

**MULTIPLE INTELLIGENCES: A WORKSHOP FOR TEACHERS**

**ELLEN M. MELLER**

B.Ed., University of Calgary, 1979

A Project  
Submitted to the Faculty of Education  
of the University of Lethbridge  
in Partial Fulfilment of the  
Requirements for the Degree

**MASTER OF EDUCATION**

**LETHBRIDGE, ALBERTA**

June, 1999

## **Dedication**

This work is dedicated to my father, Marinus Pieter Werner  
who taught me that hard work is not  
to be feared,  
high standards are not  
to be ridiculed  
and  
who went home too soon.

## **Abstract**

Teachers today deal with many issues in their classrooms from student behaviour problems to curriculum concerns. Many teachers are searching for fresh and innovative ways to approach these issues. One approach that has been moving through the United States and Canada is the Multiple Intelligences approach to teaching. These strategies are based on the Multiple Intelligences theory developed by Howard Gardner in 1983 that all people have within them many “intelligences” or capabilities. This study, which describes a workshop conducted for the teachers and assistants of Lethbridge School District #51, outlines Multiple Intelligences teaching strategies and is designed to help educators feel more comfortable using these strategies in their classrooms. A pre-workshop questionnaire guided the creation of the workshop and a post-workshop questionnaire indicated most participants gained knowledge and confidence as a result of attending the workshop. Recommendations for changes to future Multiple Intelligences workshops were suggested by the participants as well as an interest in further communication to support teachers who wish to use the strategies in their classrooms.

## TABLE OF CONTENTS

|  |     |
|--|-----|
| Dedication .....                                       | iii |
| Abstract .....   | iv  |
| Introduction .....                                     | 1   |
| The Challenges .....                                   | 1   |
| The Project .....                                      | 3   |
| What is Intelligence? .....                            | 7   |
| The Theories of Intelligence .....                     | 9   |
| Focussing on Multiple Intelligences .....              | 17  |
| Personal Experiences with Multiple Intelligences ..... | 21  |
| Research on Multiple Intelligences .....               | 24  |
| Method .....   | 29  |
| Action Research .....                                  | 29  |
| Planning a Survey .....                                | 32  |
| Potential Problems .....                               | 35  |
| Facilitating Change in Teaching Strategies .....       | 37  |
| Barriers to Change .....                               | 38  |
| So Why Change? .....                                   | 40  |
| The Workshop .....                                     | 41  |
| Details .....  | 42  |
| Results .....  | 46  |
| Conclusion .....                                       | 47  |
| Recommendations for Change .....                       | 47  |
| Self Reflection .....                                  | 48  |
| References .....                                       | 50  |
| Appendix .....   | 53  |
| Appendix A .....                                       | 54  |
| Appendix B .....                                       | 82  |
| Appendix C .....                                       | 85  |
| Appendix D .....                                       | 103 |
| Appendix E .....                                       | 107 |

## **Introduction**

### **The Challenges**

Some of the greatest challenges faced by the public education system today are larger class sizes, a wide range of learners, and increased behaviour problems. Some of the behaviour problems include student lack of attention, student lack of focus or decreased on-task behaviour, and now violence is becoming more prevalent in classrooms. Some students arrive at school with such a plethora of issues on their minds that school is not one of their priorities. Teachers often feel inadequate to handle the issues presented by the students. Specifically, some of the issues that teachers are presented with include:

- Behaviour problems including violence and attention-seeking behaviours
- Decreased student attention on school related activities
- Off-task behaviour
- Large class sizes
- Wide range of learners in each class
- Overloaded curriculum
- An ever-changing curriculum
- Lack of parent and community support
- Overwhelmed parents who need much support themselves

Teachers are battling for the attention of their students while trying to meet the expectations of an ever-changing and overloaded curriculum in creative, effective and economical ways. Teachers are searching for answers; they need strategies to improve

student learning while increasing attention, time on task and student attitudes.

As a teacher who has taught for over 15 years, I have experienced all of these problems and at times felt overwhelmed by them. There are some teachers who feel trapped and overburdened by the issues they face daily. Many of them are searching for solutions to the problems and issues so they can direct their energies to improving student learning.

In my own teaching experience I found the Multiple Intelligences approach beneficial to my students. In a two-week period while I taught math concepts through Multiple Intelligences as part of a self-initiated pilot project, I observed improved on-task behaviour, more co-operative behaviour, and more enjoyment of learning. Through daily learning logs I discovered that students thought and felt differently about these particular math concepts than students I had taught the same concepts to in previous years.

In a special education setting I currently use Multiple Intelligences strategies to help students in reading and have noticed improved attention from the students as well as a deeper understanding of what they read.

Multiple Intelligences is a theory that Howard Gardner developed in 1983 and has become a framework for many teaching strategies. Since his book, Frames of Mind was published in 1983, a wave of innovative educational strategies has been advancing throughout schools in the United States and Canada. Many schools in the United States are entirely dedicated to the Multiple Intelligences approach. Educators have developed teaching strategies based on the Multiple Intelligences Theory that are effective tools to connect students to the curriculum and answer many of the questions teachers ask. In

other words, Multiple Intelligences has become a set of strategies or techniques within a particular framework that can be used to help teach the curriculum rather than a new set of expectations for students to learn and teachers to teach.

Multiple Intelligences strategies are part of the total learning picture for students. The learning environment is very complex and it is difficult to say that any one teaching or learning strategy is the answer; however, it has been my experience that Multiple Intelligences strategies are beneficial to the students and teachers in addressing the above mentioned concerns and issues. Upon researching and applying Multiple Intelligences strategies in my classroom I have come to believe that this approach is at least a partial solution to some of the issues that teachers face. When combined with other strategies such as Co-operative Learning and Higher Order Thinking Skills, the Multiple Intelligences strategies offer students and teachers a new way to connect with the curriculum and thereby improve student learning.

As more teachers become aware of the Multiple Intelligences approach and its benefits to students, training of teachers becomes a concern. Some teachers who believe the approach would benefit the students in their classes do not have the time to research and study it, nor do they feel competent employing the strategies.

### **The Project**

As an avenue to help other teachers feel competent using the Multiple Intelligences strategies and to evaluate the benefits of Multiple Intelligences, I designed and conducted a workshop on the topic. This workshop consisted of several parts; a pre-survey, the workshop itself, and a post-workshop survey.

As part of the pre-workshop survey I sent a questionnaire to the workshop participants to ascertain what components they felt should be part of the workshop. I already had a list of the participants, and a date was set for the workshop. All of the participants were teachers and assistants in Lethbridge School District #51 so could be contacted through interschool mail. The questionnaire was short and included some demographic questions with the major focus on the needs and desires of the participants.

With this information I designed a workshop geared to the needs of the participants. This workshop was conducted on March 24, 1999 and was sponsored by Lethbridge School District #51. It included overheads describing the basics of Multiple Intelligences such as its history and what the “intelligences” are, discussion, suggestions for unit plans and individual lesson plans, a video highlighting certain aspects of Multiple Intelligences, and active participation by the participants.

At the end of the workshop I asked the participants to fill out a post-workshop questionnaire. In this questionnaire I included questions relating to their satisfaction of the workshop. I asked them if they learned what they had expected to learn and what ways the workshop could be improved. I also asked them to reflect on how they saw themselves using the strategies presented at the workshop and if they felt competent in using them. Additionally, I wanted to discern if there was a desire for a follow-up program where teachers using Multiple Intelligences strategies could support each other or learn more about Multiple Intelligences.

The information from these questionnaires will be used to implement changes in future Multiple Intelligences workshops for other groups of teachers. Each time I present

the workshop in the future, I will send this pre-workshop questionnaire to the participants, if possible. I realize that the respondent/participants may indicate a wide variety of requests for the workshop topics; however, it is important to have at least that much information rather than risk the possibility of presenting a workshop that does not meet any of the expectations of the participants. Although the potential exists for pre-workshop questionnaire responses to be scattered and perhaps all the choices of topics to be chosen by the respondents, I would rather have that information than present a workshop which contains material that was not relevant to the participants.

This workshop was and is intended to help teachers feel competent using Multiple Intelligences strategies in their classrooms and to help teachers see that many of the activities they presently use in their classrooms fit well in the Multiple Intelligences framework.

### **The Intelligence Debate**

The Multiple Intelligences Theory and corresponding teaching strategies seem to offer at least a partial answer to the issues that teachers face in classrooms today. This theory was first articulated by Howard Gardner in 1983. According to Gardner, all individuals have within themselves at least eight intelligences or domains that can be developed. Everyone has one or two intelligences in which they are stronger and one or two areas in which they are weaker. As this idea permeated the educational field, the theory developed into practical classroom application strategies. Currently, there are hundreds of books and articles available that offer background and teaching ideas based on the Multiple Intelligences Theory. Appendix A offers an annotated bibliography of

some of the available resources.

Although Gardner's research was conducted over 15 years ago, many schools and school districts, especially in the United States, developed and incorporated teaching strategies based on the Multiple Intelligences theory and are still using them today with much success.

