Teachers' Awareness Of Multiple Intelligences In
Elementary School-Aged Gifted Students

by

Heather Jean Lapper
B.A., University of Victoria, 1978

A Thesis Submitted In Partial Fulfillment Of The
Requirements For The Degree Of

MASTER OF ARTS

in the Department of Psychological Foundations in Education
University of Victoria

We accept this thesis as conforming
to the required standard

[redacted]

Dr. Jennifer Hill, Supervisor (Department of Psychological Foundations)

[redacted]

Dr. Donald Knowles, Departmental Member (Department of Psychological Foundations)

[redacted]

Dr. Roy Ferguson, Outside Member (School of Child & Youth Care)

[redacted]

Dr. Lloyd Ollila, External Examiner (Department of Communication & Social Foundations)

Supervisor: Dr. Jennifer Hill

ABSTRACT

This study explored the perceptions and behaviours of teachers in regard to multiple dimensions of intelligence in gifted students. A case-simulation method was utilized to investigate the problem. Twenty-three female elementary school teachers with a minimum of three years teaching experience were asked to read three case studies of students with different intelligences (Linguistic, Spatial, and Intrapersonal) as defined by Howard Gardner's theory of Multiple Intelligences (1983). The teachers were then interviewed by the researcher in order to gain a clear understanding of their perceptions of each student's abilities. The findings indicate that teachers demonstrate an awareness of multiple intelligences in students when they are presented with relevant information about these students. These findings also indicate a willingness on the part of the teacher to nominate these students to a gifted program, provided the program is structured in a manner which will best meet the needs of the particular children. Overall, this study suggests that although teachers receive relevant information about their students and are thus made aware of their multiple intelligences, these students' needs may not be met due to the lack of a process to identify and provide appropriate programming for them.

Gardner, H. (1983). *Frames of mind: the theory of multiple intelligences.* New York: Basic Books.

Examiners:

[redacted]

Dr. Jennifer Hill, Supervisor (Department of Psychological Foundations)

[redacted]

Dr. Donald Knowles, Departmental Member (Department of Psychological Foundations)

[redacted]

Dr. Roy Ferguson, Outside Member (School of Child and Youth Care)

[redacted]

Dr. Lloyd Ollila, External Examiner (Department of Communication & Social Foundations)

Table of Contents

List of Tables

Acknowledgements

I would like to thank the following people for their contributions to the completion of this paper: Jennifer Hill, for her patience, guidance, and wisdom; Don Knowles, and Roy Ferguson, for their advice and encouragement; Beverly Timmons, for the initial motivation to translate theory into practice; Nicole Obee for graciously allowing me to use her photograph for the case simulations; Betty Yule and Kosy Lapper for indeterminable hours of "free" babysitting; and Gwen Hartrick for setting the precedent.

Dedication

This paper is dedicated to my husband, Witt, for his support, patience and untiring confidence; and to my children, Emily, Deirdre, and Nathan, who stoically gave up many summer outings in order for me to write.

CHAPTER 1

INTRODUCTION

Over the course of the past two decades, much research has been conducted and significance placed upon various aspects of giftedness in children (Shaughnessy & Stockard, 1996). Nevertheless, there remains much debate and controversy concerning the issue of determining what is the most appropriate definition of giftedness. In British Columbia, for example, the Ministry of Education stipulates in its *Manual of Policies : Procedures and Guidelines for Special Education Services* (1995) that a student is considered gifted when he or she possesses "demonstrated or potential abilities that give evidence of exceptionally high capability with respect to intellect, creativity, or the skills associated with specific disciplines"(p.E17). Within this wide-ranging definition, the general practice has been for most school districts to develop their own terms of reference in relation to the programmes they offer and develop their own criteria for basis of entry. For example, in the Sooke School District (#62), gifted students are provided with three separate levels of programming. At the first level, students are identified as integration support students and are classified as special needs students in order to qualify for provincial ministry funding. These students are required to have had a psychometric assessment (e.g., Wechsler Intelligence Scale for Children-III or Stanford-Binet) and have scored in the top 5% of the population. Individual educational programming is then put into place for these students. These gifted students attend one of two cluster schools in the district where they are pulled from their regular classroom for daily lessons in mathematics and language arts. They are enrolled in a continuous progress program for the duration of their school years. At the second level, elementary students are designated as eligible for the Programs for Academic and Creative Enrichment (PACE) and do not qualify for

individual educational programming. They attend a weekly workshop based upon a variety of different subject material. They too are enrolled in a continuous progress program and might participate in some cluster activities. The third level of programming involves students being enriched in their homeroom classes and, on occasion, being invited to selected workshops. The criteria for entry into a gifted programme in this school district begins at the school level with teachers and administrators making a recommendation to the district for programming.

In contrast, Saanich School District (#63) is in the final implementation phase of its gifted program, Students With Outstanding Capabilities (SWOC). Students who are identified by their classroom teacher as demonstrating outstanding capabilities in general intellectual ability, specific academic accomplishments, creative thinking, visual and performing arts abilities, practical arts skills, athletic talent, and/or leadership are referred to a school-based team of professionals (i.e., classroom teacher, administrator, and school contact teacher for SWOC) who develop a student profile outlining those students' strengths, needs, and learning styles. If deemed necessary, an Individual Educational Plan (IEP) is developed and the classroom teacher is responsible for the planning and implementation of the IEP. An interesting departure in this school district's identification procedures is that no single criterion is relied upon as a basis for admission to the program. The outlined parameters for admission include academic achievement, learning styles and strengths, interests, special abilities, and visions and goals for the future. The goal of the program is to provide differentiation of instruction in a regular mixed-ability classroom. The major responsibility for the identification, planning, and programming for students with outstanding capabilities in this district reside mainly in the domain of the classroom teacher.

In a similar vein, Greater Victoria School District (#61) is working towards identifying gifted students from Kindergarten to Grade 7 with the intention of providing differentiated instruction for these students in their own classrooms. It should be noted that this school district is currently in the process of preparing a direction statement on giftedness and a handbook of identification procedures for regular classroom teachers in their district. The criteria for identification as a gifted student is similar to Sooke and Saanich School Districts, as it also begins at the classroom level, where teachers and administrators make the initial recommendation.

Teacher nomination has traditionally been a common method for identifying gifted students because it is an inexpensive screening procedure based on the belief that teachers know their students the best (Winzer, 1990). Nominations typically are based on teacher observations which include anecdotal records, checklists, and inventories, as well as records of student achievement including assignments, grades, and outstanding accomplishments. Since teacher nominations are generally an important component in the identification of gifted students, teachers' conceptions, biases, and expectancies can be viewed as constraints on broadening approaches to identification and programming for gifted students (Guskin, Peng, & Simon, 1992).

An examination of conceptions of giftedness conducted by Sternberg and Davidson (1986) included seventeen different theories of what constitutes giftedness in students. Even though each of these conceptions of giftedness was autonomous, a common theme became evident in each one. This commonality was the inclusion of the presence of a high level of intelligence or intellectual ability in a student. However, the manner in which this intellectual ability was defined and measured was where many of the theories parted company. It was noted by Sternberg and Davidson (1986) that within these seventeen different theories, there

appeared to be a definite shift away from a rigid definition of intelligence based on an intelligence test score (e.g., Stanford-Binet) and a movement toward a multiple view of potentialities. One theorist, Howard Gardner (1983), has suggested a pluralistic or multidimensional view of intelligence which recognizes many different facets of cognition. This view also serves to acknowledge that all people have different cognitive strengths and differing styles of learning.

Statement of the Problem

There has been a great deal of literature written on the multidimensional nature of intelligence (cf. Thurstone, 1938, Guilford, 1967, Gardner, 1983, Sternberg, 1988). However, only limited attention has been devoted to teachers' views of the dimensions of giftedness and talent (Guskin, Peng, & Simon, 1992; Shaughnessy & Stockard, 1996). While there is extensive evidence that teachers' perceptions of high or low ability in a student have a significant influence on the judgments and behaviour of teachers (Brophy & Good, 1974; Dusek, 1975; Siegel, 1992), there has been limited research to date on the extent to which multiple intelligences or categories of ability influence the decisions made by teachers about who should be identified and what type of educational programming should be provided for gifted students with diverse abilities.

Although it has been shown that teachers are fairly accurate in identifying students requiring remedial assistance, it has been reported that they are relatively poor in identifying gifted, talented, and creative students (Perks, 1984). For example, in one study conducted by Renzulli (1979) it was found that teachers who were in close contact with gifted students were only 50% successful when asked to identify those students whom they considered to be gifted and talented.

As can be seen from the above summary, the research is limited in regard to teachers' awareness of the multidimensional nature of intelligence in gifted

students. Moreover, in the area of identification, the research indicates teachers are not very accurate at identifying these students. If identification procedures and programming for gifted students with unique abilities are to be addressed in our school system, these issues need to be examined in greater detail.

Purpose of the Study

The purpose of this study was to explore the perceptions of teachers in regard to multiple dimensions of intelligence in gifted students. Specifically, this study focused on the following general research question:

1) To what extent does a teacher's awareness of multiple intelligences in a gifted student affect his or her educational programming for that student?

Within that broad question, three additional questions were also addressed:

2) What are teachers' beliefs, biases, and expectations in relation to gifted students?

3) How are these perceptions acted upon by teachers?

4) Do these perceptions of what constitutes giftedness affect the programming recommended for these students?

General Procedures

In the present study, a case-simulation method was utilized to investigate to what extent teachers' awareness of multiple intelligences in gifted students affect their selection of educational programming for these students. Twenty-three female elementary school teachers with a minimum of three years teaching experience were asked to read three case studies of students with different intelligences as defined by Gardner (1983). Each case study included a photograph of an 11 year old girl, a sample of her school work, and a brief case history, outlining in detail that student's particular attributes of giftedness within that intelligence. The teachers were then interviewed by the researcher in order to gain a clear understanding of their perceptions of each student's abilities.

Scope and Limitations of the Study

While this study attempted to provide further insight into the nature of teachers' awareness of multiple intelligences in gifted students, its significance is limited by the exploratory nature of this inquiry. The current study was limited to the examination of teachers' perceptions by means of utilizing a case study approach. Direct observation, (in order to examine teachers' natural reactions to their own students who exemplify these diverse patterns of ability) would provide further insights. Another limitation of this study is that only three multiple intelligences were simulated. Further research could enhance the data from this study by providing case simulations of all seven of Gardner's (1983) identified intelligences. A larger sample would also provide a more representative sample of experienced teachers.

Implications of the Study

The results of this study will have implications for the development of appropriate identification, placement and programming procedures for gifted students with diverse talents and abilities. It will demonstrate how important it is to understand how teachers perceive and respond to multiple intelligences in gifted students. Studies have shown how teacher accuracy in the identification of gifted students can be improved up to 40% if the teacher is asked to identify students according to some clearly defining characteristics (Perks, 1984). In a recent study, Hunsacker, Finley and Frank (1997) found that when teachers used ratings of specific characteristics of giftedness, they could better predict some aspects of success for a child nominated to a gifted programme. Providing teachers with more information concerning the unique abilities of their gifted students will help improve the chances of these students being placed in appropriate programmes which will meet their needs.

Summary

Teachers' views of the dimensions of giftedness and talent have not been studied widely. If identification procedures and programming for gifted students with unique abilities are to be addressed in our school system, these issues need to be examined in greater detail.

The purpose of this study was to explore the perceptions of teachers in regard to multiple dimensions of intelligence in gifted students. Specifically, this study focused on the following general research question: To what extent does a teacher's awareness of multiple intelligences in a gifted student affect his or her educational programming for that student?

A case-simulation method was utilized to investigate to what extent teachers' awareness of multiple intelligences in gifted students affect their selection of educational programming for these students. Twenty-three female elementary school teachers with a minimum of three years teaching experience were asked to read three case studies of students with different intelligences as defined by Gardner (1983). The teachers were then interviewed by the researcher in order to gain a clear understanding of their perceptions of each students' abilities.

The results of this study will have implications for the development of appropriate identification, placement and programming procedures for gifted students with diverse talents and abilities. This study was limited by the exploratory nature of the inquiry, its dependence upon a case-simulation methodology, and a small sample of experienced teachers.

CHAPTER 2

REVIEW OF RELATED LITERATURE

To facilitate a clear understanding of "multiple intelligences" in gifted students, this review of literature will first provide an overview of relevant research on the multidimensional nature of intelligence. A detailed explanation of Gardner's (1983) theory of multiple intelligences will be included. As well, a summary of research on conceptions of giftedness, some general and some specific to teaching will be presented.

The Nature of Intelligence: Contributions of Early Theorists

Psychologists have been researching and theorizing about the definition and conceptualization of intelligence for over one hundred years. Over the course of this time, intelligence has been conceived as a global aptitude or ability which can be reliably measured by a standardized intelligence quotient (IQ) test. Charles Spearman (1927), for instance, postulated a theory of intelligence based on the notion of what he referred to as general intelligence or the g factor, and specific intelligence or the s factor. The g factor is available to the same individual to the same degree for all intellectual acts. According to this theory, the performance of any intellectual act requires some combination of g and of the s factor, which is specific to that act and which varies in strength from one act to another. According to Spearman (1927), the single most significant piece of information to have about any person's intellectual ability is an estimate of his or her g level. He interpreted general intelligence literally as brain power. He maintained it is the general level of

mental energy which leads people to perform well or poorly on all sorts of intellectual acts, but particularly those requiring abstract thinking. This conception of a general or unitary intelligence has been challenged by a number of cognitive and developmental psychologists who have suggested a more pluralistic notion of intelligence. Thurstone was one such theorist.

