grade. How did you decide whether or not the teacher had considered each type of information?
 - You indicated that the teacher also considers your child's (supply answer to #16, page 3) — how do you know this?
- D. Parents' beliefs about the types of information a teacher should and should NOT use to determine their child's Science 9 letter grade, and their reasons for those beliefs.
- The questionnaire also asked you to indicate whether or not you feel the teacher should consider the different types of information when determining your child's letter grade. Why you feel the way you do about each of the various types of information. (*The parent's belief about the use of each type of information will then be discussed.*)
 - You have indicated that you think that the teacher should also consider your child's (supply answer from #16 page 4). Why do you think that this is important?
 - You also indicate that you do not think that the teacher should consider your child's (supply answer from #16 page 4) as is presently done. Can you explain why you feel this way?
- E. Parents' opinions about the methods used to report their children's progress in Science 9, and their reasons for those opinions.
- You indicated on the questionnaire that you find it most useful when (child's name) progress is reported to you by (supply answer from #2 page 5). What make this method (these methods) most useful to you?
 - You have also indicated the you are/are not (supply answer from # 3 page 5) satisfied with the way your child's progress in Science 9 was reported to you this past term. Can you explain why this is so?
 - I see from the questionnaire that you do/do not (see answer to #4 page 5) have concerns about the way your child's progress in Science 9 was assessed and reported last term. Would you like to make a comment about this?
 - You have indicated that you would/would not like to see changes made in the way your child's progress is assessed and reported. Do you have any further comments about this?
- F. Parents' opinions about the importance of reports of their child's progress in Science 9, and the reasons for those opinions.
- You have indicated that a report about your child's progress in Science 9 is (see answer to #F1 page 6) to you. Can you explain why you feel this way?
 - You indicate that a report about your child's letter grade in Science 9 is (see answer to #F2 page 6) to you. Will you please explain why you feel this way?
 - I see by your questionnaire that written comments about your child's progress in Science 9 are (see answer to #F3 page 6) to you. Can you explain why you indicated this?
 - According to your questionnaire, a report about your child's work habits in Science 9 is (see answer to #F4 page 6) to you. Would you like to make a comment about that?
 - You have indicated that a report about your child's overall progress in school is (see answer to #F5 page 6) to you. Can you explain why you feel this way?

G. Parents' beliefs about some of the consequences of reports of student progress in Science 9 and the reasons for those beliefs.

The questions asked during this part of the interview will depend upon how the parent answered the questionnaire and the written explanations they provided. Before each interview is conducted, the investigator will analyze the parent's written questionnaire and then construct questions which reflect the written answers previously provided by the parent; however, the following questions will serve as a guideline for this portion of the interview.

- You say that your child *does/does not* (see answer to #G1 page 6) believe that the letter grade in Science 9 accurately shows how well s/he did last term. How do you know this?
or
- You indicated on the questionnaire that you *do not know* if your child believes that the Science 9 letter grade accurately shows how well s/he did last term. Would you like to make any further comments about this?
- I see that you *do believe/do not believe/do not know if* (see answer to #G2 page 6) the Science 9 letter grade accurately shows how well your child did letter term. Would care to make a comment about this?
- When asked if your child's last report affected how s/he feels about studying Science 9 in school, you indicated(refer to answer for #G3 page 7) . Can you tell me more about this?
- When asked to indicate what effect you think your child's last report will have on the amount of work s/he will do in Science 9 class, you indicated (refer to answer for #G4 page 7) . Why did you indicate this?
- When asked to indicate what effect you think your child's last report will have on the amount of homework s/he will do in Science 9, you indicated (refer to answer for #G4 page 7) . Why did you indicate this?
- With respect to the effect the last report had on your child's confidence in his/her ability to do Science 9, you indicated(refer to answer for #G36 page 7) . Why did you indicate this?
- In response to the question "Has this report on your child's progress in Science 9 affected your relationship with your child?" you indicated (refer to answer for #G7 page 8) . Can you explain your answer?
- I see that you *do/do not* (refer to answer for #G8 page 8) take into consideration reports on your child's progress in Science when you discuss or plan his/her future schooling. Why is this?
- I also see that you *do/do not* (refer to answer for #G9 page 8) take into consideration reports on your child's progress in Science when you discuss his/her plans for the future. Why did you indicate this?
- When asked if you received any information from the teacher that explained how letter grades in Science 9 were to be determined, you indicated (refer to answer for #G10 page 8) .
If yes, what kind of information did you receive? Do you have any comments about this information?
- Is there anything that you would like to add about the meaning of your child's letter grade in Science 9?

Appendix I: Teacher Interview Schedule

Each interview will be semi-structured and will be conducted by the investigator, Sue Brigden. There are three purposes of the interview: 1) to provide a context for the study; 2) to learn more about each teacher's assessment, evaluation, and reporting practices; and 3) to further explore issues that may arise as a result of the analyses of the responses to the written questionnaires.

With the teacher's permission, the interviews will be recorded on audio tape; the taped interview will be transcribed, and the transcription will be provided to the teacher for their comments. After the interview responses have been coded and analyzed and the study is completed, the tapes will be destroyed.

The following questions, arranged by theme, will serve as a guideline for the interviews

- Can you describe the type of community you serve.
- What is the main goal of your school? What is it noted for?

1. ASSESSMENT PROCEDURES USED IN THE CLASSROOM?

- How do you determine what to assess?
- How do you select the procedures you use?
- How do you select the students you are assessing at a particular time? (e.g., for performance or demonstration type assessments)
- How do you determine whether student performance is adequate? (e.g., in relation to goals? to effort expended? to other students?)
- What procedures do you use to collect information on the students in your classroom?