Over the past 3 years I have read or reviewed about 90 of the books, articles, web sites, and videos which explain the Multiple Intelligences Theory and teaching strategies. I have also attended several workshops and conferences on the topic. For a practicum project in the Master's program two years ago I created, carried out, and reported on a Multiple Intelligences math unit in my multi-age 4/5 classroom. Currently, I often teach my Learning Disabled students through Multiple Intelligences strategies.

Ever since I began my studies 3 years ago I have wondered if this theory is just another "band-wagon" and if it was more work than it was worth. Even though I personally find it a useful teaching tool, I need to be aware of how and why other teachers are using it, if at all, and why they are or are not using it. Consequently, I have been "on the look-out" for critiques or cautions in regard to the application of the theory of Multiple Intelligences. Although the theory is not without its critics, I have found through examining the theory and employing the strategies associated with Multiple Intelligences that this structure of teaching and learning is practical to me as a teacher and beneficial to my students.

From my research there appears to exist three major attitudes towards the theory of Multiple Intelligences. The attitudes are: a) the Multiple Intelligences approach to

teaching, combined with other teaching strategies such as Co-operative Learning and Higher Order Thinking Skill development, offers teachers a tool for increasing motivation and behaviour thereby improving general academic growth, b) the Multiple Intelligences approach in itself offers solutions to the problems of student behaviour, engagement and attention and therefore helps to improve test scores, and c) the Multiple Intelligences Theory has several limitations and is too broad to be useful for learning and teaching.

In order to more fully understand the context in which the Multiple Intelligences Theory was developed, it is helpful to understand the history of the theories of intelligence. Since theories of intelligence and testing intelligence level are so tightly interwoven, in some cases it appears impossible to separate the two and indeed the theory became a test. The following brief summary by no means covers every theory or every contributor to the development of the tests or the intelligence theories; however, it represents the highlights throughout this century.

### **What is Intelligence?**

While it is obvious that some people are “smarter” than others and some people have more ability in certain areas than others, there is a debate as to what it means to be “intelligent.” People differ in their ability to understand complex issues, adapt to their environment, and overcome problems and obstacles in life. Intelligent behaviour or performance can vary from one situation to another. There are many different views as to what intelligence is and this dispute has continued for years. Ever since Alfred Binet developed a test to identify poor achievers, psychologists and educators as well as people in other fields have argued over the definition of “intelligence.” Aside from the fact that

people are also arguing over whether intelligence is inherited or environmental, the debate over a definition continues and has continued for almost a century.

The modern approach to intelligence began when Alfred Binet, a psychologist in France, was hired by the Paris school system to design a test that would identify students who were not likely to do well in school. It is not clear if this test was originally intended for educators to design strategies to help those students achieve more in school or if it was meant to stream students and possibly weed them out of the school system because it was too expensive to teach them.

The definition of intelligence is an age-old issue. Some would say that intelligence is the ability to perform cognitive tasks or the capacity to learn from experience. Some experts in the field of psychology include the ability to adapt to one's environment as a component of intelligence.

Currently there are three major schools of thought on "Intelligence." These schools are: a) the psychometric view, b) the cognitive, and c) the systems view. The psychometric view of intelligence deals with measuring and defining intelligence. The cognitive view deals with information processing components of intelligence, and the systems view holds that there are many intelligences as opposed to only one intelligence. It appears that no one theory of intelligence answers all the questions that are asked regarding the issue. If a dozen experts were asked their definition of intelligence, a dozen responses would likely be brought forth.

## **The Theories of Intelligence**

### **Alfred Binet**

In 1905 Alfred Binet developed measures of intelligence to predict school achievement. These tests included a series of tasks such as defining words, repeating strings of digits, and reasoning problems, as well as reproducing designs and patterns. These tests became known as Intelligence Quotient (I.Q.) tests.

A number of reasons for the development of these tests have been suggested depending on the author's point of view. The reasons range from being able to assign each child a place in society and provide appropriate education to distinguishing mentally retarded children from those with behaviour problems. It should be made clear that Binet developed the tests only for the limited commission by the Ministry of Education.

Whatever the true reason for the development of the tests, Binet himself believed in the development of each child. Quantifying the intelligence of a child was not important to him. Binet felt that the results of the tests should be used to design proper educational experiences for each child. It was Binet's desire that children with special needs be identified and their education improved through smaller classes and special teaching methods. He believed intelligence was too complex to assign a single number to.

Binet was concerned about how the tests would be used or misused by others and justifiably so. In a world of hereditarian theorists, Binet feared his tests and scales would be perverted and used as an indelible label rather than a guide for identifying children who need help (Gould, 1996). He also feared a "self fulfilling prophecy" effect that the tests might impose. If a teacher was aware that a child had a low score on the tests, the

teacher might not expect the student to do well in school and therefore the child may not actually do as well as he or she was able. Binet feared labelling as a result of his tests and meant them to be used to help and improve children's learning. Binet feared that certain children would be stigmatized as unteachable, since in the hereditarian thinking of the time not only was intelligence inherited, it was inevitable. If a child's I.Q. was low then automatically the child would not be intelligent throughout his or her life. The effects of the environment were not seen as important. This intelligence also dictated to a large extent that child's "station" in life. This way of thinking was opposite to Binet's intent and unfortunately his warnings went unheeded and his fear became reality.

### **Charles Spearman**

Charles Spearman was a contemporary of Binet. Spearman believed that there must be a single intelligence factor because all intellectual factors are related. He developed the "g" factor- general intelligence, and felt that intelligence was a single measurable entity. This factor was a measure of the capacity for complex mental work. Spearman was also the father of factor analysis, a mathematical technique for estimating how much sharing was going on in a given set of statistical data. Gould (1996) later discovered that factor analysis pushes a certain interpretation of mental tests to support the biodeterminist or hereditarian theory.

### **H. H. Goddard**

In the early 1900s it was believed that people who were viewed as idiots and imbeciles could be categorized and separated in a way that would satisfy most professionals (Gould, 1996). These individuals could be locked away or institutionalized

and forgotten. However, psychologists became increasingly concerned about “high-grade defectives” who could be trained to function in society but who posed a threat to the evolution and continuation of an intelligent society. Americans were at the same time facing a tide of immigration from southern and eastern Europe. These immigrants were viewed as cheap labour and politically radical, and American racism became even more persistent.

It was in this climate of fear and racism that Goddard was influenced and at the same time influential. Goddard was one of the American psychologists who translated Binet’s tests in 1911 into English written tests. He believed that intelligence was completely determined through heredity and that it was fixed and unchangeable. He felt the I.Q. tests were accurate and desired to use them to segregate the intelligent from the “morons,” a term he coined which comes from the Greek word meaning foolish. Morons were those people who scored in the below normal range on Binet’s tests which Goddard wished to see applied on a widespread basis in America.

Goddard saw a high correlation between low intelligence and immorality and attributed undesirable behaviours to inherited mental deficiencies. On the other hand, a person with high intellect showed good judgement and control over his/her emotions according to Goddard. Therefore, Goddard believed that criminals were of low intelligence.

By 1928, Goddard had changed his viewpoint and agreed with Binet that morons could be trained to be “useful” and that low intellect was not incurable. He no longer believed that morons needed to be segregated from society but he still believed moron

parents would have moron children (Gould, 1996). Although Goddard opened a special school for “feeble-minded” boys and girls, by doing so he inadvertently created a new label for children who struggle in school.

Goddard first popularized the Binet scale and used it to identify limits, to segregate and to prevent “feeble-minded” people and “morons” from breeding. He did not want American stock to be threatened further than it already was from immigration.

### **R. M. Yerkes**

During World War 1 Colonel Yerkes pushed for and presided over the testing of 1.75 million recruits. This mental testing was conducted to assign military personnel to their stations. The tests were designed by Yerkes, Goddard, and Terman as well as others who felt that intelligence was entirely inherited. Army recruits who were literate wrote the Army Alpha test and illiterate recruits wrote the Army Beta tests that were pictorial. This division of recruits created its own problems and testers began to manipulate the groups so that there were fewer in the Army Beta group. This group was usually large and consisted of immigrants, and test conditions were cramped, crowded and noisy; conditions which the testers found undesirable to work in.

Each recruit was graded from A to E and placed in the military according to that grade. No one who scored below a “C” was recommended for officer training (Gould, 1996).

It has been suggested that Yerkes’s motivation to have all recruits tested was based on psychology’s reputation as being a “soft” science. According to Gould (1996) Yerkes wanted to establish his profession as a rigorous science and did so by gathering

data from the tests conducted on the recruits.

### **Lewis M. Terman**

Terman was a professor at Stanford University who developed the Stanford-Binet I.Q. test as well as defining the term “Intelligence Quotient.” In the Stanford-Binet test, Terman extended the tasks from 54 in Binet’s 1911 test to 90 tasks in the revised 1916 test. He also established norms for age whereas Binet worked with ranges.