Thurstone (1938), with the aid of statistical factor analysis of his own devising, distinguished seven distinct groups of primary mental abilities. He labelled these verbal comprehension--tests of reading and vocabulary; word fluency--tests requiring rapid production of words; number facility--tests of arithmetic word problems; spatial visualization--tests requiring mental manipulation of symbols or geometric designs; associative memory--tests of recall; perceptual speed--tests requiring rapid recognition of symbols; and reasoning--tests such as analogies.

Guilford (1982) developed Thurstone's analysis even further. He proposed that intelligence was comprised of 150 distinct factors. According to Guilford, every mental task involved three ingredients: an operation, a content and a product. He suggested there were five kinds of operations (i.e., cognition, memory, divergent production, convergent production, and evaluation), five kinds of contents (i.e., visual, auditory, symbolic, semantic and behavioural), and six kinds of products (i.e., units, classes, relations, systems, transformations, and implications). Guilford and his colleagues subsequently developed tests that measured many of the factors posited by the model and they claimed to have demonstrated the existence of 105 of the 150 possible factors. Guilford's structure of intellect theory assumes that intelligence is too complex to be subsumed by a few primary mental abilities, much less by a single IQ score (Fancher, 1985).

A new thrust of the theory of intelligence is evident in the treatment of intelligence as a flexible and fluid process or processes which develop over the lifespan of the individual (Flaitz, 1986). There have been many theorists and

researchers who have investigated such an alternative view of conceptualizing intelligence. Robert Sternberg is one such theorist.

Sternberg's (1988) conception of intelligence resulted in the development of a new theory of intellectual giftedness which he described as a triarchic theory based on three elements: componential, experiential, and contextual. According to Sternberg (1988) it is only possible to understand intelligence completely when you understand the relationship of intelligence to the internal world of the individual, the experience with the world that mediates between the internal and the external worlds of the individual, and that which relates intelligence to the external world of the individual. The main theoretical implication of his theory is that intelligence is not a fixed entity. Sternberg believes that intelligence is malleable and thus can be strengthened and changed.

In order to address educational implications of this theory, Sternberg (1988) developed a triarchic test of intelligences known as the Sternberg Multidimensional Abilities Test. The test includes verbal, quantitative, and figural type items. Separate scores are produced for each of the three main parts of the triarchic theory; specifically, components of intelligence, coping with novelty and automatization, and practical intelligence. The triarchic theory is pluralistic rather than unitarian in its conception of intelligence.

Recently, Sternberg has broadened his concept of triarchic intelligence to include a sharp distinction between what he calls academic intelligence and successful intelligence (Sternberg, 1996). Academic intelligence as defined by Sternberg is an inert ability to do well on an IQ test. He contends, however, that this intelligence is inert; in other words it does not lead to goal-directed movement or behaviour. In contrast, Sternberg believes that successful intelligence is used to achieve important goals and is therefore necessary in order to succeed in life. It is measured by what one accomplishes.

Some interesting findings of Sternberg's recent research include his contention that you cannot predict a person's successful intelligence from his or her academic intelligence. He also argues that successful intelligence can be taught. This finding endorses his earlier assertion that intelligence can be strengthened and changed. Another finding of interest is that successful intelligence is not identical from one domain to the next. In other words there is no single IQ or general ability that defines intelligence. Multiplicity is, therefore, one of the main characteristics of intelligence as presented by Sternberg.

Another pluralistic view of intelligence has been brought forward by Howard Gardner (1983). Gardner's cognitive theory of multiple intelligences was developed as a result of research with normal children, gifted children, and brain damaged adults. In studying profiles of these individuals, he discovered they were extremely jagged, with one cognitive strength not necessarily relating to performance in another cognitive area. Gardner found some persuasive evidence that particular faculties or specific intelligences could be spared or enhanced in these particular individuals, thus encouraging his theory of a multiple domain of intelligences (Gardner, 1983). At this same time, Gardner held a distrust of the overemphasis on linguisitic and logical-mathematical symbolization in our school systems, and became generally disenchanted with the theories of the Swiss psychologist, Jean Piaget.

At the turn of the century, Piaget developed a powerful view of human cognition based on several decades of research and study. In his view, an individual is constantly constructing hypotheses and attempting to gain knowledge. Piaget identified several operations which a child passes through in order to generate higher knowledge. The first stage is a sensorimotor knowledge of objects, where a toddler can realize that an object can still exist even though it is out of view. The next level of development, according to Piaget is the mental

operation stage. During this stage of development the child realizes several significant symbol systems such as language and drawing are available for manipulation and understanding. Then at the age of seven or eight the child is capable of what Piaget termed the concrete operations stage. The child is able to reason systematically and understands the relationship between objects in terms of number, time, and space. According to Piaget, the final stage of development occurs during early adolescence. This stage is termed, formal operations. The young adolescent is now capable of thinking logically and has reached the end-state of adult human cognition (Flavell, 1963).

Gardner (1983) argued that Piaget's developmental theory has several flaws. His first criticism was that individual stages of development occur in a far more continuous fashion than that posited by Piaget. Gardner claimed that indeed, concrete operations can be solved by children in their pre-operational years. Another flaw in Piaget's theory, according to Gardner, was the claim that processes such as conservation operations can be applied to any manner of content. Gardner argued that in fact, children will demonstrate conservation operations with one set of materials and not with another. Gardner concluded that Piaget was incorrect in assuming that all aspects of intelligence were related.

As Gardner explored new conceptions of intelligence, he began to question the traditional reliance upon linguistic and logical mathematical knowledge when developing tests of intelligence. He argued that standard IQ tests (e.g., Stanford Binet) only tested these two intelligences. Gardner (1983) thus predicted that if an individual was fortunate enough to do well in both these areas, then he or she would do well on tests, do well in school and be considered smart by our society. Gardner's theory of multiple intelligences will be discussed in greater detail in the following section.

Gardner's Theory of Multiple Intelligences

Gardner has defined intelligence as a human intellectual competence that allows one to solve problems and create effective products in society (Kirschenbaum, 1990). According to this theory, human beings are capable of developing at least seven semi-autonomous ways of making sense of the world. These are also referred to as intelligences by Gardner, and are comprised of the following:

1. Linguistic intelligence: the skills required in reading and writing, listening and talking. Poets, and writers are examples of individuals who have a high level of intelligence in this area.
2. Logical-mathematical intelligence: the form of intelligence involved in numerical computation, deriving proofs, solving logical puzzles and scientific reasoning. Mathematicians and scientists are examples of individuals who have a high level of intelligence in this area.
3. Spatial intelligence: the skills used in navigation. Spatial intelligence is important in the field of visual arts. Painters, sculptors, architects, engineers, surgeons and sailors are examples of individuals who have a high level of intelligence in this area.
4. Musical intelligence: the form of intelligence involved in singing, playing an instrument, conducting an orchestra, composing, and even appreciating music. Musicians and composers are examples of individuals who have a high level of intelligence in this area.
5. Bodily-kinesthetic intelligence: the ability to use one's whole body or various portions of it in the solution of problems or in the construction of products or displays. Dancers, choreographers, athletes, and mimes are examples of individuals who have a high level of intelligence in this area.

6. Interpersonal intelligence: the form of intelligence involved in understanding and acting upon one's understanding of others. Salespeople, politicians, and teachers are examples of individuals who have a high level of intelligence in this area.
7. Intrapersonal intelligence: the ability to understand oneself--to know one's feelings, to understand one's own emotions and to behave in ways which are appropriate to one's needs, goals and abilities. Psychiatrists, and clinical psychologists are examples of individuals who have a high level of intelligence in this area.

Recently, Gardner has added an eighth intelligence, the Naturalist intelligence: the ability to readily recognize flora and fauna, to make other consequential distinctions in the natural world, and to use this ability productively (e.g., in hunting, farming, biological science). Gardner has noted that in our consumer society, children exploit their naturalist intelligence as they make acute distinctions among cars, running shoes, or hairstyles (Durie, 1997).

Gardner (1983) has suggested that the existence of a number of different intellectual strengths or competencies is substantiated by a review of cases dealing with adult brain injuries, child prodigies, idiot savants, and autistic children. He contends that individuals within these groups exhibit a highly uneven profile of abilities and deficits. Work in neurobiology by Allport (1980) and Fodor (1983) has also suggested the presence of areas in the brain that correspond roughly to specific forms of cognition and it is these same studies, Gardner has pointed out, that imply a neural organization that fits with the concept of different modes of information processing.

Gardner has stated emphatically that at the core of each intelligence, there exists an information processing device, unique to that particular intelligence. In other words, according to Gardner, a normal individual is biologically and

neurologically sensitive to certain information cues. When a particular informational cue is presented, various mechanisms in the nervous system carry out specific operations. According to Gardner, it is after repeated use and interaction among these information processing devices, that intelligence is formed.

Gardner's theory is contextually based, insofar as he suggests that these intelligences need to be nurtured within a social framework. However, it has been posited by Kornhaber, Krechevsky, and Gardner (1990) that unless assessment is placed in the context of authentic domains and social environments, it is doubtful it can adequately represent intellectual performance. According to Gardner, intelligence tests are limited not only in the skills they examine, but in the way they examine them, as they require people to deal with atypical, decontextualized tasks, rather than examining how people function when they are able to draw upon their experience, feedback and knowledge.

Multiple intelligence theory challenges the use of standardized assessments, (e.g., Stanford-Binet, Wechsler Intelligence Scale for Children-III), which in Gardner's mind serve only to address the linguistic and logical-mathematical intelligences of an individual (Blythe & Gardner, 1990).
According to Gardner and his colleagues each intelligence needs to be assessed independently, in contexts which best suit its definitive characteristics.

Robert Sternberg (1985), agrees with Gardner's multi-faceted concept of intelligence. He has ascribed three fundamental principles to Gardner's work. First, he agrees that intelligence is not a singular entity. He states there are a multiple of intelligences. The second principle he ascribes to Gardner is that these intelligences are independent of each other. The third principle is that the intelligences interact (i.e., two or more intelligences work together to produce solutions to problems). Sternberg continues to believe that the traditional view of intelligence is defined operationally as the ability to answer items on tests of

intelligence. He asserts that human cognitive competence is better described in terms of a set of elements or mental skills which Gardner has termed intelligences. Sternberg further contends that all individuals possess each of these skills to some extent. Each individual differs both in the degree of skill and in the nature of their combination.

There have been many criticisms of Gardner's theory of multiple intelligences--the main critic being Robert Sternberg. The first criticism he levels at Gardner is that what Gardner calls multiple intelligences are not intelligences at all, but in fact, talents (Sternberg, 1988). From this viewpoint, multiple intelligence theory is nothing more than what Sternberg refers to as "new wine in old bottles" (p.41), as lists similar to Gardner's have been presented before (cf. Guilford, 1982). He has questioned why Gardner chose to confuse the issue by using the word intelligence to describe these talents. Gardner has responded by noting that the word intelligences was selected in order to emphasize his point that abilities not normally considered as intelligences by Western society, such as the bodily-kinesthetic ones, should be placed alongside the abilities more conventionally viewed as intelligence (Hatch & Gardner, 1986). His purpose in doing so, according to his theory, was to remove the eminence of linguistic and logical-mathematical intelligences as the source of intelligence, and to encourage people to consider other abilities (e.g. composing a song, playing chess, creating an original dance movement) which tend to be ignored. More recently, Gardner has been asked to differentiate between intelligence and learning or cognitive style (1995). The concept of style, according to Gardner, conveys a general approach that an individual can apply equally to every content. In contrast, Gardner believes an intelligence is a capacity with component processes that is set for a specific content.

Sternberg's second criticism is that multiple intelligences "theory" is not really a "theory", but rather it merely lists intelligences without making clear what

their boundaries are. According to Sternberg (1988), the presentation of the data ignores what refutes the theory and only selects data which supports it. Gardner's response to this criticism has been to point out that factor analysis does not measure the kinds of intelligences about which he speaks. He has further argued that intelligences may overlap, but has conceded that his concept of independence is really nothing more than a "good working hypothesis" (Walters & Gardner, 1986, p.180).

A third criticism, levelled by Sternberg (1988) is that the number of intelligences proposed by Gardner could expand indefinitely, resulting in a number much larger than the seven he originally proposed. However, Gardner has always been quite open about his belief that there are probably more than seven intelligences. In applying the criteria he developed for establishing an intelligence (i.e., the existence of one or more basic information-processing operations which are programmed to be activated by certain kinds of internally or externally presented information), he came up with seven working hypotheses (Walters & Gardner, 1986); however, he has also admitted there are most likely subunits of each of these seven intelligences.

A final criticism by Sternberg is that the intelligences which Gardner proposes are quite difficult to measure than more conventional theories (Sternberg, 1988). Gardner has responded by remarking that his intelligences may indeed be measured, albeit by different instruments than those currently available. While Gardner has not displayed too much interest in developing instruments which would measure these intelligences, he has been interested in assessment which occurs as part of an individual's natural engagement in a learning context (Gardner, 1993).