For each procedure:

- Describe what the procedure is.
 - How often do you use it?
 - When (under what conditions) do you use it?
 - Do you use it for all students?
- What are some of the benefits of the procedure?
- What are some of the problems?

2. GENERAL QUESTIONS ABOUT ASSESSMENT PRACTICES:

- What are the purposes of student assessment?
- How are the results of student assessment used? (e.g., for accountability, reporting to parents, instructional feedback)
- *How do you feel about assessing your students' progress in Science 9? Are you comfortable assessing and evaluating students?*
- *How do you feel about the way you assess the students?*

3. ANALYSIS AND INTERPRETATION

- What procedures do you use to evaluate student learning, once the information has been collected?
 - How is the information analyzed and interpreted?
 - Are students involved in the interpretation and analysis of this information? How?
 - Are parents involved in the interpretation and analysis of this information? How?
- Are the same procedures used to evaluate all students? If you do not evaluate everybody the same way, how do you ensure that grades are interpreted in the way you intended?

- How do you determine a student's letter grade?
 - How did you learn to take all the information that you have collected and then make a letter grade out of it?
 - How are the following being used in analyzing and interpreting assessment results: comparison, description, and standards?
 - How do the various kinds of information you collect about students influence your student progress reports? How do they influence the letter grade, the work habits symbol, and written comments?
4. **REPORTING STUDENT PROGRESS**
- How is information currently reported?
 - What difficulties do you find in writing valid reports?
 - What effects does reporting student progress have on students?
 - do the results seem to have any impact on the students?
 - does it seem to affect how they work in class?
 - does it seem to affect how much homework they do?
 - does it seem to affect student-teacher relationships?
 - what variation is there across students in your class?

5. **ISSUES ARISING OUT OF THE WRITTEN QUESTIONNAIRES**

The purpose of this portion of the interview is to explore any issues that may arise as a result of the administration and analyses of the written questionnaires. During the interview, teachers will have the opportunity to elaborate on and explain the choices they made on the Teacher Questionnaire. Before conducting the interviews, the investigator will complete an interview schedule for each teacher recording, where necessary, their questionnaire responses. As such, the teacher's questionnaire will serve as the focal point for this part of the interview and, in addition to a few background questions, the interview will be organized around the following themes.

- What teachers intend letter grades in Science 9 to mean.
- The types of information used by teachers to determine students' Science 9 letter grades.
- Teachers' beliefs about the types of information a teacher should and should NOT use to determine their child's Science 9 letter grade, and the reasons behind those beliefs.

A. Background Information

- You indicate you have/have not taken coursework that included assessment, evaluation, and reporting as a major topic. You indicate you have/have not taken coursework that included assessment, evaluation, and reporting as a major topic. How satisfied were you with that coursework? How valuable was it?
- You also indicate you *have/have not* taken in-service training that included assessment, evaluation, and reporting as a major topic. How satisfied were you with that training? How valuable was it?
- How did you learn to assess, evaluate, and report student progress in Science 9?
- How did you learn to determine students' letter grades in Science 9?

B. What teachers intend Science 9 letter grades to mean

The questions asked during this part of the interview will depend upon the meanings selected by the teacher on the questionnaire. When you give an A to a student, what are you saying about that student?

- What do you hope the child will think that A means? What do you hope the parent will think it means?
- When you give an B to a student, what are you saying about that student? What do you hope the child will think that A means? What do you hope the parent will think it means?
- When you give an C to a student, what are you saying about that student? What do you hope the child will think that A means? What do you hope the parent will think it means?
- When you give an D to a student, what are you saying about that student? What do you hope the child will think that A means? What do you hope the parent will think it means?
- When two, or more, students achieve the same letter grade, does mean the same thing for each student?
- Do you think that a student moving to another class in this school would receive the same letter grade from another teacher in Science 9 as they from you? Why do you think that? What about if they moved to another school?

C. Types of information used by teachers to determine students' Science 9 letter grades

The questions asked during this portion of the interview will depend on the answers provided by the teacher on the written questionnaire and during the first part of the interview.

D. Teachers' beliefs about the types of information a teacher should and should NOT use to determine their child's Science 9 letter grade, and the reasons behind those beliefs.

The questions asked during this portion of the interview will depend on the answers provided by the teacher on the written questionnaire and during the first part of the interview. The following question will be used to begin discussion of this section of the teacher questionnaire.

- The questionnaire asked you to indicate whether or not you feel a teacher should consider each of several types of information when determining a student's letter grade. I'd like to find out more about why you feel the way you do about each of the various types of information. (*Teachers' beliefs about the use of each type of information will be discussed.*)
- You have indicated that you think that a teacher should also consider a student's (supply answer from #16 page 4). Why do you think that this is important?
- You also indicate that you do not think that a teacher should consider a student's (supply answer from #16 page 4) as is presently done. Can you explain why you feel this way?

E. Teachers' opinions about the methods used to report student progress in Science 9 and the reasons behind those opinions.

The questions asked during this portion of the interview will depend on the answers provided by the teacher on the written questionnaire and during the first part of the interview. The following question will be used to begin discussion of this section of the teacher questionnaire.

- You indicated on the questionnaire that you prefer to use (supply answer from # 2 page 5) to report student progress to students. Why do you prefer this method (these methods)?
- You indicated on the questionnaire that you prefer to use (supply answer from # 3 page 5) to report student progress to parents. Why do you prefer this method (these methods)?_