Terman believed that all students should be tested because educators needed to discover what they didn’t already know. Teachers could easily establish which students were drastically below average. It was only through the I.Q. tests, Terman felt, that teachers could find those students who were slightly below average. He labelled these students “high grade defectives,” and he wanted to curtail the opportunity of these people to reproduce (Gould, 1996).

Terman used test results to sort children into their proper stations in life. In fact, an advertisement at that time for Terman’s mass mental testing states that the test is “immediately useful for classifying children...” (Gould, 1996).

After the Great Depression, Terman altered his theory completely. By this time people had become less vocal about their patriotism and the hereditarian belief was faltering. In 1937 he published a book about the Stanford-Binet revisions where he entertained the concept of environmental factors affecting intelligence.

### **Louis Thurstone**

In 1938 Louis Thurstone developed the Primary Mental Abilities test that was based on the theory that there was no dominant general “g” factor (Thurstone, 1938). In

fact, Thurstone showed that “g” could be made to disappear by simply rotating the factor axis to different positions. In one rotation he was able to give rise to the theory of multiple intelligences that was later supported by the work of J. P. Guilford and Howard Gardner.

Thurstone theorized that there were separate abilities that were distributed differently in different people but at the same time he agreed that there may have been a general “g” factor. Thurstone believed he discovered real mental abilities with fixed positions on a geometric structure called “vectors of mind.” Generally speaking, Thurstone argued that different children were better at some things than others and he felt that the child’s environment as well as biology played a part in his/her intellectual development.

### **J. P. Guilford**

In 1967 J. P. Guilford expressed his belief that there was no “g” factor and developed a “Structure of Intelligence” which included 120 separate mental abilities. These abilities could be clustered within patterns and were interrelated.

### **Jean Piaget**

In 1972 Jean Piaget articulated his belief that intelligence develops in all children “through the continually shifting balance between the assimilation of new information into existing cognitive structures and the accommodation of those structures themselves to the new information” (Neisser, et al., 1996). Piaget’s theory deals with the development of intelligence in infancy and through childhood. He felt that the cognitive development of an individual followed an unchanging and necessary sequence. This

sequence was logical and not trial and error.

Piaget's stages are as follows:

- a) the sensory motor stage (from birth to 2 years)
- b) the pre-operational stage (roughly ages 2 to 7 years)
- c) the concrete operational stage (from age 7-8 through to age 11-12)
- d) the formal operational stage (adolescence)

### **Robert Sternberg**

Sternberg's theory of Triarchic Intelligence was first developed in 1984 comprising three components (Sternberg, 1984). These components of intelligence are: a) knowledge, b) performance, and c) meta-components. Since the theory was first developed, Sternberg has revised his theory slightly. He notes that there is a distinction between analytic intelligence and practical intelligence. Practical intelligence involves intelligence that helps one succeed in the real world. Sternberg labels this intelligence successful intelligence (Sternberg, 1996). Successful intelligence includes knowing one's own strengths and weaknesses, setting goals, motivation, following through or delivering what one promises, belief in one's ability to get a job done or self-efficacy, ability to discern who owns what problems, and taking responsibility for one's own problems, as well as translating thought into action. Sternberg does not believe that there is one intelligence, rather that one must match his/her abilities to the demands of the job at hand (Huitt, 1998).

### **Howard Gardner**

Howard Gardner developed the theory of Multiple Intelligences in 1983 as a result

of his work with brain-damaged individuals. He claimed that everyone holds within them at least 8 “intelligences” or capacities. He felt that these intelligences could be developed to a higher level of competency and that there are many ways to be intelligent within each category. The intelligence areas include linguistic, spatial, logical/mathematical, musical, kinesthetic, interpersonal, intra-personal, and naturalist. Gardner felt there could easily be many other areas of intelligence that have not been acknowledged yet and that intelligence has traditionally been defined too narrowly.

### **Daniel Goleman**

In 1994 Daniel Goleman wrote a book entitled Emotional Intelligence where he states that a person’s emotional intelligence has proven to be a better indicator of their success in the future than grade point average I.Q. or standardized tests. Goleman’s Emotional Quotient (E.Q.) includes self awareness, mood management, self motivation, empathy, and managing relationships. He claims that research in brain-based learning indicates that E.Q. is fundamental to learning effectively (Goleman, 1994).

### **Richard Herrnstein and Charles Murray**

The Bell Curve, written in 1994 by Richard Herrnstein and Charles Murray, reminds us that the debate as to whether intelligence is completely inherited or is affected by the environment, still lives. The major purpose of this book is to reveal that American society has created a “cognitive elite” as well as a class of people who are deficient in intellectual abilities. The authors claim that intelligence levels differ among ethnic groups and that low intelligence is the cause of many of our society's problems. This book has sparked renewed controversy and debate in the world of psychology.

### **Focussing on Multiple Intelligences**

Despite the recent effects of The Bell Curve, time seems to have changed the views of theorists regarding intelligence and whether there is one general intelligence or many intelligences. Today, more psychologists are accepting the view that there may indeed be multiple intelligences and that emotions and environment can play a key role in the success of an individual.

It was in this climate that Howard Gardner presented the theory of Multiple Intelligences. This approach is a teaching tool that allows students multiple options for taking in information, making sense of ideas, and expressing what they learn. Multiple Intelligences recognizes that students have learning strengths and weaknesses. It also acknowledges that these strengths can be further developed and the weaknesses to at least some extent alleviated. Teaching with Multiple Intelligences allows teachers to meet a wide range of student needs because in this approach information is presented in a variety of ways. Both teachers and students can choose activities within the curriculum that will help the students learn best while strengthening minor intelligence areas. This concept is not new to most teachers. Teachers have been using a variety of strategies for years. However, Multiple Intelligences provides a structured approach to adding variety in the classroom. It is a medium to reach children that corresponds with their learning strengths while giving them an opportunity to expand their list of strengths. Multiple Intelligences also offers students a chance to challenge themselves in less dominant learning modes.

Howard Gardner was a neuropsychologist who worked with brain injured and

savant individuals in the 1980s. Gardner concluded that each person has eight distinct intelligences. They are:

- ❶ **Visual/Spatial** - the ability to create visual or spatial representations mentally or concretely,
- ❷ **Mathematical/Logical** - the ability to use inductive and deductive reasoning, and to recognize and manipulate abstract patterns and relationships,
- ❸ **Bodily/Kinesthetic** - the ability to use the body to solve problems or create products and convey ideas and emotions,
- ❹ **Verbal/Linguistic** - the ability to read, write, and work with words,
- ❺ **Musical** - the ability to use music - this includes a sensitivity to pitch, timbre, and rhythm of sounds,
- ❻ **Interpersonal** - the ability to work with others and understand them,
- ❼ **Intrapersonal**- to be deeply aware of one's own feelings, intentions, and goals,
- ❽ **Naturalist Intelligence** - the ability to see similarities and differences in one's environment.

Gardner (1993) states that an intelligence is a capacity, with component processes, that is geared to a specific content in the world (such as musical sounds or spatial patterns). So intelligences must be viewed in light of the situation in which the person is occupied. Gardner believes there is a need for a more naturalistic source of information about how people develop skills important to their way of life. He defines intelligence as the ability to solve problems or to fashion products that are valued in one or more cultural or community settings.

Gardner theorizes that human intelligence contains three components:

- ❶ a set of skills that enables an individual to resolve genuine problems encountered in one's life
- ❷ the ability to create an effective product or offer a service that is of value in one's culture, and
- ❸ the potential for finding or creating problems that enables an individual to acquire new knowledge.

Gardner has established a set of criteria that must be met before something is admitted as an intelligence. The criteria are:

- ❶ Potential isolation by brain damage (when a person suffers a stroke, various abilities can be destroyed and others can be spared, in isolation from the others.)
- ❷ The existence of prodigies, mentally handicapped individuals with savant behaviors and other exceptional individuals. (Again the abilities can be observed in isolation.)
- ❸ An identifiable core operation or a set of operations. (This might be something that spurs an area in a particular intelligence. For example, "Twas the night before Christmas"... will usually spark the listener to think or say "and all through the house." This demonstrates how the core operation of the verbal/linguistic intelligence can be activated.)
- ❹ A distinctive developmental history, along with a definable set of expert "end state" performances (such as milestones linked to training or physical maturation.)

- ⑤ An evolutionary history and evolutionary plausibility. Early cave drawings show an evolutionary history of visual/ spatial intelligence, for example.
- ⑥ Support from experimental psychological tasks. (The cognitive psychologist can study linguistic or spatial processing quite specifically.)
- ⑦ Support from psychometric findings. These would be standardized tests that would provide “complimentary evidence”; however, Gardner suggests that they should be used cautiously.
- ⑧ Susceptibility to encoding in a symbol system. (Language, pictures or mathematical symbols are examples of symbol systems.)

Each intelligence has been subjected to these criteria, and any new ones will have to follow the same system for them to qualify as an intelligence in Gardner’s structure.