Gardner's students and colleagues continue to work toward developing implementation and assessment measures with which to apply multiple intelligence

theory in the classroom (e.g., Krechevsky, 1991; Hoerr, 1994; Hatch, 1997;). While there are many schools (i.e., Key School, Indianapolis; Somerville, Massachusetts Public Schools; The New City School, Missouri) and educators (Lazear, 1991; Campbell, Campbell, & Dickinson, 1992; Armstrong, 1994) in the United States who have wholeheartedly embraced the multiple intelligence theory , it should be noted that there is a very limited number of Canadian researchers working towards developing assessment and implementation strategies for multiple intelligence theory in Canada.

Notwithstanding, Gardner's theory of multiple intelligence has made a significant contribution in the field of gifted education. In fact, Treffinger and Sortore (1992) have reported that Gardner's theory has created a major paradigm shift in how giftedness is conceptualized and defined. The basic concept of giftedness has shifted from a traditional, elitist one of giftedness as consisting of a high IQ and identifiable by a psychometric test score, to one of giftedness in multiple forms, developmentally based and defined and identified by excellence in performance (Morelock, 1996). This shift away from the traditional model has gathered its share of critics. Borland (1996) has contended that gifted education has become mere talent development, while Delisle (1997) has defended the concept that giftedness is what you are, rather than something you do.

Conceptions of Giftedness

Some of the most interesting work on implicit theories of giftedness has been done by researchers seeking an understanding of the nature of intelligence in children (Sternberg, 1990). An example of early research is that by Siegler and Richards (1982) who asked college students what they thought "intelligence" was at

different ages. Subjects were asked to describe the nature of intelligence in 6-month olds, 2-year olds, 10-year olds, and adults. The authors reported the five traits which were most often mentioned as characterizing intelligence at each different age. Specifically, at 6 months old, these traits were recognition of people and objects, motor coordination, alertness, awareness of environment, and verbalization. At 2 years old, they were verbal ability, learning ability, awareness of people and environment, motor coordination, and curiosity. At 10 years old they were verbal ability, followed by learning ability, problem solving ability, reasoning ability, and creativity. At the adult level, the traits were reasoning ability, verbal ability, problem solving ability, learning ability, and creativity. According to these researchers, there is a clear indication that the trend toward conceiving of intelligence as less perceptual-motor and as more cognitive increases with age.

Another interesting study of implicit theories of children's intelligence was conducted with teachers as subjects. In this study, Fry (1984) asked teachers at the elementary, secondary, and tertiary levels about their conceptions of intelligence. A fascinating set of results emerged. Elementary teachers tended to emphasize social variables such as popularity, friendliness, respect for law and order, and interest in the environment in their conceptions of intelligence, whereas secondary teachers, in contrast, tended to stress verbal variables, such as verbal fluency and energy, in their conceptions. The university teachers tended to regard cognitive variables such as reasoning ability, broad knowledge, logical thinking, and dealing maturely with problems as most pertinent to intelligence. Thus, elementary teachers regarded social competence as an important indicator of intelligence in their students, secondary teachers perceived verbal ability as a significant indicator of intelligence in their students, and university instructors leaned towards problem solving ability as an important conceptualization of intelligence in their students.

Sternberg's (1990) research is also consistent with some of Fry's results, as those findings suggested that teachers of elementary school students tend very heavily to emphasize social-competence skills in their assessment of the intelligence of students.

Yussen and Kane (1985) also studied conceptions of intelligence; however, they used children rather than adults as their subjects. They interviewed students in the first, third, and sixth grades. Children were asked questions concerning such issues as visible signs of intelligence, qualities associated with intelligence, the constancy of intelligence, and the definition of intelligence. The authors found that older children's conceptions were more differentiated than those of younger children and that with maturity, children increasingly characterized intelligence as an internalized quality, rather than an external one. Similar to previous research findings (e.g., Fry, 1984), in this study there was a tendency for younger children to think of intelligence largely in terms of social skills, whereas older children tend to think of it largely in terms of academic skills.

Research which has specifically explored conceptions of giftedness by teachers, parents, and administrators has been carried out since the 1960s. Weiner and O'Shea (1963) measured the feelings or attitudes of university faculty members, administrators, supervisors, teachers and university students towards the gifted. Feelings of acceptance towards gifted individuals were found to be highest in supervisors, followed by administrators, university faculty, teachers and finally, graduate students. Studies which continued to focus upon attitudes toward and about the gifted continued in the 1970s. Mills and Berry (1979) found that teachers and parents of gifted children held more favourable attitudes towards gifted children and their programs than did regular classroom teachers, educational administrators, community leaders, and the general public. In an ethnographic study of gifted elementary school students, Lutz and Lutz (1980) found that, except for gifted

underachievers, students identified as gifted were not rejected by their classmates. Regular classroom teachers, however, felt both that gifted children should adjust to regular classrooms (i.e., follow the prescribed curriculum) and that gifted children were often outspoken and critical.

In an interesting vein of research, some authors have speculated that the label "gifted" may affect gifted students negatively. Mead (1954) wrote that children labelled as having high intellectual ability were viewed by others as having been "given" this label, rather than "earning" it. Mead concluded that those who are gifted, therefore, are usually viewed with hostility. In a similar manner, Fox (1976) expressed the opinion that initial reactions of both teachers and students to those labelled gifted are likely to be negative. Sanborn (1979) believed that many gifted children do not like being called gifted and that "gifted and talented" are categorical terms that lack meaning to the individuals attached to these labels. Zaffrann (1978) notes that the term gifted is often defined as being removed from the norm. He identified problems of isolation, boredom, nonconformity, and resentment as frequently being attributed to students who are labelled gifted.

More recent research findings (Guskin, Zimmerman, Okolo, & Peng, 1986; Guskin, Peng & Simon, 1992; Shaughnessy & Stockard, 1996) have indicated that students who are labelled gifted have highly favourable views of themselves and of academically gifted and artistically talented students, in general. They believe giftedness can be attained by hard work and that gifted and talented students are not very different from others. In these studies it was reported that only a minority reported negative reactions from peers.

In summary, the research seems to indicate that being labelled academically gifted and talented is a mixed blessing. Giftedness is often associated with high status, especially in the eyes of parents and teachers, but like any category or label which differentiates, it contains the risk of separating the individual from his or her

peer group both physically and psychologically. Students who are gifted and talented typically do not want to be seen as too different from the norm. They would rather see giftedness and talent a result of effort and achievement.

Summary

When looking at perceptions of intelligence and giftedness in others, it is crucial that researchers look at whether teachers' perceptions operate in the thoughts and decisions they make about individual students. How do these perceptions influence decisions in the classroom? Are these students who are gifted given the opportunity to compact the prescribed curriculum, or are they permitted to engage in enrichment activities which interest them? It is also important to establish whether teachers support different approaches to programming for students with different patterns of talent. Are these students who are gifted given the opportunity to complete an assignment in a non-prescribed format (i.e., composing a song or rap, or constructing a model or drawing an illustration)?

Understanding teachers' implicit theories concerning giftedness is critical because it is these theories that motivate teachers in their everyday judgments of the intelligence of others and it is also these theories which enable the development of explicit theories (Sternberg, 1990). Implicit theories can also help us realize how incomplete our current explicit theories are.

This study will begin to address this previously unexplored area by focusing on the specific question: To what extent does a teacher's awareness of multiple intelligences in a gifted student affect his or her educational programming for that student?

CHAPTER 3

METHODOLOGY

Introduction

The information presented in Chapter 3 includes a detailed description of the procedures used to investigate the following general research question: To what extent does a teacher's awareness of multiple intelligences in a gifted student affect his or her educational programming for that student? In addition, a description of the procedures used to investigate the following sub-components will also be examined:

a) What are teachers' beliefs, biases, and expectations in relation to gifted students?

b) How are these perceptions acted upon by teachers?

c) Do these perceptions of what constitutes giftedness affect the programming recommended for these students?

The chapter is divided into the following sections: a) the rationale for the methodology, b) the development of the case simulations, c) the procedures for selecting subjects and data collection, and d) the procedure for data analysis.

Case Simulation Methodology: Rationale for Choice

A case-simulation methodology was selected as the best means to determine the extent teachers' awareness of multiple intelligences in gifted students affect their educational programming for these students. This methodology has been used frequently in the measurement of attitudes (Eisenberg, 1986) and it has also been employed successfully to determine the attitudes of teachers with respect as to how

they would respond to and place students with specific labels (e.g., mental retardation and learning disabled) in the school system (Rolinson & Medway, 1986; Schloss & Miller, 1982). According to Alreck and Settle (1985), this type of approach has the advantage of being comprehensive, customized, flexible, efficient, and versatile. In this way, it allows for the manipulation of certain variables under investigation.

After the teachers reviewed the case studies, semi-structured interviews were conducted in order to obtain a clearer and more accurate understanding of the subjects' perceptions of each student presented in the case simulations. The procedure of interviewing was chosen as it "...offers researchers access to people's ideas, thoughts and memories in their own words rather than in the words of the researcher" (Reinharz, 1992, p. 19). It is a process of interviewing which aims to, "...elicit rich, detailed material that can be used in qualitative analysis" (Lofland, 1971, p. 76). Qualitative interviews supply a way of developing shared dialogue between researcher and subject. The interviews create an opportunity for the researcher to explore with an individual her experiences of life events as related to the research question. Throughout the interview, "... respondents are invited to speak in their own voices, allowed to control the introduction and flow of topics, and encouraged to extend their responses" (Mishler, 1986, p.69). Qualitative interviews employ open ended questions designed to discover and describe an individual's experiences (Reinharz, 1992). Using questions as a guide, the dialogue between researcher and participant will provide meaningful answers to the research question.

Teachers' perceptions of giftedness have not previously been studied in this manner, and there is no existing instrument to explore them in this way. Because of this, the researcher formulated the interview questions. Prior to using the questions with subjects, content validity was established by having the questions judged independently by three professors, who agreed that the questions were

congruent with the objectives of this study. An example of this interview format is included in Appendix A.

Using a questionnaire and case study approach, Guskin, Peng, and Simon (1992) conducted an investigation in order to determine the effects of teachers' stereotypes on judgments and expectancies for students with diverse patterns of giftedness and talent. In other words they were seeing whether teachers react to "multiple intelligences". Their study was conducted using five patterns of giftedness and talent which overlap, though not fully, with five of Gardner's identified intelligences (1983). At the same time, they examined the influence of demographic variables such as students' gender, race, and social background. Guskin, Peng and Simon (1992) have provided some interesting data for educators. Using this study as a starting point, this researcher decided to adhere to Gardner's selected intelligences, and manipulate the data in order to restrict outside bias regarding gender and age. The design of a pure vehicle for determining teachers' awareness of multiple intelligences was the intent of the researcher. As mentioned previously, human experience and the perceptions one draws from this experience is a critical factor in decision making. Since the literature concerning teachers' perceptions of giftedness has received very little attention (Shaughnessy & Stockard, 1996), this choice of methodology enabled this researcher to explore the data in a meaningful way.

Development of the Case Simulations

Three different case simulations were developed by the researcher which addressed three of the seven different intelligences, defined by Gardner (1983). For this study, the researcher selected a) spatial (i.e., the ability to visually discriminate and create a concrete or visual representation of information), b) intrapersonal (i.e., the ability to understand oneself--to know one's feelings, to

understand one's own emotions and to behave in ways which are appropriate to one's needs, goals and abilities), and c) linguistic (i.e., the ability to communicate effectively through reading, writing and talking) intelligences.

The three case simulations were assembled in booklet form. Each booklet contained a photograph of the same eleven year old female student. The work samples, however, contained in each booklet were different in order to reflect the areas of giftedness that the simulation was to portray. A short biography of each student was also included. Copies of each simulation are contained in Appendix B.

To ensure that the case simulations accurately reflected Gardner's (1983) depiction of the three differing intelligences, the booklets were inspected for the purpose of identifying the stated intelligences being represented by (1) a professor of Developmental Psychology at the University of Victoria and (2) by a teacher/coordinator of gifted programs in School District #61. These two professionals were selected because of their knowledge of Gardner's work. Suggested revisions were then made and the case simulations were subsequently developed for distribution.

As mentioned previously, a case simulation methodology was selected as it permitted the manipulation of certain variables under investigation. In the present study the variables were age and gender of the student, as well as type of intelligence studied. In all three case studies the child was described as being 11 years of age. This age was selected because most programming for gifted students typically does not occur until the intermediate or middle school years of a child's educational program (Johnson, 1983). If a younger aged student had been selected, it was believed that teachers might have shown some reluctance to accept what they had seen in a work sample as a true manifestation of giftedness or talent, and in practical terms, may not have been able to provide these students with many special resources because of their young age. If an older aged student had been

selected, teachers might have felt the student is already in a specialized setting or taking courses for credit in high school in the area they excel in (e.g., music) and consequently may not require special placement.

In all three case studies, the child was described as being female. This gender was selected because extraordinary accomplishments of young boys have frequently captured public attention and, as a result, may have formed the basis of the public's general knowledge about child prodigies (Goldsmith, 1987). It is important to note that males are also more commonly accepted as being gifted and talented than females and also achieve greater recognition and higher status than women of the same age (Winzer, 1990). With this in mind, the case simulation was manipulated to include only girls in order to see what effect this had on teachers' perceptions, if any.

The three intelligences (i.e., spatial, intrapersonal and linguistic) were chosen for the manner in which they related to the research question. Two of these intelligences (i.e., spatial and intrapersonal) were chosen because they represent an under served population of gifted students (Whitmore, 1987). The third intelligence (i.e., linguistic) was chosen in order to test teachers' perceptions of the dimensions of giftedness when presented with an example of a traditional, widely accepted manifestation of giftedness in a female student.

In order to portray realistic work samples for each intelligence, the researcher deliberately included doodling and diagrams on the worksheets included in the case simulation for the student displaying spatial intelligence, and neat and legible solutions on the worksheets included in the case simulations for the students displaying linguistic and intrapersonal intelligences. According to Gardner (1993), students displaying spatial intelligence would create graphic representations of data in order to learn. They would enjoy doodling, drawing, and creating new forms of visual representation. Gardner (1993) states that students displaying intrapersonal and linguistic intelligences would be independent, demonstrate strong leadership

skills, and have a highly developed proficiency for reading and writing. In order to accurately reflect these descriptions, the researcher deliberately created neat and legible worksheets for these two case simulations.

In summary, the case simulation methodology was used in this study for the following reasons. It enabled the researcher to develop a simulated case history which included additional sources of information (i.e., photograph and work samples), that clearly defined the attributes of this child's maturity and development. Secondly, it allowed for the manipulation of specific variables of interest (i.e., age, gender and area of giftedness).

Selection of Subjects and Procedure for Data Collection

The subjects consisted of teachers with a minimum of three years elementary teaching experience, who were attending summer session courses in the Faculty of Education at the University of Victoria. Instructors of various classes were contacted by the researcher for permission to ask for volunteers from their classes. Once permission was granted, the researcher made an appointment to visit each class, in order to explain the general nature of the study being conducted, and to ask for volunteers. It was pointed out by the researcher that only females with a specified amount of teaching experience would be the subjects necessary for conducting this study.

Twenty-three teachers volunteered to participate in the study and met the established criteria. Their ages ranged from 31 to 50 years, with a mean of 39.8 years. Total years of elementary teaching experience ranged from 4 to 26 years, with a mean of 12.1 years. Areas of specialization for the teacher participants included 7 in Learning Assistance, 4 in Language Arts, 2 in Science, 1 in French and 9 who specified they had no area of specialization.

The teacher volunteers were telephoned by the researcher in order to arrange a convenient time to take part in the study. Subsequently they were given three separate booklets, each containing a separate case study to read. Each booklet included a current photograph of a student, some work samples, as well as a short case history, about 12 lines long.

The interviews were conducted by the researcher and tape recorded for later analysis. Prior to conducting the interviews, a signed informed consent form (see Appendix C) was completed by each participant.

A counterbalanced design was chosen in order to avoid any problem of order effect (Borg & Gall, 1989). While each subject received the same three case studies, the order of distribution was varied across the subjects. For example, Subject 1 received the case simulations in the following order of intelligence: Intrapersonal , Linguistic , Spatial. Subject 2 : Spatial, Intrapersonal, Linguistic. Subject 3 : Linguistic, Intrapersonal, Spatial. Subject 4: Spatial, Linguistic, Intrapersonal. Subject 5: Intrapersonal, Spatial, Linguistic. Subject 6: Linguistic Spatial, Intrapersonal. For Subject 7 the order returned to that for Subject 1 and carried on in this way for the remaining participants in the study.

Following the reading of the case studies, a semi-structured interview was conducted in order to obtain a clear and accurate understanding of the participants' perceptions. The questions asked during the interviews were designed to elicit specific and concrete meanings of words and perceptions the subjects may have had towards the diverse talents of the students presented in the case simulations.

An interview guide was used to help ensure that limited time was wisely used by the interviewer, by keeping interaction focused, but still allowing individual perspectives and experiences to emerge (Patton, 1980).

Procedure for Data Analysis

The data were analyzed using the technique of content analysis. The first step in the analysis of the collected data was to review and transcribe the interview tapes. Each participant's responses were transcribed verbatim onto a separate strip of paper. The researcher then reviewed the collected data and highlighted the recurring themes which were present in the responses. Guba and Lincoln (1981) identify this procedure as a coding process whereby raw data is categorized or classified by relevant content characteristics. For this study the various categories that emerged were developed from the thoughts and feelings of the respondents. In most instances a phrase from one of the teacher volunteers was selected to represent the category. The separate strips of paper were then sorted into piles. Each pile or grouping formed the initial categorization of themes.

Integral to this method of content analysis is the requirement that the researcher's categorical set be congruent with another competent judge (Guba & Lincoln, 1981). In order to satisfy this requirement, this researcher asked two independent judges to examine the researcher's categorizations. One judge was a doctoral student with a background in counselling and the other a teacher, educated at the master's level. The judges were given an explanation of the meaning for each category the researcher had developed so that they were equipped with the necessary information on which to base their examination (Guba & Lincoln, 1981). The name and meaning of each category was printed at the top of a 3x5 index card. The judges were then given randomly selected uncoded statements from the teachers which were representative of the categories determined by the researcher. The judges were then asked to place the statement onto the index card labelled with the relevant category.

The consistency of the analysis was determined by dividing the number of agreed categorizations by the total number of the agreements plus disagreements

between the researcher and the judges (Miles & Huberman, 1984). The agreement between the two judges and the researcher can be viewed in Table 1. On average, the first judge agreed 82.9% with the researcher and the second judge agreed 85.7% with the researcher in the placement of uncoded statements into the relevant categories. The average percentage of agreement between the researcher and the two judges was 84.4%, compatible with Andersson and Nilsson (1964) who suggest that a level of agreement between 75% to 100% is acceptable. This validation of the categorization of the data is also consistent with the expectations of replication (Miles & Huberman, 1984, p. 239).

Table 1

Percentage Agreement Between Judges' Assignment of Teachers' Comments to Categories and the Researcher's Assignment

JUDGE	CATEGORY				
	Philosophy	Experience	Program Variables	Student Variables	Admission Criteria
1	81.2%	79.3%	87.4%	82.2.%	84.6%
2	83.1%	81.7%	89.6%	88.8%	85.3%
AVERAGE	82.2%	81.0%	88.5%	85.5%	85.0%

Data Display

In addition to determining the different categories, the data analysis included frequency counts for each theme. In reporting these frequencies, the researcher counted the number of teachers reporting a theme which appeared in the data, rather than the number of times a theme was mentioned (Miles & Huberman, 1984). Displaying the frequency of teachers endorsing a theme in this manner allowed the researcher to see which categories emerged in greater or lesser frequency. This method prevented the researcher from incorrectly assuming a tendency in the data based on any preconceived notions (Miles & Huberman, 1984).

Summary

Elementary school teachers with a minimum of three years teaching experience were invited to participate in this investigation to determine to what extent their awareness of multiple intelligences in gifted students affect their educational programming for these students. By means of case simulations and a semi-structured interview, qualitative data were analyzed to determine this effect.

CHAPTER 4

RESULTS AND DISCUSSION

Introduction

The data for this study are organized according to the four research questions which directed this investigation. Specifically, these questions were: (a) To what extent does a teacher's awareness of multiple intelligences in a gifted student affect his or her educational programming for that student? (b) What are teachers' beliefs, biases and expectations in relation to gifted students? (c) How are these perceptions acted upon by teachers? (d) Do these perceptions of what constitutes giftedness affect the programming recommended for these students?

Previously, the multidimensional nature of intelligence was discussed. The first section in this chapter, therefore, presents the data which examines to what extent a teacher's awareness of multiple intelligences in gifted students affects his or her programming for that student, as well as how teachers perceived multiple intelligences in the students who were introduced to them through the case simulations. Various statements made by the respondents are cited to provide the reader with authentic descriptions of the participants' perceptions.

The second section of this chapter also relates to the research question which examines teachers' beliefs, biases and expectations in relation to gifted students. This issue is examined in relation to thematic content. The themes resulting from the analysis of the participants' perceptions will be outlined and explored in detail.

While the perceptions of teachers were previously examined, it is the behaviours which occur during this process which are reviewed in the third section of this chapter. This section relates directly to the research question dealing with how a teacher's perceptions are acted upon. Once again the issue will be studied in relation to thematic content.

Finally, the results are examined to determine to what extent teachers' perceptions of giftedness affect the proposed programming for these students.

Teachers' Awareness of Multiple Intelligences in Gifted Students

Only one of the teachers participating in this study (n=23) attributed the label of "gifted" to a student portrayed in the case simulations. However, 19 (82.6%) of the teachers interviewed, stated that the students in question were not "average". The researcher identified five different descriptions or categories which were used by the subjects to specify the characteristics of each student in the simulations. The descriptors along with examples of the raw data used to create them are shown in Table 2.

Table 2

Teachers' Descriptions of Students with Diverse Patterns of Ability

Bright
Someone who stands out as being verbally superior and quick-witted.
She is a very bright student.
All three students are very bright.
Exceptional
Someone who demonstrates skills or achievements above or beyond the ordinary.
Her strength is expressing herself. To me, an exceptional girl. Didn't come across to me as average.

I don't think she is an average student. Certainly, she has a few math and spelling problems, but her reactions, thought processes, the way she looks at things are very mature for her age. I have a hard time describing her as average.

Artistic

Someone who demonstrates a flair and natural talent for various art forms.

This student is very artistic.

All three students have strengths--one is in writing, one is in art, and the other is involved in her own interests.

Creative

Someone who can use his or her imagination to invent something new.

This student likes to create things with her hands.

She is very imaginative.

This student is a very creative thinker.

All three girls are creative in very different ways.

Independent

Someone who does not depend on someone or something else for constant direction, guidance or validation.

She can work on her own.

These two students are good, self-directed, independent learners.

This student is very self-directed.

Leader

Someone who directs or guides others by example.

This student is a real leader.

She has leadership potential.

It can be seen from these descriptors, that teachers responded to and recognized some of the diverse talents and abilities of the students in the case simulations, even though the majority refrained from describing these talents as gifts. As noted, 19 (82.6%) of the respondents agreed that the students were not average, but had qualities which made them outstanding in some aspect. While it can be argued that the descriptors "bright" and "exceptional" may be viewed as synonymous with gifted, and describe a student who has generalized high academic ability, these labels do not really indicate a true perception of an awareness of various types of intelligences. Those teachers who actually perceived the creative, artistic, leadership and independent learning tendencies of these students, came the closest to being aware of the various types of intelligences these gifted students possessed.

A finding of interest was that the student displaying spatial intelligence, was described as being creative and artistic, but 17 (73.9%) of the teacher volunteers directed an overwhelming portion of their interview remarks towards discussing this student's weaknesses in other subject areas. Examples of these descriptions include: "she isn't as engaged in some subjects as others--so she's selective as to when she will apply herself"; "she would only stretch herself with support"; "she likes to doodle a lot--not totally interested"; "I think she will do work asked of her but not interested"; "even though she drew a diagram in math to get the answer, I think she just guessed" and "she is distracted by her own thoughts".

The student displaying what Gardner (1983) refers to as intrapersonal intelligence was perceived by 18 (78.2%) of the teachers interviewed, as having a remarkable talent or gift. While the teachers lacked Gardner's intrapersonal intelligence label, they certainly seized upon the descriptors of this intelligence, and used such phrases as, " a mature and self-directed student" and "in a tight squeeze, this student could make plans to get out of it--a very important survival skill." This

was the student who was considered to have great leadership potential and to be a self-directed and independent learner.

The student in the case simulation who possessed linguistic intelligence was the student who was identified as gifted by one of the subjects. Other teachers described her in the following ways: "she's a teacher pleaser"; "a conscientious neat worker, the kind you like to have in your class"; "finds work too easy"; and "takes pride in the appearance of her work".

There are several possible reasons why these students with diverse patterns of giftedness were not recognized as being gifted by the majority of teacher subjects. An explanation which is consistent with earlier research conducted by Sternberg (1990), is the role each teacher's implicit theory of giftedness plays in that teacher's judgments about students. As western thinkers, we tend to categorize complex information into mutually exclusive dichotomies (i.e.black/white, good/bad). The side of a dichotomy which one personally ascribes to may be based more upon the defence of an already established point of view than on a thorough exploration of the issue (Peat, 1992). This idea will be further explored in the second section of this chapter.

Another reason for not ascribing a gifted label to the students in the case simulations could be the reliance upon a traditional perception of how giftedness is measured. The discrepancy between the teachers' lack of a gifted label and their positive descriptions of the students is supported by the assertion that Gardner's theory is contextually based (Kornhaber, Krechevsky, & Gardner, 1990), and that these intelligences need to be nurtured within a social framework which uses authentic domains of assessment. Without this criteria in place, it is doubtful that intellectual performance can be recognized and or represented by the evidence of such multiple intelligences (Kornhaber, Krechevsky, & Gardner, 1990). Authentic assessment takes place when the assessment process is integrated within the curriculum. It is a complex, continuous cycle of integrated activities with

instructional, assessment, evaluative, and decision making components. Gardner and his colleagues contend that it is only through using this method, rather than a norm-referenced assessment, that relevant information can be elicited on the varying and diverse gifts of learners. If the teachers are indeed relying upon a traditional framework of measurement, then they could easily overlook the pertinent data contained in the work samples and biographies of the students in the simulation.

A final explanation may be found in the premise of Gardner's theory. A critic of Gardner's work, Robert Sternberg (1988), questioned Gardner's use of the word "intelligences" to describe what he regarded as seven human "talents". It would appear that the majority of the teachers in the sample also identified the intelligences portrayed as talents. Again, a traditional perception of what abilities constitute intelligence and/or giftedness may be operating here.