An intellectual competence must entail a set of skills of problem-solving - enabling the individual *to resolve genuine problems or difficulties* that he or she encounters and, when appropriate, to create an effective product - and must also entail the potential for *finding or creating* problems - thereby laying the groundwork for the acquisition of new knowledge. These prerequisites represent my effort to focus on those intellectual strengths that prove of some importance within a cultural context. At the same time, I recognize that the ideal of what is valued will differ markedly, sometimes even radically, across human cultures, within the creation of new products or posing of new questions being of relatively little importance in some settings. (Gardner, 1983)

It was with the publication of The Bell Curve in 1994 that Howard Gardner renewed his efforts to spread the news, philosophy, and teaching strategies related to the Multiple Intelligence Theory. Although Herrnstein and Murray (1994) encouraged individuals to accept differences in each other and control prejudicial assumptions, their

theory implies that different races are biologically determined to have different intelligence levels. Gardner would argue that culture and environment play a key role in determining success in one's life. He would also say that one's "intelligence" can change and grow over time.

One of the main benefits to utilizing the Multiple Intelligences approach is that the same concept is taught in a number of different ways, although not every concept needs to be taught using all the intelligences. Students can then assimilate the material in a way that they can understand. If one activity does not get the idea across, another activity will. Other benefits that teachers have found in their students include increased student leadership and responsibility for their own learning, improved behaviour, improved cooperation, ability to work multi-modally in student presentations, and better retention of material.

### **Personal Experiences with Multiple Intelligences**

The Multiple Intelligences approach helps me individualize my teaching. My special education students find what their dominant intelligences are, participate more in their learning, and feel better about learning. I witness improved on-task behaviour as well as an eagerness to read. Currently, I use the Multiple Intelligences approach to studying novels and have designed a generic novel study with choices of activities to be completed after the novel has been read. Since the activities are hands-on and more concrete, the students understand better what they read. At the same time, Multiple Intelligences challenges students to think at higher and deeper levels about what they have read.

When I taught in a multi-age 4/5 classroom with a large diversity of learners and behaviours, I designed a geometry unit in math based on the curriculum as well as on Multiple Intelligence goals. Even the students who were usually unfocussed and exhibited violent behaviours benefitted from this approach.

I set up a pilot project where I utilized some basic strategies of Multiple Intelligences on a trial basis in a very cautious, step-by-step method for a short period of time. After having the students respond daily in a learning log, I read the logs and searched for any threads or main thoughts in the logs. This search was meant to help me decide if I would continue using Multiple Intelligences in the next school year and what changes I would employ in future lessons.

I was not necessarily looking for higher test scores but rather more enthusiasm and love of learning. I also wanted to see more focused attention to the task-at-hand in my classroom. I did not want Multiple Intelligences to be an add-on to an already overcrowded curriculum. I wanted to use it as a tool to organize this crowded curriculum, heeding Gardner who cautions that schools attempt to cover far too much material and that the result is superficial learning (Gardner, 1993).

I chose to implement the seven intelligences (at that time I was not aware of the eighth intelligence, the naturalist intelligence) described above to a math unit on Geometry as my pilot project. I began the unit during a math class by asking the students what they thought it meant to be smart. I listed their replies on the overhead projector, and we discussed the variety of ways that people can be smart and how this can be useful to us. I then showed them a large poster that I had made up which listed all the intelligences

(I called them “smarts”) in one column, the characteristics of people who are strong in each intelligence in another column and lists of famous people who were or are strong in each intelligence in the last column. I showed overhead pictures of the famous people or of some work they had accomplished. I asked the students to think what areas they thought they may be strong in and emphasized to them that we can use all the intelligences in many different areas of our lives.

Over the next seven math classes, I focused on one intelligence a day and the students explored geometry through that intelligence. For example, in one lesson the students were asked to write a rap about a geometric shape using words and terms qualifying geometric shapes that we had brain-stormed earlier in the lesson. Each lesson included objectives from the Alberta Education Program of Studies as well as a Multiple Intelligences objective.

Each class lasted about 45 minutes and ended with time to write in a learning journal. I had prepared the learning journal in advance as a graphic organizer, asking many questions to focus the students' thoughts. I asked them to fill in their choice of two columns a day responding to a variety of questions such as what they learned, how they felt, what they liked about the lesson, what they did not like about the lesson, how this lesson could be applied to another area of their lives, and what they would like to learn more about.

At the end of the eight lessons the students were quite aware of the seven intelligences and where they could be used. The enthusiasm and enjoyment of learning were also very evident in both their daily performance and in the journal responses.

This approach to using Multiple Intelligences is not the only way to set up a classroom. Bruce Campbell, a teacher in Marysville, Washington who has adopted the Multiple Intelligences strategies and conducted action research in the field, suggests a variety of ways to set up a Multiple Intelligences classroom. He suggests daily centres, once a week centres, whole class centres, and/or apprenticeship programs. He says the teacher should decide which system would best meet the needs and strengths of the students (Campbell, 1994).

The Multiple Intelligences approach offers teachers and students multiple ways of teaching and learning concepts. Multiple Intelligences is a tool that can help teachers reach more learners in the classroom. As we reach more learners, students will experience more success in being able to make sense of the world.

### **Research on Multiple Intelligences**

Many studies have been conducted regarding the effectiveness of the Multiple Intelligences Theory and its application in the classroom. Pierce (1997) found in an action research project that there was an increase in homework completion among a class of fifth graders when Multiple Intelligences strategies were employed along with Co-operative Learning strategies. She also found an increase in class participation in both small and large group activities. Her article suggests that Multiple Intelligences strategies can improve student interest and motivation. She also suggests many other techniques which teachers can use to contribute positively to student motivation.

Ellingson, Long, and McCullough (1997) also indicate that a variety of teaching methods can improve motivation, attendance, homework return, and academic growth.

Multiple Intelligences strategies were incorporated into their action research study to reflect student learning preferences. Co-operative learning and students' choice in activities and assignments were also included. This study applied to 22 third graders and 53 middle-school students and the results indicate an increase in motivation especially in the areas of staying on task, using time wisely and asking and answering questions, although attendance continued to fluctuate during the study. Teacher journals collected from this study showed an increase in lesson plans targeting the seven intelligences and that the role of the teacher shifted to that of a facilitator.

Many teachers have found that disruptive and inappropriate behaviours on the part of students interfere with academic growth. Dare, Durand, Moeller, and Washington (1997) found that when Multiple Intelligences strategies were combined with Co-operative Learning and Higher Order Thinking Skills there was a decrease in behaviour problems that interfered with student learning. They also found that the number of students who were at risk decreased as behaviour improved. This action research was conducted in a large urban centre in four primary classrooms. Co-operative Learning and Higher Order Thinking Skills seem to go hand-in-hand with Multiple Intelligences.

Although all of the above studies were carried out in the United States, it is likely that the results would be similar in Canada. The above studies did not isolate Multiple Intelligences strategies as being the sole catalyst for improved motivation, behaviour or learning. Rather, they involved a multi-pronged approach which included Co-operative Learning and Higher Order Thinking Skills strategies as well.

Reading comprehension and decoding are areas of concern for teachers. Fewer

studies have been conducted which specifically address reading and Multiple Intelligences and fewer still have been carried out in the area of Learning Disabled students and Multiple Intelligences.

Albero, Brown, Eliason, and Wind (1997) identified several reasons that children may be poor readers. One reason may be that children lack quality time to practice reading at home or at school. Other reasons for poor reading skills include test anxiety, developmental lag, living in low socio-economic areas, inability to use prior knowledge when reading, and inability to connect reading to life experiences. In this action research study Multiple Intelligences techniques were employed as well as creating portfolios and reading logs. The results showed an increase in reading scores as well as in the ability to connect reading to life experiences. This study also revealed an increase in Higher Order Thinking Skills.

Hearne and Stone (1995) summarize several studies that show that Learning Disabled students can be unmotivated and yet gifted in some areas. They also discuss how schools have not tapped into the Learning Disabled students' strengths; rather that most special educators teach from a deficit driven standpoint. Although the authors do not mention any specific studies that have shown Multiple Intelligences to be useful for Learning Disabled students, they surmise that since Learning Disabled students can be gifted in some areas and weak in others, the Multiple Intelligences approach would be useful. They also suggest that a number of other approaches such as cognitive strategies instruction and literacy based instruction should be employed to assist the Learning Disabled child.

Not everyone believes that the Multiple Intelligences Theory is a sound one. Klein (1997) feels the theory “shares the limitations of general intelligence theory; it is too broad to be useful for planning curriculum, and as a theory of ability, it presents a static view of student competence” (p. 377). He claims that the intelligences as outlined by Gardner are simply components of one single intelligence. Klein also states that Gardner does not actually prove that the intelligences are distinct from each other and that “Multiple Intelligences theory offers a level of analysis neither empirically plausible nor pedagogically useful” (p. 389). Throughout his article, Klein refers to studies which support his statements. His argument seems to pertain to the field of psychology and the proper use of terminology rather than implementing the strategies.

Collins (1998) claims that “the answer is not quite so simple, but there are good reasons to have doubts about this trend” (p. 62). He points out that there is no firm research that supports the effectiveness of Multiple Intelligences and that “a realistic view of Multiple Intelligences theory may not justify the enthusiasm it has engendered thus far.”