In summary, teachers in this study responded to and recognized some of the diverse talents and abilities of the students in the case simulations, even though the majority refrained from describing these talents as "gifts". This could be the result of (a) the implicit theory each subject holds in relation to giftedness, (b) the reliance upon a traditional perception of how giftedness can be measured or (c) the terminology employed by Gardner to describe what Western society traditionally view as talents into a new construct called "intelligences".

Teachers' Beliefs, Biases and Expectations in Relation to Gifted Students

The data which relate to the second research question of this study are presented in this section. What are teachers' beliefs, biases, and expectations in relation to gifted students? The participants' perceptions in relation to gifted students are grouped into two categories. These descriptors along with examples in

the teachers' own words to clarify the meaning of each category are shown in Table 3.

Table 3

Teachers' Perceptions of Gifted Students

Philosophical Premise

Every child is gifted.

> I think every child is gifted in some way. They should all be given those opportunities.
>
> Everyone should be enriched.

Personal Experience

I've taught children who are gifted and it's not necessarily the smartest ones that are gifted.

> I don't think you have to be a top achieving student to be gifted.
>
> Creativity is very important. Just because they're average or below average students doesn't mean they're not gifted.

As can be seen, two broad categories of teachers' perceptions are engaged when examining teachers' beliefs, biases and expectations of gifted students. Seventeen out of twenty-three participants (73.9%) claimed to share the philosophy that all children are gifted and that each child deserves the opportunity to be enriched in his or her preferred domain. This finding is quite interesting in relation to the body of literature on giftedness which suggests that teachers identify giftedness in elementary aged school children as evidenced by highly developed social competence (Fry, 1984). However, if popularity, friendliness, and a respect for law and order are the variables which elementary teachers use as a measurement tool of intelligence, then it can be argued that it would not be difficult for these teachers to believe that all children are gifted.

A second explanation for teachers basing their perceptions of giftedness on such a philosophical premise as this one, may be a reflection of current philosophical beliefs. In the province in which this study was conducted (British Columbia), a document entitled Year *2000* was introduced by the Ministry of Education in British Columbia in 1990. This document's philosophy is based on a learner-centred environment, cooperative learning and progression at one's own pace through the system. An integral part of this philosophy was that enrichment should be for all students (Tarasoff & Emperingham, 1991). Teachers participating in this study would have been teaching during the implementation of this initiative and may have been affected by its philosophy and goals.

While the majority of the participants based their responses on their own philosophical premise, a small number of the teachers 6 (26.1%) in this study based their perceptions of giftedness upon their own personal teaching experience. The low incidence of this category could be attributed to the low incidence of gifted students in the general school population. Therefore, one could argue that only one quarter of this study's sample had actually taught a gifted student and consequently

were able to bring their experience into play when formulating their personal perceptions of giftedness.

In addition to the findings on teachers' perceptions reported, an additional recurrent theme should be noted. All of the respondents seemed to indicate their belief that overall high academic performance does not necessarily establish a student as gifted in the eyes of these teachers. Other variables were considered far more important. One subject stated, "I don't think you have to be a top achieving student to be gifted. I think it's how well you can work, how creative you are, and you should be given a chance regardless of sex." This point of view is consistent with previous research in which it was found that perceptions of giftedness were characterized by hard work and the belief that gifted students are not very different from others (Guskin, Zimmerman, Okolo, & Peng, 1986).

In summary, in reply to the research question, "what are teachers' beliefs, biases and expectations in relation to gifted students?" there appears to be a majority of teachers who have embraced a philosophical premise that every child is gifted. This may be a result of recent educational initiatives in the province of British Columbia which supports an "enrichment for all" philosophy. A smaller group of teachers based their beliefs about giftedness on their personal experience of identifying, nominating and teaching gifted students. These teachers ascribed to a view of giftedness based in creativity and hard work, rather than a generalized high academic ability.

How Teachers Act Upon Their Perceptions of Giftedness

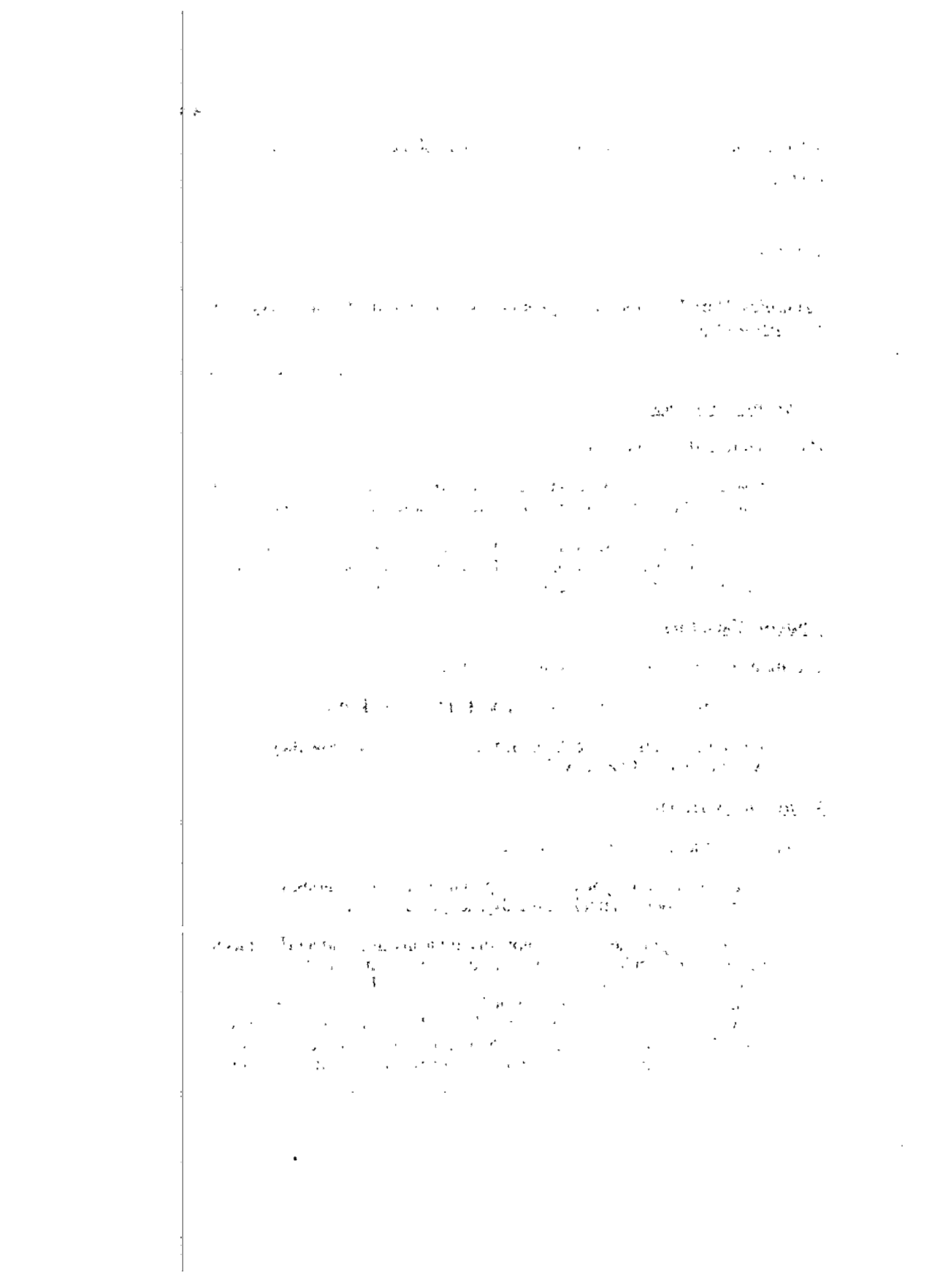
The third research question this study addressed was: How are these perceptions acted upon by teachers? Three categories of variables were identified by the researcher which appeared to explain how the teachers acted upon their perceptions of giftedness. These categories of variables which includes examples

in the teachers' own words to clarify the meaning of the category are shown in Table 4.

Table 4

Variables Which Affect How Teachers' Act Upon Their Perceptions of Giftedness

Program Variables	
The structure and personnel of the program.	I would have to know about the gifted program and how it was run and that would be really crucial as to which of these students I would pick.
	I would want to know who was doing enrichment. I would want to feel comfortable that the student would benefit from interaction with that person. I would want to make sure there is a match between teacher and kid.
Student Variables	
The abilities, personality and maturity of the student.	I have trouble making decisions about kids I don't know personally.
	I need to meet them, see them on a day-day basis, see how they cope with problems of day-day life.
Admission Criteria	
The criteria for admission to a gifted program.	It depends on what you call gifted program. If you go along with testing, then this student [Linguistic Intelligence] would pass.
	I could only put one in and I know that typically this student [Linguistic Intelligence] would be picked because she excels in all areas and that's just the way our system works. Whoever has the highest marks on the standardized tests that they give the kids gets to go to enrichment and it's not based on teacher's recommendations. Really, it's based on the scores. They do ask you, but if this child [Spatial Intelligence] was given the test, she wouldn't get in. [Linguistic Intelligence] would definitely get in.



Three variables were identified which affected how the teachers in this study acted upon their perceptions of gifted students. The first of these variables dealt with factors regarding gifted programs. Nine of the respondents (39.1%) felt that before they could nominate a student to a gifted programme, they would want to know how the programme was set up and who was administering it. As one teacher put it, "I would question the gifted program. What is going to be there for them? What are they going to get out of it? Will it meet their needs?" Before nominating a student, another participant stated, "It depends on what the emphasis would be of the program". An interesting finding was that these respondents fall into the 74% of the sample which stated that their philosophical premise towards giftedness is that all children are gifted and should be enriched. These teachers were responding to the diverse gifts and talents of these students by realizing that their gifts would not be typically served in a traditionally structured gifted program.

Another nine respondents (39.1%) of the respondents felt that before they could nominate a student to a gifted programme, they would need to know salient information about, and preferably share a personal relationship with, the student. One teacher explained,"I would like to do a classroom observation to see how she interacts with her peers." Another participant said, "I would really need to know more about all aspects of the child, and in fact I wouldn't make any recommendations unless I had taught the child for a period of time and felt I knew her and her capabilities personally." The majority of this group of respondents also fit into the 74% of the sample which stated that all children are gifted as their philosophical premise on giftedness. These teachers are also very concerned about meeting the needs of their students and ensuring there will be a compatible match between student and program.

The five teachers who stated that the admission criteria for gifted programs was a major variable in their determination of which students would be selected for a gifted program totalled 21.7% of the sample. This third variable affecting how

teachers act upon their perceptions of giftedness appears to be directly linked to those six teachers (26.1%) whose perceptions of gifted students is related to their personal experience in working with these students. These teachers were unanimously disillusioned by the system of selecting gifted students. One participant stated, "In my experience, gifted programs enrich academics, not talents. I always have made my decision based on what the system accepts, not what I feel is my first choice or my best choice. If students don't fit the mold, they don't get what they need." Another said, "I tend to choose a student who excels academically even though they may not be the best candidate for enrichment due to the structure of the system." Yet another teacher said, "If you're looking at testing criteria, a different student would be picked than the one I recommend." A final view, "When you nominate students for a gifted program you have to look at the system and choose accordingly. This usually means the academically superior student is enriched."

This finding is quite significant because it seems to reveal a discrepancy between perception and practice. If researchers determine teachers' perceptions of giftedness and enrichment programs based solely on whom these teachers nominate and place in gifted programmes then some false premises could be constructed. In other words, it would be quite simple to say that teachers generally perceive only academically superior students to be worthy of placement in a gifted programme, and therefore it is the teachers who act as constraints in attempts to broaden approaches to identification and programming for gifted students (Guskin, Peng, & Simon, 1992), when in fact, it is the structure of the nomination and admission process for gifted programs which appears to be the main constraint. The work of Martinson (1975) describing how teachers choose conformist high achievers and disregard the creative or divergent thinkers would support this finding.

It would appear from these findings that a significant number of teachers realize that certain populations of gifted students are being under served in their

school districts. It is also apparent that experience in working with the system has a tremendous impact upon the actions of these teachers. It is a point of great frustration to some that their perceptions regarding the giftedness of certain students cannot be complemented by appropriate criteria for admission.

In summary, in relation to the research question concerning how teachers act upon their perceptions of giftedness, three variables were identified by the researcher as playing a significant role. The first of these were variables of the program being offered to students. Teachers were concerned whether it would meet the needs of the students. Of greatest concern was the structure of the program and the personnel administering it. The second variable of interest was the students themselves. Would they be compatible with the teacher who was running the program? Would they benefit from the program? Would it meet their needs? Teachers felt they needed more information about the student before they could make a nomination. The final variable dealt with admission criteria. This finding appeared significant because it demonstrated a discrepancy between teachers' perceptions of giftedness and their ultimate actions. There was a notable inconsistency between the practices of those teachers whose perceptions of giftedness stemmed from experience in nominating students to a gifted program and those whose perspectives were based on a more philosophical premise. The practice of nominating students who are academically superior rather than those with other talents or abilities (Borland, 1986) is consistent with the finding of this study that teachers cannot always meet the needs of those students they feel are gifted with diverse talents or abilities. They must adhere to the system and nominate those who fit the mold.

How Teachers' Perceptions Affect Programming

The final research question this study addressed was: To what extent do teachers' perceptions of giftedness affect the proposed programming for these

students? In order to gain a full appreciation of how each subject perceived the programming needs for each of the intelligences portrayed in the case simulation, the teachers' proposed programming for each of the three students and a frequency distribution are shown in Table 5.