Ediger (1995) also offers some challenges to the Multiple Intelligences Theory. Ediger states that Multiple Intelligences is weak in addressing the social sciences and that Thurstone’s work already covered the same ideas that Gardner covers.

Although it appears from the recent literature that Multiple Intelligences is not the only approach that brought improvement to the areas of concern the literature that supports the theory far outweighs the negative literature in quantity and the arguments against the theory seem to be based on terminology and semantics. They do not argue that

the practical teaching strategies are harmful or useless to students. All the studies included other teaching strategies such as Co-operative Learning and Higher Order Thinking Skills. Multiple Intelligences lends itself well to employing these strategies at the same time and increasing student skills in many areas.

The learning environment is very complex and it is difficult to say that one strategy is the answer. However, it has been my experience that Multiple Intelligences strategies are beneficial to the students and teachers in addressing the concerns and issues of crowded classrooms, behaviour problems, ever-changing and over crowded curriculums, and the wide range of learners in each classroom. In an era where teachers need to compete with television and other electronic devices, and at a time when theorists, researchers, and educators appear open minded about the concept of “Intelligence,” Multiple Intelligences offers hope. Brain research is expanding at an explosive rate. What researchers knew yesterday is infinitely less than what they will know tomorrow. This brain research also offers hope to teachers and students who struggle with traditional methods of teaching and learning. The hope is that there are new and diverse ways in which we learn and demonstrate what we know, and that we are all intelligent in some way.

All of this information is basic and relevant to the Multiple Intelligences workshop that I developed and presented. Indeed much of the above material became an integral part of the workshop.

## **Method**

### **Action Research**

In order to help teachers feel more competent using Multiple Intelligences strategies in their classrooms through designing and conducting a workshop, I followed the accepted Action Research approach of methodology as described by Dr. David Townsend, a member of the Faculty of Education at the University of Lethbridge. Townsend outlines the process of action research as generally adhering to the following steps:

- 1) Define the focus or problem.
- 2) Collect information.
- 3) Analyse the information.
- 4) Report your preliminary conclusions with your group.
- 5) Plan action- build personal commitment and group support.
- 6) Take action.
- 7) Collect information.
- 8) Analyse the collective knowledge to help make sense of what is happening and why.
- 9) Publish.
- 10) Future action: celebrate, relax, and reflect. Take time to consolidate your learning.

Although not all the above steps apply to my study, most of them apply to the research I have conducted and are discussed below.

**Define the focus**

It is because teachers are currently dealing with so many issues in their classrooms that I began to wonder if there was a teaching strategy that would help teachers improve student learning in spite of the issues. After researching Multiple Intelligences on my own and using it in my own classroom, I wondered if other teachers in Lethbridge School District #51 knew of this strategy and if they felt confident using Multiple Intelligences in their classrooms. I decided to share what I learned about Multiple Intelligences with other teachers through a workshop format. Therefore, the question that guides this study is “Will a workshop on Multiple Intelligences help teachers feel more confident in using Multiple Intelligences strategies in their classrooms?”

I chose to conduct a workshop on Multiple Intelligences for teachers for two main reasons. The first reason was that, as Smith (1963) says when he discusses why to train teachers in his book Educational Research and the Training of Teachers, it is something that was seen as necessary to the client. In this case the clients are the teachers and students of Lethbridge. I felt that a workshop on Multiple Intelligences was necessary for teachers to be able to begin to deal with some of the issues they struggle with in the classroom. This workshop was necessary for the students of Lethbridge because as teachers feel more comfortable using this teaching strategy, the issues of behaviour, attention, etc., will diminish and student learning and self esteem will increase. Teachers need to feel secure in their knowledge and their capacity to use that knowledge, Smith says, so that they no longer see problems as devastating. They need to understand that they have the answers to the problems. I believe Multiple Intelligences teaching strategies

are part of the solution to the problems.

The second reason I chose this workshop was, as Smith (1963) mentions, someone has an ability to help. I have studied Multiple Intelligences for two and a half years and have used it in both the regular and special education settings. Now I am able to help other teachers bring this innovative idea to their classrooms.

### **Collect Information**

Before I planned and conducted the workshop, I sent out a questionnaire to each of the participants to ask several questions regarding their current teaching situation as well as their current knowledge of Multiple Intelligences. I wanted to know if they felt they had a good knowledge of Multiple Intelligences and how comfortable they felt employing the Multiple Intelligences strategies in their classrooms.

### **Analyze the Information**

Upon examination of the responses that I received from the participants I found that few of them had much knowledge about Multiple Intelligences. I also found that for the most part, the participants did not feel comfortable using Multiple Intelligences strategies in their classrooms. Because I found Multiple Intelligences strategies to be helpful in my classrooms, I wanted to assist teachers in becoming more confident in their knowledge and use of Multiple Intelligences.

### **Plan and Take Action**

From the information I received in the responses from the participants I created a workshop on Multiple Intelligences designed to increase both their knowledge and their comfort level in employing Multiple Intelligences strategies. This workshop was

conducted on March 24, 1999. After the workshop I asked the participants to respond to another questionnaire which contained similar questions to the first questionnaire. I asked them if their knowledge and level of confidence increased as a result of the workshop I conducted. I also asked them if they learned what they had hoped to learn at the workshop.

### **Analyze and Future Action**

The second questionnaire which I handed out at the end of the workshop gave me information for future Multiple Intelligences workshops that I will conduct. Most of the respondents felt they increased their knowledge and confidence level as a result of attending the workshop; however, a few people offered suggestions for future workshops. From these suggestions I will make changes to any Multiple Intelligences workshops I conduct for other audiences in the future.

A written questionnaire provides a permanent record of recommendations for future workshops. After each set of questionnaires is completed, I will look for themes or trends that the respondents feel need to be addressed in future workshops.

In designing the questionnaires I followed the steps as suggested by John L. Hayman (1968) in Research in Education. The steps to designing questionnaires are a) list the objectives of the study b) decide on the types of questions, and c) formulate the questions. These steps are discussed below in reference to my study.

### **Planning a Survey**

**1) List objectives of the study- is this survey to gather factual information or ideas, recommendations, attitudes or opinions?**

In my case, the main objective was to design a workshop on Multiple Intelligences that meets the desires and needs of the participants; to help them feel competent and comfortable using Multiple Intelligences strategies in their classrooms. The questionnaire was a program evaluation survey and was designed to gather information on factual information and recommendations.

## **2) Decide on the type of survey- interview or questionnaire.**

There are advantages and disadvantages to both of these techniques. The interview provides rapport and intimacy with the respondent as well as a good rate of return. It also allows the researcher to immediately define any terms that may be misunderstood or misinterpreted by the respondent. However, interviews are time consuming and this is the main reason I chose not to conduct interviews, with teachers being so busy.

On the other hand, the questionnaire is a low cost, effective technique for surveying groups of people. It assures consistency of wording and if designed properly, is easily interpreted. The pre-workshop questionnaire was sent out about a month before the actual workshop date with the incentive being the workshop would revolve around their responses. The rate of return was higher with the post-workshop since it was completed at the workshop.

I decided to use the questionnaire because of the time constraints that teachers are under. Most teachers do not have time for an interview whereas they will take a moment or two to complete a questionnaire. Interviews can also be threatening to respondents especially if they are presenting criticisms of a presenter. An anonymous questionnaire is

less threatening and gives more accurate information.

### **3) Formulate the questions**

The questions can be either unstructured (open) where any response is permitted or they can be restrictive (closed) where choices are given for the respondent to choose from. In formulating the questions the researcher needs to keep several factors in mind, the first of which is to avoid the use of jargon or esoteric language. The use of this type of language will dampen the motivation of the respondent to answer and the respondents may feel that their comments may not be worthwhile (Hayman, 1968).

The order of the questions is another factor the researcher needs to consider. The questions should begin by building rapport and motivate the respondents to continue. The questionnaire must be designed to meet the respondent where they are and should create thought patterns which produce the desired interpretation of the questions (Hayman, 1968). Therefore the questions must be presented in a logical and reasonable sequence.

Hayman says that to ensure co-operation of the respondent, he/she must feel that he/she has something to gain by filling out the questionnaire. In the case of my study, the respondents were made aware that the workshop was to be tailored to their needs and desires as a result of their filling out this questionnaire. This ensured a good rate of return.

Return rate of the post-survey was a concern because the respondents may have felt they had less to gain by filling it out. When one individual does not fill out a questionnaire the sample changes and no longer represents the population it was designed to represent (Hayman, 1968). To increase the return rate of the post-survey, I asked if the respondents were interested in a follow-up system for future support. This follow-up

includes networking with other teachers through e-mail or meetings or it could mean further workshops or training. By handing out the post-survey at the end of the workshop, I was able to effect a return rate of 100%.

Once all the post-workshop questionnaires were gathered, I evaluated the effectiveness of the workshop, and the recommendations for change in further presentations are included on page 47.