Table 5

Proposed Programming for Gifted Students Displaying A Multiple Intelligence

Student's Type of Intelligence	Gifted Program Nomination	No Nomination for Programming
Spatial	**12**	**11**
Intrapersonal	**14**	**9**
Linguistic	**20**	**3**

It appears from the data displayed in Table 5 that the majority of teachers rely upon their perceptions when proposing programming for gifted students. There is a satisfying consistency between those teachers who operate from the premise that all children are gifted and should be enriched and their nomination of all three students to a gifted programme. In a similar vein, those teachers who operate from an experiential premise, all nominated the student who they believed would fit the criteria for a gifted programme (i.e., the student portrayed as Linguistically intelligent). What the data do not show is that those six (26%) who would actually have nominated different students if they had not felt constrained by the admission process. This is a significant finding in that it clearly demonstrates that teachers are responding to, and are aware of, varying intelligences in gifted students. However, they feel they are constrained by outdated identification and admission policies. During their interviews, each of these teachers voiced the frustration that they know the student who may be the most deserving of an enriched program does not necessarily receive it due to, in their opinion testing methods which tend to favour the academically superior child. These findings would lend support to previous research which found students who demonstrate creativity and leadership skills as under served populations of gifted students (Whitmore, 1987).

It appears then, that 17 of the teachers (74%) were consistent in how their awareness of multiple intelligences in gifted students affected their educational programming for these students. In other words, their perception that every child is gifted, was acted upon when they nominated all three students in the case simulation to a gifted programme. It is important to note, however, that the results might not be the same if a fourth case study of a student of average ability had been included in this research. Another interesting finding was that six (26%) of the respondents who have had direct experience in the nomination procedure for gifted programming, put their awareness of multiple intelligences and their personal

perceptions aside, and did not practice what they actually believed to be the best case scenario for the students in the simulation. Instead, they nominated the student whom they knew from past experience would meet the criteria for the gifted program in their school.

Summary

The purpose of the present study was to explore the perceptions of teachers in regard to multiple dimensions of intelligence in gifted students. Based on the responses of the participants it would appear that 19 (82.6%) of the teachers in this study perceived that the students in the simulation were not average. However, only one subject used the word "gifted" to describe one particular student. Five different categories of descriptions were identified by the researcher which were used by the subjects to describe the students. These included, "bright", "exceptional", "artistic", "creative", "independent" and a "leader". The teachers who perceived the creative, artistic, leadership and independent qualities of these students came the closest to being aware of varying types of intelligences in these gifted students.

In identifying teachers' perceptions of gifted students, the researcher named two overriding themes operating in the perceptions of these teachers. The first was a perception of giftedness based on personal philosophy and the second was a perception of giftedness based on personal experience. Three quarters of the teachers in the study claimed to have the philosophy that all children are gifted and each child deserves the opportunity to be enriched in the area of his or her interests and strengths. The remaining quarter of the sample based their perceptions on experience. These teachers tended to view giftedness as based in creativity and hard work, rather than an overall superior academic ability.

The findings for how teachers act upon their perceptions of gifted students,

were studied in light of three identified variables. The first variable under investigation related to the structure and the personnel involved in gifted programs. Over a third of the subjects felt they would need to have this information before nominating a student to a program. The second variable was related to personal knowledge and familiarity with the student. Again, more than a third of the sample suggested they would need to know the student personally, before making a recommendation for programming. The final variable examined was the criteria used for admission to a gifted programme. A significant finding was made, when a discrepancy between perception and practice was identified. The teachers who felt constrained by the admission criteria, actually acted in direct contradiction to their perceptions when selecting students for nomination to a gifted program. They were disillusioned by the process, and felt they could only nominate the student who would "fit the mold" and be successful in gaining entry to the program.

In determining how teachers' perceptions affect programming for these students, there appeared to be a great consistency of perception matching practice. Those teachers who ascribed to a philosophical premise that every child is gifted, nominated all three students in the simulation to a gifted program. The teachers who based their perceptions on experience in nominating and teaching gifted students only nominated the student who demonstrated a traditional type of giftedness in a female student (Linguistic Intelligence). Their rationale for this action was that this was the student who would "pass the test" and be accepted into the program.

CHAPTER 5
IMPLICATIONS AND RECOMMENDATIONS

Summary of Findings

The purpose of this study was to explore the perceptions of teachers in regard to multiple dimensions of intelligence in gifted students. Specifically, this study focussed on the following general research question: To what extent does a teacher's awareness of multiple intelligences in a gifted student affect his or her educational programming for that student? Within that broad question, several additional questions were also addressed: (a) What are teachers' beliefs, biases, and expectations in relation to gifted students? (b) How are these perceptions acted upon by teachers? (c) Do these perceptions of what constitutes giftedness affect the programming recommended for these students?

A case-simulation method was used to investigate to what extent teachers' awareness of multiple intelligences in gifted students affect their selection of educational programming for these students. Twenty-three female elementary school teachers with a minimum of three years teaching experience were asked to read three case studies of students with different intelligences based on the work by Gardner (1983). Each case study included a photograph of the same eleven year old girl, a sample of her school work, and a brief case history, outlining in detail that student's particular attributes of giftedness within that intelligence. After reading each case study presented in a counterbalanced fashion the teachers were interviewed by the researcher in order to gain a clear understanding of their perceptions of each student's abilities.

In summary, the results showed that 83% of the subjects in this study perceived that the students in the simulations were not "average". However, only

one subject used the word "gifted" to describe a student. Categories used to describe the students by the teachers indicated a general awareness of diverse intelligences in these students.

In determining teachers' perceptions of gifted students, the researcher identified two consistent premises embraced by the teachers in this sample. The first premise was based on the philosophical view that all children are gifted and deserve to be enriched. The second premise was based on personal experience. Teachers who had specific experience with the nomination procedures for gifted students in their schools based their perceptions of giftedness on this direct experience. These teachers were more liable to equate creativity, leadership skills and hard work with giftedness than the other group.

Three variables were identified by the researcher which appeared to have a direct bearing on the manner in which the teacher acted upon their perceptions of the gifted students in the simulation. The first factor which affected teachers' actions regarding nominating students for enrichment were the variables of the program. Some teachers felt they needed to be familiar with the structure of the program and its personnel before nominating certain students. Other teachers felt that student variables were important in the nomination process. Some teachers needed to have personal knowledge of the student before making any programming decisions for that student. The final variable affecting teacher nominations to gifted programs were the admission criteria for the programme. It was important for some teachers to know how these children would be assessed for entry into a program (i.e. results of standardized testing or teacher nomination and work samples).

A significant finding was made when a discrepancy between teachers' perceptions and their practice was identified. The teachers whose perceptions of giftedness were based on personal experience and who had felt constrained by past experience with the admission criteria for gifted programs, acted in direct contradiction to their perceptions when selecting students for the gifted program.

These teachers based their practice (i.e., the nomination decision) on past experience and selected the student who best "fit the mold" of admission criteria, rather than the student they thought would be the best candidate for the program. However, those teachers who based their perceptions of giftedness on the philosophical premise that all children are gifted and deserve to be enriched, matched their perceptions with their practice. These teachers nominated all three students in the simulation for gifted programming.

Implications

The results of this study have implications for the development of appropriate identification, placement and programming procedures for gifted students with diverse talents and abilities. These results demonstrate how important it is to understand how teachers perceive and respond to different types of intelligences in gifted students.

The findings of this research study indicate that teachers demonstrate an awareness of multiple intelligences in students when they are presented with relevant information about these students. These findings are consistent with earlier research conducted by Guskin, Peng, and Simon (1992). The findings also indicate a willingness on the part of the teacher to nominate these students to a gifted program, provided the program is structured in a manner which will best meet the needs of the particular children. However, there is still a number of teachers who continue to refrain from nominating students with diverse patterns of talent. Instead, the student who is academically superior is placed in the program because these teachers know it will be this student who will conform to the admission criteria. The implications one can draw from this finding is that gifted programming needs to be examined more carefully. A broadened approach to identification and placement procedures is vital if under served members of our

gifted population are to have their needs met.

Another implication of this finding is that teachers will require a great deal of information about their students in order to detect their diverse gifts and talents. This was particularly evidenced in the case simulation of the student with spatial intelligence. While her gifts were recognized by the teacher respondents, they were somewhat discounted due to what the teachers perceived as problems of attention and motivation for this particular student. This finding is similar to the findings of Guskin, Peng, and Simon (1992) in which they found that teachers do not recommend special programming for students with visual and motor abilities. In a busy classroom situation, it would be unlikely that a teacher of a large class could have the time to see this girl's giftedness in spatial endeavours, and not be deceived by her lack of attention and motivation for everyday assignments.

The single most important finding of this study is that even though teachers receive relevant data about their students and are thus made aware of their multiple intelligences, these students may still not have their needs met, due to the lack of a process which identifies and provides appropriate programming for them. It would appear therefore, that school districts need to evaluate and expand their identification, nomination, and admission procedures.

Limitations and Suggestions for Future Research

While this study provides further insight into the nature of teachers' awareness of multiple intelligences in gifted students, its conclusions should be considered in relation to the following limitations. First, the significance of this study is limited by the exploratory nature of this inquiry. Direct observation, in order to examine teachers' natural reactions to their own students who demonstrate these diverse patterns of ability would provide further insights into the varying

perceptions and behaviours of classroom teachers towards gifted students in their classes. A direct observation approach could also include reviewing actual student work, and interviewing parents as well as teachers. This would provide a more detailed account of the child's interests and abilities, and could provide more information on which to judge teachers' reactions to these students.

A second limitation of this study is that only three multiple intelligences were simulated. Further research could enhance the data from this study by providing case simulations of all seven of Gardner's (1983) identified intelligences. It would be interesting to see whether teachers react differently to students with a different intelligence profile then those presented in this study.

Yet another limitation of this study which further research might alleviate, is obtaining a larger and more representative sample of experienced teachers. An interesting possibility for further research would be to conduct a study in which only experienced teachers with a background in gifted education were interviewed. Another idea includes examining the gifted child's behaviour in the classroom, in order to obtain a clearer picture of more factors which might affect a teacher's perceptions and behaviour towards gifted students in their classroom.

REFERENCES

Allport, D.A. (1980). Patterns and actions: Cognitive mechanisms are content specific, in G.L. Claxton (Ed.), *Cognitive psychology: new directions*. (pp.109-122). London: Routledge & Kegan Paul.

Alreck, I., & Settle, B. (1985). *The survey research handbook.* Homewood, IL: Richard P. Irvin.

Andersson, B., & Nilsson, S. (1964). Studies in the reliability and validity of the critical incident technique. *Journal of Applied Psychology, 48*, 398-403.

Armstrong, T. (1994). *Multiple intelligences in the classroom.* New York: Basic Books.

Blythe, T., & Gardner, H. (1990). A school for all intelligences. *Educational Leadership*,l, *46* (7), 33-37.

Borg, W., & Gall, M. (1989). *Educational research: An introduction.* New York: Longman.

Borland, J.H. (1996). Gifted education and the threat of irrelevance. *Journal for the Education of the Gifted, 19,* (2) 129-147.

British Columbia, Ministry of Education (1990). *Year 2000.* Victoria: Queen's Printer.

British Columbia, Ministry of Education (1995). *Manual of policies: Procedures and guidelines for special education services* . Victoria: Queen's Printer.

Brophy, J., & Good, T. (1974). *Teacher-student relationships.* New York: Holt, Rinehart, & Winston.

Campbell, B., Campbell, L., & Dickinson, D. (1992). *Teaching and learning multiple intelligences.* Seattle WA: New Horizons for Learning.

Delisle, J. (1996). Multiple intelligences: Convenient, simple, wrong. *Educational Leadership, 53* (3), 12-13.

Durie, R. (1997). An interview with Howard Gardner. *Mindshift Connection: Multiple Intelligences. 4* , 10-12.

Dusek, J. B. (1975). Do teachers bias children's learning? *Review of Educational Research, 45*, 661-684.

Eisenberg, N. (1986). *Altruistic emotion, cognition, and behavior.* Hillsdale NJ: Laurence Erlbaum.

Fancher, R. (1985). *The intelligence men: Makers of the IQ controversy.* New York: W.W. Norton & Company.

Flaitz, J. (1986). *Why intelligence tests must change.* Paper presented at the Annual Meeting of the Mid-South Educational Research Association, Memphis, Tennessee, November 19-21, 1986.

Flavell, J.H. (1963). *The developmental psychology of Jean Piaget.* New York: D. Van Nostrand.

Fodor, J. (1983). *The modularity of mind.* Cambridge MA: MIT Press.

Fox, L. (1976). Sex differences in mathematical precocity: Bridging the gap. In D.P. Keating (Ed.), *Intellectual talent, research and development.* (pp.202-224). Baltimore MD: John Hopkins University Press.

Fry, P.S. (1984). Teachers' conceptions of students' intelligence and intelligent functioning: A cross-sectional study of elementary, secondary and tertiary level teachers. In P.S. Fry (Ed.), *Changing conceptions of intelligence and intellectual functioning: Current theory and research* (pp. 157-74). New York: North-Holland.

Gardner, H. (1983). *Frames of mind: the theory of multiple intelligences.* New York: Basic Books.

Gardner, H. (1993). *Multiple intelligences: The theory in practice.* New York: Basic Books.