### **Potential Problems**

Babbi (1995) states one of the problems with questionnaires is that of return rate. Teachers are extremely busy and are frequently asked to complete questionnaires. Therefore researchers need to prove to teachers that it is worth their time and effort to complete them. I did not want my questionnaire to be one that was hastily completed with little thought or worse yet, thrown out. To increase the interest in responding to my questionnaire I used some “encouragers.” One such encourager was the fact that the workshop was based on the responses of the participants. When the participants realized that I would gear the workshop to their requests, I hoped they would be more likely to fill out the questionnaire.

Another encourager to completing the questionnaire was that I included with it the application form for Alberta Teachers Association funds to support their attendance at this workshop. Teachers in Lethbridge must apply to the ATA to cover substitute costs while they attend a workshop or conference. If most teachers are like me, they either forget to apply or the application forms are in the office. Having to go to the office, find the form in the filing cabinet and fill out the form adds to the hindrances. With the ATA

application being included with the questionnaire, teachers would realize the importance of the topic and that at the same time I was serious about meeting their requests. Then, even if they didn't fill out the questionnaire, they were one step closer to attending the workshop.

Included in the post-workshop questionnaire was the “encourager” of possible follow-up support. The workshop was intended to give teachers support in implementing Multiple Intelligences strategies, however, further support may be required. If teachers see that there is the possibility of such support they may be more inclined to use the strategies.

In Instructional Product Development, Robert Baker and Richard Schutz (1971) clarify that educational products must go through product development, try-out, and product revisions. I see the Multiple Intelligences workshop as a type of educational product and therefore feel that it must go through the same process of development. I am also prepared to support teachers who feel comfortable trying the approach but who feel they need allies.

Through a formative program evaluation model, I will be able to redesign the workshop as well as scrutinize and rethink assumptions that I have about Multiple Intelligences. Formative evaluation gives the evaluator the opportunity to closely examine the effectiveness of the program (Fitz-Gibbon & Morris, 1978). In my case, I need to know the effectiveness of the Multiple Intelligences workshop.

The in-service workshop can be evaluated by an observer (Ayers, 1989). Observers can sit through the workshop and use checklists designed before-hand to

determine if goals have been met. Reactions of the participants, interaction between the instructor and the participants as well as other pre-determined objectives can be monitored through the use of the checklist. I varied this suggestion by video-taping and reviewing the workshop myself in the role of an evaluator.

### **Facilitating Change in Teaching Strategies**

For some teachers, using new teaching strategies is a frightening proposition. Since Multiple Intelligences strategies are relatively new, many questions arise when teachers are considering implementing them on a regular basis in the classroom. These questions may include:

Are teachers/educators reluctant to attempt Multiple Intelligences ?

Why are teachers/educators reluctant to try these strategies?

How can change be facilitated for teachers?

What are the benefits of employing Multiple Intelligences strategies?

What are the barriers to attempting Multiple Intelligences strategies?

Who is responsible for facilitating Professional Development in Multiple Intelligences strategies?

The concept of change is a complex issue. Few people are ready to try new things without a safety net or the assurance that a particular idea will work or that it will not involve more stress, work, money, time, or hassle. Many people think “if it’s not broke don’t fix it,” forgetting that change can be positive if it is embarked on for the right reasons.

Change needs to be first and foremost for the benefit of the children in a school. Staff members must not change simply for the sake of change. It must be relevant, meaningful, and viable. Many factors must be taken into account before change can be realized. Teachers must consider this issue before embarking on Multiple Intelligences strategies in their classrooms.

### **Barriers to Change**

One of the biggest barriers to change, I believe, is fear. Fear shrouds itself in many other forms such as pompousness, arrogance, shyness, and timidity. Teachers who implement Multiple Intelligences strategies need the support of other teachers who have used the strategies.

Another barrier to change is lack of time. This may be lack of time for preparing lessons, for meetings, for reflection or evaluation of the students or of the changes themselves. Since change takes time, no short cuts can be taken. Sometimes attitudes and beliefs need to change and this process requires much time and reflection. Here, administrative support is required to accommodate teachers and allow them the time to plan, evaluate and reflect on the process of using a new strategy such as Multiple Intelligences.

Related to the issue of lack of time is the issue of too many changes, too fast. If a staff or school district perceives that they are being asked (or mandated) to deal with many changes in a short period of time, they can become burnt-out and resentful. These feelings can be especially acute if the teachers have had little or no input into the changes. Also, if many changes are being mandated by an outside agency, for example the

government, it is unlikely that staff will want to initiate even more changes. Therefore, it is important that the impetus for utilizing Multiple Intelligences techniques come from the teachers themselves. They need to believe in the theory in order for it to work.

In order for many new initiatives to be accomplished new resources may be required. Staff will find it difficult to follow through with the changes without proper resources and may give up because of this problem. Although there are many resources available to assist in the implementation of Multiple Intelligences strategies, they can be employed with a minimum of new resources and materials. In fact, teachers are already using many activities in their classrooms that blend well with the Multiple Intelligences theory.

Lack of support and encouragement within a school can cause teachers to abandon their attempts at implementing a new teaching strategy including Multiple Intelligences strategies. If teachers feel they are the only people employing a new technique and/or if they believe others do not trust them or are suspicious of what they are doing, teachers may feel threatened. At the same time, jealousy and resentment of another teacher's new strategies can be a barrier to new ideas being incorporated into a school or classroom. Teachers also need to feel that they are understood and accepted by their administrator while they practice new ideas. Administrators must show open support for teachers who attempt any new teaching strategy, including Multiple Intelligences, as long as the strategy has proven successful and beneficial to students through past research.

### **So Why Change?**

With all the negative possibilities, barriers, and consequences listed over the past few pages, why would any teacher want to bother to change their teaching strategies to include Multiple Intelligences? Why would a staff member try any new ideas? Why risk suspicion, jealousy, more work, stress, the possibility of failure and the reputation of the school?

Often the risks are worth the effort because of the positive results of an innovation. Improved student learning is a proven result of Multiple Intelligences and therefore a strong supporting argument for employing it in a classroom. Changes can also help teachers meet the needs of a diversity of student abilities as well as infusing the teacher with spark or enthusiasm. Innovative ideas can stimulate the intellectual development and leadership abilities of teachers as well as students. Multiple Intelligences strategies have resulted in students displaying leadership skills as well as taking on more responsibility for their own learning (Campbell, 1994).

Any new idea that grips a staff, or an individual for that matter, must have as its basic incentive that the change is what is best for the students of that school. The goal of improved student learning must be the focal point of any innovation in a school. Past proven and reliable research that indicates student growth in learning should be investigated before a new initiative is begun. Multiple Intelligences has stood the tests of time and research.

Innovations are a dime a dozen. Schools cannot and must not jump on every bandwagon that comes around, even if the ideas sound wonderful. Administrators and leaders

of schools have key roles to play in changing schools but ultimately the goal for change must be to improve student learning. This reasoning applies to Multiple Intelligences as it does to any new teaching strategy.

One of the easiest and most efficient ways to accommodate change and encourage new knowledge is through a workshop. It is because I have found Multiple Intelligences strategies so helpful that I wanted to share my knowledge with other teachers.

## **The Workshop**

### **Introduction**

The workshop that I conducted on March 24, 1999 is described in detail on page 42. During the workshop, I described briefly the history of Multiple Intelligences and gave some information about Howard Gardner. This information included a video describing the intelligences and the myths associated with Multiple Intelligences. The participants then assessed their own strong and weak areas of intelligence. I then went on to describe how I used and currently use Multiple Intelligences strategies in my classrooms. I also offered some suggestions and lesson ideas for other grades and subjects.

At the end of the workshop I handed out a post-workshop questionnaire asking the participants if they learned what they had hoped to learn at this workshop, if their knowledge of Multiple Intelligences had increased and if they felt comfortable using Multiple Intelligences strategies in their classrooms. The questionnaire also asked if there were any recommendations for change in future workshops that they would like to suggest. I also asked them on the questionnaire if they would like to keep in touch

somehow either through e-mail or meetings as a means of supporting each other while using this new teaching method.

From the responses on the questionnaires I will make changes to the Multiple Intelligences workshop and incorporate these changes in future presentations of the workshop. I also videotaped myself through portions of the workshop and evaluated myself from this video tape. From this video tape I have set some goals for future workshop presentations. These goals are included on page 48.

### **Details of the Workshop**

The Multiple Intelligences workshop for teachers and assistants was held on March 24, 1999 at the Board Office of Lethbridge School District #51 from 8:30-11:30 a.m. I sent out a pre-workshop questionnaire (Appendix B) to all participants who had signed up earlier. This questionnaire presented the participants with several questions regarding their current teaching situation as well as their current knowledge of Multiple Intelligences.

Of the seven responses received, six were from teachers and one was from a teaching assistant. The respondents worked in grades one, three, three/four, five/six, seven to nine, and grade eight. When asked what the respondents felt was their current level of knowledge of Multiple Intelligences, one said he or she had no knowledge, five said they had a little knowledge but had never used the strategies in their classrooms, and one said he or she had enough knowledge to have used Multiple Intelligences in the classroom but still did not feel comfortable using the strategies. No-one said they used Multiple Intelligences strategies in their classrooms and felt comfortable using them. Six

of the respondents said they had not consciously used Multiple Intelligences strategies and one said he or she had used the strategies in the past.

When asked why the participants were interested in the workshop, one responded that he or she wanted to confirm how he or she is using Multiple Intelligences in the classroom, seven stated they wanted to learn about the approach, one said he or she wanted to get away from the classroom and generate some ideas, and two responded that they knew the speaker.

I asked what the participants wanted the presenter to cover in the Multiple Intelligences workshop. Three respondents replied that they wanted the basics covered as they knew nothing about the approach, two said that they would like to practice using some of the activities within a workshop setting, four responded that they wanted some lesson plan ideas and six responded that they wanted to know the advantages and disadvantages of the Multiple Intelligences approach.

After receiving the responses, I summarized them and created the workshop based on their requests. I generated many lesson plan ideas and created over 25 overhead transparencies to help the participants learn more about Multiple Intelligences. I also obtained some posters and many books to be used as resource material for the participants to look through during the workshop. The workshop included my own lesson plans that I used in a multi-age 4/5 setting, as well as lessons I currently use in a Special Education setting. I also researched lesson ideas at other grade levels and included those in the workshop. I brought some student work in as examples for the participants to view.

I started the workshop with an outline of the morning and what would be included

in the workshop. I then went on to explain a brief history of Multiple Intelligences including some information on Howard Gardner, what the intelligences are and how Gardner subjects each new intelligence to a set of criteria before adding it to the theory. I then offered several overviews outlining the intelligences and then showed a video explaining the intelligences further. Included on this video are some myths that exist around Multiple Intelligences as well as the counter-arguments against these myths. The video is about 40 minutes and was too long for this workshop. However, I suggested that the participants book it through the media centre if they wanted to view the entire video.

After the video the participants assessed their own strong and weak intelligences using two assessment tools. The Multiple Intelligences Profile is geared to assessing the strong and weak intelligences of adults, while the Teele Inventory for Multiple Intelligences is designed to assess the intelligences of children. Most of the participants were able to confirm that what they learned from the assessments was consistent with what they saw in everyday life.

In the next portion of the workshop I described how I used Multiple Intelligences in a grade four/five multi-age classroom during a math unit on Geometry. I included several lessons from this math unit and the student learning log in a handout which I gave to the participants at the beginning of the workshop (See Appendix C).

After describing how I used Multiple Intelligences in the multi-age classroom I explained how I currently employ Multiple Intelligences in a Special Education setting. I teach reading to children with learning disabilities in a resource room setting. The children leave their regular classes for half an hour each day with the goal of bringing

their reading to grade level. I include Multiple Intelligences strategies within a novel study where we read and discuss a novel of the students' choice. After reading the novel I give the children a choice of Multiple Intelligences activities to develop a deeper understanding of what they have read. Within each intelligence area the children are offered two or three choices of activities. After completing each activity the children share their finished product with the rest of the group. I included this novel study unit plan in the handout that was given to each of the participants at the workshop.

In the next segment of the workshop I presented some suggestions for teaching with Multiple Intelligences at the lower elementary grades on a Winter theme, as well as some strategies that could be used at the Junior High level. Lastly, I offered some research results that teacher Bruce Campbell has found when using Multiple Intelligences strategies in his grade three classroom. Mr. Campbell has done extensive action research in the area of Multiple Intelligences and how the strategies affect his grade three students. He has published several books on the topic.

The workshop closed with the opportunity for the participants to ask questions and peruse the resources that I brought. This time gave the participants a chance to reflect on how they would see themselves using the strategies in their classrooms in the future. Throughout the workshop the participants felt comfortable enough to ask any questions they had along the way but some more questions came up at the end as well. After this question period, the participants were asked to complete a post-workshop questionnaire and hand it in (See Appendix D).

## Results

Nine of the eleven participants were teachers, one was an assistant and one was an administrator. There were two people in the grade one setting, two in the grade three setting, three at grade three/four, one at the five/six level, one at the grade seven special education level, one at the grade seven to nine level, and one in a grade eight setting.

Six of the eleven post-workshop questionnaire respondents said they had used Multiple Intelligences strategies in their classrooms in the past and all eleven said they would use these strategies in the future. The participants mentioned many ways that they felt they could use Multiple Intelligences in their classrooms. Almost all of the responses included ways to vary lessons to include all the intelligences and meet a wider range of student learning needs. When asked if the participants felt competent using Multiple Intelligences strategies in their classrooms one said he or she already felt competent, three said they felt competent now that they had attended the workshop, five said they felt only a little more competent, and one said he or she did not feel competent using the approach after attending the workshop.

When asked to rate their current level of knowledge of Multiple Intelligences with 1 being a low level of knowledge and 5 being a high level of knowledge, no-one rated themselves a 1, three people rated themselves as a 2, six rated themselves as a 3, two rated themselves as a 4, and no-one rated themselves as a 5.

Eight out of the eleven participants said they learned what they hoped to learn at this workshop and expanded on what they learned. The main theme in the responses was applying the principles and strategies of Multiple Intelligences in their classrooms. Three

respondents said they learned what they had hoped to learn but also did not learn some things they had hoped to learn from the workshop. It appears that some people thought the workshop was going to be on learning styles but still learned from the discussion on Multiple Intelligences.

Several of the participants were interested in establishing a support system whereby those teachers who use Multiple Intelligences strategies in their classrooms can reflect on their practices, ask questions, share successes and failures, and give suggestions for future lesson ideas. Four participants were interested in regular meetings every two months, and four were interested in communicating via e-mail.

## **Conclusion**

### **Recommendations For Change**

No workshop is perfect the first time it is presented; nor can a workshop be expected to meet all the needs of all the participants. However, that does not mean that the presenter cannot look for ways to improve the workshop. I plan to present this workshop at other venues in the future and have been asked to present it again in March of 2000 for Lethbridge School District #51. Therefore I want to improve it to the point where it meets as many participant needs as possible. To that end, I have asked the participants of this year's workshop to present recommendations for changes that I can incorporate into future workshops. I have also viewed the video-tape of the workshop and have set some goals that I would like to meet as far as improving the workshop for future presentation.

Although most of the responses were positive and did not include ideas for

change, some participants did make some suggestions. One person suggested that I give more examples of higher level lesson plans and one suggested that I set up centres or do a mini lesson employing the eight intelligences. I could also have the participants plan a lesson that they could share with the rest of the group.

### **Self Reflection**

Upon self reflection and viewing the video-tape I realized that I need to allow the participants an opportunity to share and talk more. In future presentations, rather than my telling the participants about the history and development of the Multiple Intelligences theory, I could have them work in co-operative groups and research the information and then share with the larger group.

Teachers need time to look through the resources that are available to them on the topic of Multiple Intelligences. Although I was aware of this need and allowed the participants to peruse the materials I brought, I passed out the resources while I was trying to present the workshop. At this time I felt that they would rather look through the resources than listen to me. In the future, I will keep these two items separate or I will present the participants with some questions about Multiple Intelligences that can be answered by searching through the resources.

I will also allow the participants an opportunity to start to work on a lesson plan and share with the group or investigate developing an intelligence of their own through a specific activity and allow them the chance to share with the group.

Designing and conducting this workshop on Multiple Intelligences was a challenging and growing experience for me. It has long been one of my professional goals

to present workshops to other teachers and this project was an immense step toward attaining that goal. It is my hope that teachers who attended the workshop and those who attend it in the future will learn enough about Multiple Intelligences to investigate it further and will feel confident in their knowledge of it to use it in their classrooms. The benefits to students can be enormous.

## References

Albero, P., Brown, A., Eliason, S., & Wind, J. (1997). Improving reading through the use of multiple intelligences. Unpublished master's thesis, St. Xavier University, New York.

Ayers, J. B. (1989). Assessing professional outcomes in professional settings: The case of teachers in-service (Clearinghouse No. TM014125) San Francisco, CA: Annual Meeting of the American Evaluation Association. (ERIC Database no. 312317)

Babbi, E. (1995). The practice of social research. Belmont, CA: Wadsworth Publishing Company.

Baker, R. L., & Schutz, R. E. (1971). Instructional product development. Inglewood, CA: Van Nostrand Reinhold, Ltd.

Campbell, B. (1994). The multiple intelligences handbook. Stanwood, WA: Campbell and Associates, Inc.

Collins, J. (1998, October 19). Seven kinds of smart. Time, 62-64.

Dare, M., Durand, S., Moeller, L., & Washington, M. (1997). Using multiple intelligences, co-operative learning and higher order thinking skills to improve the behaviour of at-risk students. Unpublished master's thesis, St. Xavier University, New York.

Ediger, M. (1995). To Every Action There is an Opposite and Equal Reaction: An Essay on Teaching. Opinion Paper, (ED386319)

Ellingson, W. E., Long, E., & McCullough, K. (1997). Improving student motivation through the use of varied instructional and curricular adaptations.