Gardner, H. (1995). Reflections on multiple intelligences: Myths and messages. *Phi Delta Kappan, 77* (3) 200-203, 206-209.

Goldsmith, R. (1987). Girl prodigies: Some evidence. *Roeper Review, 10* (2), 74-82.

Guba, E.G., & Lincoln, Y.S. (1982). *Effective evaluation.* San Francisco: Jossey-Bass Publishers.

Guilford, J.P. (1967). *The nature of human intelligence.* New York: McGraw-Hill.

Guilford, J.P. (1982). Cognitive psychology's ambiguities: some suggested remedies. *Psychological Review, 89* , 48-59.

Guskin, L., Peng, C-Y. J., & Simon, M. (1992). Do teachers react to "multiple intelligences"? Effects of teachers' stereotypes on judgments and expectancies for students with diverse patterns of giftedness/talent. *Gifted Child Quarterly, 36* (1), 32-37.

Guskin, S., Zimmerman, E., Okolo, C., & Peng, C-Y.J. (1986). Being labelled gifted or talented: Meanings and effects perceived by students in special programs. *Gifted Child Quarterly, 30* (2), 61-65.

Hatch, T. (1997). Getting specific about multiple intelligences. *Educational Leadership, 54* (6), 26-28.

Hatch, T. & Gardner, H. (1986). From testing intelligence to assessing competencies: a pluralistic view of intellect. *Roeper Review, 8* (3), 147-150.

Hoerr, T.R. (1994). The MI approach to giftedness. *Contemporary Education, 66* (1), 32-35.

Hunsacker, S.L., Finley, V.S., & Frank, E.L. (1997). An analysis of teacher nominations and student performance in gifted programs. *Gifted Child Quarterly, 41* (2), 19-24.

Johnson, M. (1983). Giftedness in preschool: A better time for development than identification. *Roeper Review, 5* (4), 6-10.

Kirschenbaum, R.J. (1990). An interview with Howard Gardner. *Gifted Child Today, 12* (6), 26-32.

Kornhaber, M., Krechevsky, M. & Gardner, H. (1990). Engaging intelligences. *Educational Psychologist, 25* (3&4), 177-199.

Krechevsky, M. (1991). Project spectrum: An innovative assessment alternative. *Educational Leadership, 47* (5), 43-48.

Lazear, D.G. (1991). *Seven ways of knowing: Teaching for multiple intelligence: Handbook of techniques for expanding intelligence.* Palantine, IL: Skylight Publishers.

Lofland, J. (1971). *Analyzing social settings.* Belmont CA: Wadsworth.

Lutz, F., & Lutz, S. (1980, April). *Gifted pupils in the elementary school setting: An ethnographic study.* Paper presented at the annual meeting of the American Educational Research Association, Boston, Massuchussets.

Martinson, R.A. (1975). *The identification of the gifted and talented.* Reston VA: Council for Exceptional Children.

Mead, M. (1954). The gifted child in the American culture today. *Journal of Teacher Education, 5* (3), 211-14.

Miles, M.B. & Huberman, A.M. (1984). *Qualitative data analysis: A source book of new methods.* Beverly Hills CA: Sage Publications.

Mills, B.N. & Berry, G.L. (1979). Perceptions of decision-making groups toward programs for the mentally gifted. *Educational Research Quarterly, 4* (2), 66-76.

Mishler, E. (1986). *Research interviewing: Context and narrative.* Cambridge MA: Harvard University Press.

Morelock, M.J. (1996). On the nature of giftedness and talent: imposing order on chaos. *Roeper Review, 19* (1), 4-12.

Patton, M.Q., (1980). *Qualitative evaluation methods.* Beverly Hills CA: Sage Publications.

Perks, B. (1984). *Identification of gifted children.* Unpublished doctoral dissertation, University of British Columbia, Vancouver, British Columbia, Canada.

Reinharz, S. (1992). *Feminist methods in social research.* New York: Oxford University Press.

Renzulli, J.S. (1979). What makes giftedness? Re-examining a definition. *Phi Delta Kappan, 60,* 180-84, 261

Rolinson, R. & Medway, S. (1986). Teachers' expectations and attributions for student achievement: Effects of labelling. *American Educational Research Journal, 22,* 561-73.

Sanborn, M.P. (1979). Counselling and guidance needs of the gifted and talented. In A.H. Passow (Ed.), *The gifted and talented. Their education and development.* Chicago: University of Chicago Press.

Schloss, P. & Miller, S. (1982). Effects of the label "institutionalized" vs "regular school student" on teacher expectations. *Exceptional Children, 48,* 363-69.

Shaughnessy, M.F., & Stockard, J.W. (1996). Gifted children's, teachers', and parents' perceptions of influential factors on gifted development. *Gifted Education International, 11*, 76-79.

Siegel, J. (1992). Regular education teachers' attitudes and behaviors toward their mainstreamed learning handicapped students. (Doctoral dissertation, University of California, Los Angeles, 1992). *American Doctoral Dissertations, 52.* (University Microfilms No. ADD9213660).

Siegler, R.S. & Richards, D.D. (1982). The development of intelligence. In R.J. Sternberg (Ed.) *Handbook of human intelligence* (pp 897-971). Cambridge MA: Cambridge University Press.

Spearman, C. (1927). *The abilities of man.* New York: Macmillan.

Sternberg, R.J. (1985). *Beyond IQ.* New York: Viking Press.

Sternberg, R.J. (1988). *The triarchic mind: A new theory of human intelligence.* New York: Viking Press.

Sternberg, R.J. (1990). *Metaphors of mind: Conceptions of the nature of intelligence.* Cambridge MA: Cambridge University Press

Sternberg, R.J. (1996). *Successful intelligence.* New York: Simon & Schuster.

Sternberg, R.J. & Davidson, J.E. (1986). *Conceptions of giftedness.* New York: Viking Press.

Thurstone, L.L. (1938). *Primary mental abilities.* Chicago: University of Chicago Press.

Treffinger, D.J. & Sortore, M.R. (1992). Talent recognition and development: Successor to gifted education. *Journal for the Education of the Gifted, 19* (3), 181-193.

Walters, J.M. & Gardner, H. (1986). The theory of multiple intelligences: some issues and answers. In R. Sternberg & R. Wagner (Eds.), *Practical intelligence: Nature and origins of competence in the e everyday world* (p.163-82). Cambridge: Cambridge University Press.

Weiner, J.L. & O'Shea, H.E. (1963). Attitudes of university faculty, administrators, teachers, supervisors, and university students toward the gifted. *Exceptional Children, 34* (5), 354.

Whitmore, J. (1987). Conceptualizing giftedness. *Journal for the Education of the Gifted, 10* (3), 141-153.

Winzer, M. (1990). *Children with exceptionalities: A Canadian perspective.* Scarborough, Ontario: Prentice-Hall Canada.

Yussen, S.R. & Kane, P. (1985). Children's concept of intelligence. In S.R. Yussen (Ed.), *The growth of reflection in children,* (pp 207-241). New York: Academic Press.

Zaffran, R. T. (1978). Gifted and talented students: Implications for school counsellors. *Roeper Review, 1* (2), 9-13.

APPENDIX A

Interview Guide

1. As a teacher, give me your thoughts about this student and her work.
2. Based on the information you have been given, what would you identify as the strengths and weaknesses of this particular student?
3. What type of program or curriculum would best meet this student's needs?
4. Should this student's program be different from other eleven year olds?
   a) If yes, in what ways?
5. If you were the classroom teacher of these three girls and you were asked to nominate one or more of these students for an enrichment program, which student(s) would you choose?
   a) Why?
6. Do you need any further information to make a decision? What information would you need?

APPENDIX B

CASE SIMULATION

This eleven-year old student will be entering Grade 6 in September. She is described by her teachers as an average student who works well independently. She has also been consistently characterized as a self-directed learner.

At home, she enjoys writing in a daily journal, and her parents indicate that she is an emotionally mature child for her age. She gets along well with her younger nine-year old sister.

Due to her intense personal interest in environmental issues, she organized an Environment Club with her Girl Guide group. She is also active in her school debating club where she presents well-thought out personal arguments, and she has recently begun Tai Chi classes at the local recreation centre. Someday, she hopes to be an environmental lawyer.

APPENDIX B

Add.

1. 2183 + 9745 = 11928 ✓
2. 6014 + 7287 = 13301 ✓
3. 23 691 + 84 759 = 108450 ✓
4. 76 450 + 23 561 = 100011 ✓
5. 48 062 + 19 647 = 66709 ✗
6. $17.50 + 19.98 = $27.38 ✗
7. 2.094 + 1.906 = 3.990 ✗
8. 32.188 + 47.922 = 80.110 ✓
9. $40.99 + 60.95 + 59.94 = 157.78 ✗
10. 82 183 + 6708 + 11 045 = 152035 ✗

Subtract.

11. 2548 − 1529 = 1019 ✓
12. 19 408 − 8 507 = 10901 ✓
13. $39.62 − 29.75 = $9.87 ✓
14. 8175.1 − 7264.3 = 1911.2 ✗
15. 37.586 − 18.195 = 19.391 ✓
16. 2001 − 1828 = 173 ✓
17. 15 000 − 9 374 = 5626 ✓
18. 46.597 − 18 888 = 27709 ✓
19. $120.36 − $49.95 = $70.41 ✓
20. 57.009 − 29.321 = 27.688 ✓

Estimate. Watch the signs.

21. 16 125 + 36 396 → 20 + 40 = 60000 ✓
22. 91 916 − 24 555 → 90 − 20 = 70000 ✓
23. 32 479 + 7 609 → 30 + 10 = 40000 ✓
24. $50.69 − 18.38 → 50 − 20 = 30.00 ✓
25. 43.04 + 25.81 → 40 + 30 = $7000 ✓
26. 8879 + 3462 → 90 + 30 = 12000 ✓

APPENDIX B

Estimate the length in centimetres. Measure in centimetres.

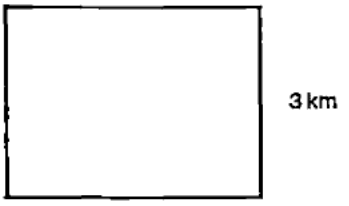
	estimate	measure
1. ⊢——⊣	4 cm	4 cm ✓
2. ⊢————⊣	5 cm	6 cm ✓
3. ⊢—⊣	3 cm	2 cm ✓

Complete.

4. 12 m = 1200 cm ✓
5. 25 km = 2500 m ✗
6. 51 m = 5100 cm ✓
7. 230 mm = 23 cm ✓
8. 67 cm = 670 mm ✓
9. 800 cm = 8 m ✓
10. 35 000 m = 350 km ✗
11. 43 m = 4300 cm ✓
12. 150 mm = 15 cm ✓

Find the perimeter.

13.



14 Km ✓

14.

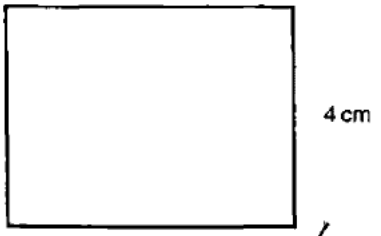
51 m ✓

18
18
136
15
51

7.5
7.5
15.

Find the area.

15.



20 cm^2 ✓

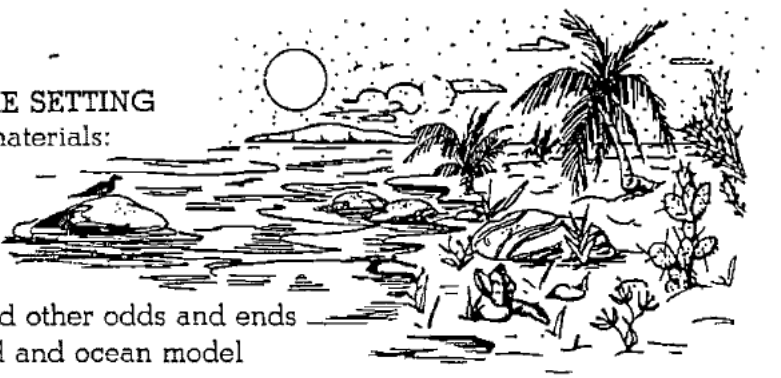
16.

142 m^2 ✗

16
×9
142

APPENDIX B

In the story "Island of the Blue Dolphins," Karena is marooned on a desert island. Reread the story to recall the various details of the setting the author describes. Then bring that setting to life by making a model of the island and its surrounding ocean.



TO MAKE A MODEL OF THE SETTING

You will need the following materials:

modelling clay
coloured paper
scissors
glue
string, sandpaper, stones, and other odds and ends
a container to hold the island and ocean model

Once you have completed the model, make tiny flags for labels out of toothpicks and triangular pieces of paper. Use these to mark the areas that are mentioned in the "Island of the Blue Dolphins."

Now, using the model as an idea guide, imagine yourself alone and abandoned in this setting. Write about the feelings and thoughts that race through your mind as you realize what has happened. Be sure to consider more than just the hardships and loneliness you will face. Remember that there will be chances to show heroic courage and survival skills.

What to Do!

Well here I am! I just don't know what I will do if someone doesn't find me. I am so frightened about being in the dark all alone. Are there wild animals on this island? What will I eat? Where will I live?

I've got to stop this or I'll go crazy. All right Karena, let's make a plan. The first thing I need is shelter. Perhaps there's a cave in those rocks over there . . .

I'm feeling better now, maybe this won't be so bad afterall.

APPENDIX B

May 25th

I herd the song "I am a Child of the Universe" last night. I can't explain why but it really got me. I've always felt that good planets are hard to find and we should look after Earth very carfuly. But I never realized how I fit into the whole picture. befor. I have always tried to do something to help and our Enviro-Kids Club has done a lot in the community with samerayd enhansment and recycling but what I never realized befor is that I am a part of this earth to - just like the Sun and the trees.

I guess now I now what Mr. Dimoff means when he goes on in science about systems and chains. I - we - are one system and I am a link in the chain. The earth needs me just the way I ned the earth.

I need to think about this more.

APPENDIX B

Unit Twelve
Test

1. Artic Ocean ×
2. Asia
3. Antlandtic Ocean ×
4. Pacific Ocean
5. Africa
6. Australia
7. Yourup ×
8. North America
9. South America
10. Indian Ocean
11. world
12. contenits × 10/15 Good Try!
13. longitude
14. Antartica ×
15. latitude

APPENDIX B

CASE SIMULATION

This eleven-year old student will be entering Grade 6 in September. She is described by her teachers as an excellent student. She consistently achieves scores beyond her grade level, and frequently finishes assignments ahead of other students. She loves to do "extra work" and works well independently. She expresses herself extremely well in words and writing, and enjoys reading aloud to her classmates. She is interested in any creative writing assignment.

She has a younger sister and brother. Her parents indicate that she gets along very well with them. They also report she is a very easy-going child who spends hours reading in her room.

Her outside interests include making copious notes about the neighbours while playing "Harriet the Spy" with her friends, and taking speech arts at the Conservatory. She hopes to be a journalist someday.

APPENDIX B

MY FAVOURITE COLOUR - purple

Feelings	Images
happiness	royalty
joy	velvet
warm	cushions
silly	eggplant
cool	sunsets
rich	rainbows
	grapes ripening
	comfort

What is Purple?

Purple is the sunset
Filling the sky
When I feel glad
the day has gone by.
Purple is a royal velvet cushion
Or perhaps a new dress.
Purple is a rainbow
Oh yes!
Purple is an eggplant,
a turnip, a grape
The sound of purple is
Muffled and muted
Like a rich satin drape.

APPENDIX B

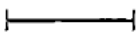
Choose the best estimate.

1. 

a. 4 cm	b. 5 cm	c. 7 cm	d. 2 cm	1. b

2. 

a. 4 cm	b. 5 cm	c. 7 cm	d. 2 cm	2. a

3. 

a. 4 cm	b. 2 cm	c. 1 cm	d. 3 cm	3. b

Choose the equivalent measure.

4. 300 cm

a. 300 mm	b. 30 mm	c. 3000 mm	d. 3 mm	4. c

5. 5000 mm

a. 50 m	b. 5 m	c. 500 m	d. 5000 m	5. c

6. 7 kg

a. 700 g	b. 70 g	c. 7000 g	d. 7 g	6. c

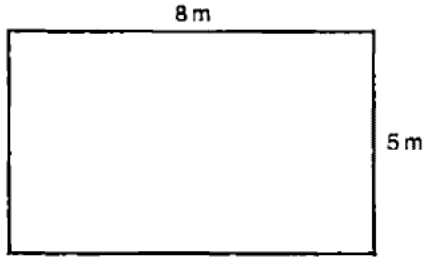
7. 6 L

a. 6 mL	b. 60 mL	c. 600 mL	d. 6000 mL	7. d

8. 300 mm

a. 3000 m	b. 3 m	c. 30 cm	d. 300 m	8. c

Choose the correct area.

9. 

a. 26 m	b. 40 m²	c. 13 m	d. 26 m²	9. b

APPENDIX B

Multiply.

1. 430 × 25 = 10750 ✓
2. 360 × 50 = 18000 ✓
3. 930 × 68 = 63240 ✓
4. 660 × 34 = 22440 ✓

Estimate the product.

5. 311 × 52 = 1500 ✓
6. 407 × 41 = 1600 ✓
7. 588 × 43 = 2400 ✓
8. 492 × 59 = 3000 ✓

Multiply.

9. 267 × 45 = 12015 ✓
10. 916 × 26 = 23817 ✗
11. 181 × 53 = 9593 ✓
12. 705 × 82 = 57810 ✓
13. $4.82 × 26 = $125.32 ✓
14. $5.07 × 40 = $202.80 ✓
15. $8.24 × 61 = $502.64 ✓
16. $7.51 × 19 = $141.79 ✗

APPENDIX B

Unit Twelve Test

1. cattle
2. circle
3. possible
4. jungle
5. marble
6. middle
7. needle
8. purple
9. rifle
10. title
11. barrel
12. camel
13. level
14. model
15. nickel
16. shovel
17. squirrel
18. towel
19. travel
20. tunnel

$\frac{20}{20}$ Great!

APPENDIX B

CASE SIMULATION

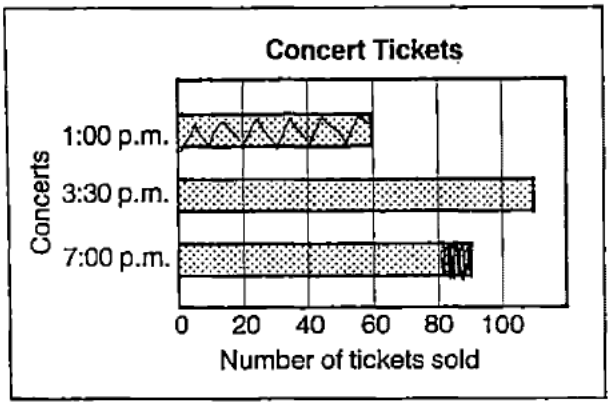
This eleven-year old student will be entering Grade 6 in September. Her teachers describe her as a student who needs to work very hard to maintain a high average in her subjects. She likes to doodle and draw during lessons and often needs to be reminded to stay on task. She is, however, particularly adept at decoding charts, graphs, diagrams and maps. Her science teacher was particularly impressed with the outstanding job she did of creating a model of the human arm for a science assignment this past term.

She is the youngest child in her family. Her parents describe her as having a very vivid imagination. Her mother has said she only needs to be shown how to do something once, before she learns quickly and easily how to do it.

Outside interests include art classes at the community centre, and playing chess with a junior master's club through the school. Her future plans include becoming an art teacher or an engineer.

APPENDIX B

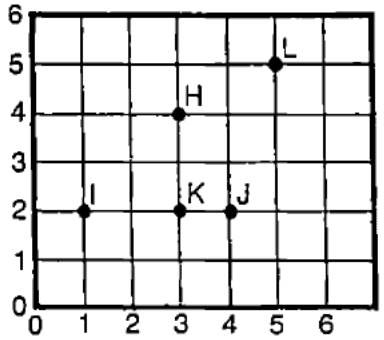
Use the graph. Choose the correct answer.



38. How many more tickets were sold for the 3:30 concert than for the 7:00 concert?
a. 200 b. 10
c. 30 d. 20
38. d ✓

39. How many tickets were sold for the afternoon concerts?
a. 170 b. 50
c. 200 d. 270
39. a ✓

Choose the correct ordered pair for the point.



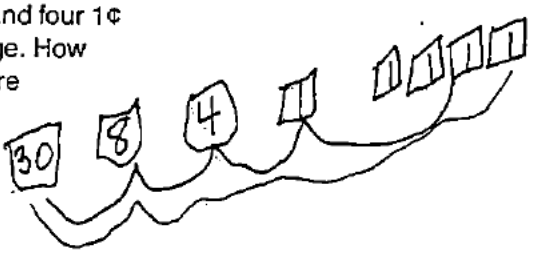
40. H
a. (4,3) b. (3,4) c. (4,2) d. (2,4)
40. b ✓

41. I
a. (3,2) b. (2,1) c. (2,3) d. (1,2)
41. d ✓

APPENDIX B

Find the number of different combinations. Choose the correct answer.

87. Bertha has one 30¢ stamp, one 8¢ stamp, one 4¢ stamp, one 2¢ stamp, and four 1¢ stamps. She needs 38¢ postage. How many different combinations are possible?



a. 1 b. 2
c. 3 d. 4

87. d ✗

88. Marg and Brian are making picnic lunches. Each lunch has an apple or an orange and a peanut butter, egg, or tuna sandwich. Each lunch also has an oatmeal cookie and lemonade. How many different lunches can they make?

a. 3 b. 6
c. 7 d. 12

88. b ✓

Choose the correct answer.

89. Sarah used a calculator to solve multiplication problems from 3:10 to 4:07. She solved 19 multiplication problems. What was the average length of time for each exercise?

a. 4 min b. 5 min
c. 6 min d. 3 min

89. a ✗

90. Andrew had $9.25. He earned $5. He wants to buy records that each cost $6.95. How many can he buy?

a. 2 b. 1
c. 3 d. 4

90. a ✓

APPENDIX B

CIPHER CODE SYMBOLS
Each letter of the alphabet has a number as its symbol.

L O V E
12 15 22 5

My Cipher Code Symbols

13 25 2 5 19 20
6 18 9 5 14 7 9 19
2 18 9 1 14 14 5

My Mystery Message

My best friend is Brianne

POSITION CODE SYMBOLS
The letters spelling out the words in the message are hidden in other words. These letters are placed in some particular order in the words in the surface message.

LYNN ORDERS
VIOLETS EVERY DAY

LOVED

My Position Code Symbols

CATS OUGHTN'T
ARGUE REGULARLY
OVER COLD
FISH DROPS

My Mystery Message

Cu rentur

APPENDIX B

Be a stargazer yourself. Study the night sky on three or four different occasions. Use the Star Guide in Activity 2 to help you identify the stars you see. Keep a record of your observations on the chart below.

Date	Time of Observation	Stars Sighted
June 3	9:25	Capella
June 4	9 30	Big Dipper
June 8	9:30	Big Dipper
June 9	9:30	Capella "W"
June 10	9.00	Vega
June 11	9:40	Little Dipper
		Big Dipper
		Capella

Which constellation on the Star Chart are you most curious about? Do some research to uncover the history of its name. Make a record of what you discover about this group of stars.

Constellation Little Dipper or "Ursa Minor" – Little Bear

History of Name Thousands of years ago people thought "Ursa Minor" looked like a little bear

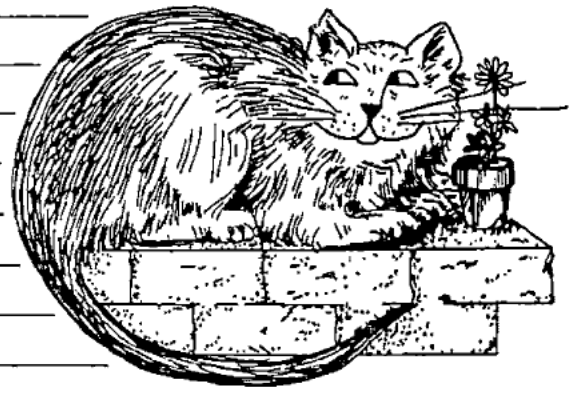
Interesting Facts – constellations move into a different part of the sky each month – in May or June if you look north the Little Dipper will be straight ahead of you, high in the sky

Read through school or public library books and magazines about the stars. Find the names and matching diagrams of four other constellations that interest you. Then try to locate them in the night sky.

APPENDIX B

The story "The Talking Cat" is not told by any of the main characters in the story. How would it change if it were told by Chouchou? Reread the story, then tell one section of it from a cat's point of view.

Chouchou stared at Tante Odette with his big green eyes. Why was she so angry at him? She ought to know he couldn't answer her questions. Why could she not see that Pierre was tricking her. These humans sure are dumb! Maybe I'll run away, then Pierre won't be able to confuse her any more. Yeah, that's what I'll do— I will run away, but after dinner.



How does your story compare with those written by your classmates? In your group, talk about any differences you think are interesting.

APPENDIX C

Consent Form

Researcher: Heather J. Lapper, B.A.

I, , consent to participating in the study examining teachers' awareness of female students' needs when planning educational programming.

I understand that my involvement in this study is completely voluntary and that I may decide to withdraw at any point without negative consequences.

I am aware that I will be asked to read three student case studies and will then be interviewed by the researcher and asked a series of open-ended questions relating to my perspectives on the students in these case studies. This interview will be tape recorded and the information on the tape will be destroyed after the research is completed.

I am aware that my involvement in this project will be kept strictly confidential by the researcher, and that the results of the study, published or unpublished, will in no way identify me.

Signed:

Date:

VITA

Surname: Lapper Given Names: Heather Jean

Place of Birth: Toronto, Ontario, Canada

Educational Institutions Attended:

University of Victoria	1992 - 1998
Saint Nicholas Training Centre for the Montessori Method of Education, London, England	1982 - 1983
University of Victoria	1980 - 1981
University of Victoria	1974 - 1978

Degrees Awarded:

B.A.	1978

Honours and Awards:

University of Victoria Fellowship	1992 - 1993

PARTIAL COPYRIGHT LICENSE

I hereby grant the right to lend my thesis to users of the University of Victoria Library, and to make single copies only for such users or in response to a request from the Library of any other university, or similar institution, on its behalf or for one of its users. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by me or a member of the University designated by me. It is understood that copying or publication of this thesis for financial gain shall not be allowed without any written permission.

Title of Thesis:

Teachers' Awareness of Multiple Intelligences in Elementary School-Aged Gifted Students

Author: [redacted]

Heather Jean Lapper

January 30, 1998