Unpublished master's thesis, St. Xavier University, New York.

Fitz-Gibbon, C. T., & Morris, L. L. (1978). How to design a program evaluation. Beverly Hills, CA: Sage Publications Ltd.

Gardner, H. (1983). Frames of mind. New York: Basic Books, Inc.

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

Goleman, D. (1994) . Emotional intelligence. New York: Bantam Books.

Gould, S. J. (1996). The mismeasure of man. New York: W. W. Norton and Company, Inc.

Hayman, J. L. Jr. (1968). Research in education. Columbus, OH: Charles E. Merrill Publishing Company.

Hearne, D., & Stone, S. (1995). Multiple intelligences and underachievement: Lessons from individuals with learning disabilities. Journal of Learning Disabilities, 28(7) 439-448.

Herrnstein, R. J., & Murray, C. (1994). The bell curve. New York: Simon and Schuster, Inc.

Huitt, B. (1998). Intelligence. Educational psychology interactive: Intelligence. Available FTP: [www.valdosta.peachnet.edu/~whuitt/psy702/cogsys/intell.html](http://www.valdosta.peachnet.edu/~whuitt/psy702/cogsys/intell.html)

Klein, P. (1997). Multiplying the problems of intelligence by eight: A critique of Gardner's theory. Canadian Journal of Education, 22 (4), 377-394.

- Neisser, U., Boodoo, G., Bouchard, T. J., Boykin, W. A., Brody, N., Ceci, S. J., Halpern, D.F., Loehlin, J. C., Perloff, R., Sternberg, R. J., & Urbina, S. (1996). Intelligence: Knowns and unknowns. American Psychologist, 51(2), 77-101.
- Pierce, M. (1997). Improving elementary students' motivation. Unpublished master's thesis, St. Xavier University, New York.
- Smith, C. E. (1963). Educational research and the training of teachers. British Columbia, Canada: British Columbia Teachers' Federation.
- Sternberg, R. J. (1984). How can we teach intelligence? Educational Leadership, 42(1) 38-48.
- Thurstone, L. L. (1938). Primary mental abilities. Chicago, IL: The University of Chicago Press.

## **Appendix**

**Appendix A**  
**Annotated Bibliography of Multiple Intelligences Resources**

## **Multiple Intelligences Resources**

**1) Frames of Mind**  
**by Howard Gardner**  
 New York  
**Basic Books Inc.**  
 1983

This is the book that started it all for Howard Gardner. The reader will discover the basis of the theory of Multiple Intelligences as well as the historic path of the study of intelligence in general. Much research is quoted and referred to. Keep in mind that Gardner has made “modest theoretical advances” (from *Seven Ways of Knowing* by David Lazear, 1991, pg v) since writing this book. However the basic premise of the Multiple Intelligences Theory remains. In his introduction Gardner challenges the way we customarily think about the intellect. He states that educators need to devise more appropriate ways of assessing intellect and more effective ways of educating it. In part one (chapters 1-4) Gardner goes through a history of thoughts about intelligence and some of the biological foundations of intelligence as well as what an intelligence is. In part two (chapters 5-12) he discusses in detail each intelligence, gives examples of people in history who showed evidence of each intelligence and presents some of the evolutionary highlights of each intelligence. He then offers a critical examination of Multiple Intelligences and examines related theories. In part three (chapters 13 and 14) he discusses the implications and applications of Multiple Intelligences and relates them to other cultures.

**2) Seven Ways of Knowing-Teaching for Multiple Intelligences**  
**by David Lazear**  
 Palatine, Illinois  
**IRI/ Skylight Publishing, Inc.**  
 1991

This is an excellent book for the teacher who wants to awaken and discover the intelligences within himself or herself or for the teacher/leader who may be conducting a Professional Development workshop on Multiple Intelligences. It also offers many strategies for helping students discover and broaden their own intelligences. After a very readable introduction to Multiple Intelligences, Lazear goes through each of the intelligences and provides exercises to assist participants in getting a glimpse of the capacities connected with each intelligence. He then suggests practice sessions to strengthen and expand each intelligence. Appendices include reviews of the research on Multiple Intelligences, a Multiple Intelligences summary wheel, and fact sheets on each of the intelligences. Some blackline masters are also included.

**3) Multiple Intelligences Handbook- Lesson Plans and More**  
**by Bruce Campbell**  
 Stanwood, WA  
**Campbell and Associates**  
 1994

Campbell has been using a Multiple Intelligences approach in his classroom for seven years and wrote this book for teachers in 1994. His goal is to assist teachers who are just starting out with

Multiple Intelligences to help them with such questions as “How do we start?” “What resources do we need?” and “Do you have Multiple Intelligences lesson plans to share?”. The book is laid out in seven main sections which include topics such as-

Preparing the Multiple Intelligences classroom- where he lays out some models for the Multiple Intelligences classroom as well as lists of resources required for each intelligence.

Preparing your students and parents- which includes a simple explanation for parents as well as a student self reflection inventory.

Preparing for Multiple Intelligences teaching- where teachers are asked to reflect on their current teaching practices and stretch themselves to new and different modes.

Assessment in the Multiple Intelligences classroom- this outlines alternative assessment tools such as rubrics, portfolios, student self assessment and a Multiple Intelligences report card.

Teaching Multiple Intelligences lessons- 16 sample lessons are offered in this section.

Preparing students for self directed learning- outlines ways to implement independent projects with contracts and evaluation.

Teaching Multiple Intelligences curriculum units - Lists many ideas for theme units that can be implemented in the Multiple Intelligences classroom.

This handbook is user friendly and full of many useful and exciting strategies.

#### **4) Multiple Intelligences in the Classroom**

**by Thomas Armstrong**

**Alexandria, Virginia**

**Association for Supervision and Curriculum Development**

**1994**

Armstrong describes the history of intelligence tests as well as the development of the Multiple Intelligences theory. He then goes on to explain how one can uncover one's own intelligences as well as those in the students. He describes some possible curriculum development, “seven way” lesson plan ideas and teaching strategies as well as some classroom management issues.

Armstrong devotes a chapter to Multiple Intelligences and Special Education where he describes cognitive bypassing, remedial strategies and even gives some sample IEP's. The end of each chapter includes a section entitled “For Further Study” where readers can carry out their own “assignments” to further develop their knowledge and understanding of Multiple Intelligences.

#### **5) Multiple Intelligences- The Theory in Practice**

**By Howard Gardner**

**New York**

**Basic Books**

**1993**

A “distillation of work on the education of the frames of mind”. This book can be read in its entirety or each chapter can be read as a book itself. This book contains many of the same difficult concepts as in Frames of Mind and includes research descriptions and tables. In part 1 Gardner describes the original theory and some background to it as well as describes each intelligence. He relates intelligence to creativity and genius. In part 2 he outlines what a school system would look like if it were based upon a Multiple Intelligences approach. He then looks

upon some of the projects that are going on in the field of Multiple Intelligences in education. In the third section of this book, Gardner attacks some assessment issues and in the last section he offers possibilities for new directions in which Multiple Intelligences may move in the future. These readings are not just reprinted from the original articles and books rather Gardner has gone through and eliminated sections or added sections that he feels pertain to current research and understanding of Multiple Intelligences. The appendices include extensive lists of references.

#### **6) Seven Ways of Teaching**

**by David Lazear**

**Arlington Heights, IL**

**IRI/Skylight Training and Publishing Inc.**

**1991**

This book offers specific lessons using Multiple Intelligences in creative ways. Each intelligence is addressed in a different lesson that can be easily adapted to each teacher's situation or they can be used directly as they are outlined in the book. Lazear includes a lesson palette, similar to an artists' palette for each lesson, a model of the lessons and how they are applied, as well as side notes to explain why some steps are included or some background notes. Assessment tips are added for portfolio ideas and for the students' journals. Many extra lesson planning ideas are also contained at the end of each chapter. This book contains numerous illustrations, charts and diagrams which are easy to read and interpret. Blackline masters for journal ideas, webbing skills, checklists and graphic organizers are found at the back as well as a glossary of terms used in the book. The steps to the lessons are clearly laid out and easy to understand. This is a very practical and helpful guide.

#### **7) The First Seven... and The Eighth**

**A Conversation with Howard Gardner**

**By Kathy Checkley**

**Educational Leadership Sept 1997**

This article makes the reader aware of the current thinking on Multiple Intelligences by talking directly to Howard Gardner. He reviews the criteria for any of the intelligences to be considered as such as well as goes over what the newest intelligence is... the naturalist intelligence and why it is considered an intelligence. The author and Dr. Gardner go over some of the myths and Gardner critiques these myths. A chart is included which gives an overview of the intelligences.

#### **8) Seven Pathways of Learning**

**By David Lazear**

**Tucson , Arizona**

**Zephyr Press,**

**1994**

The latest research on metacognition documents four levels of information processing. Each level becomes more cognitively sophisticated than the one before it. Lazear has built this book around these levels to teach students, teachers and parents about Multiple Intelligences whereas his other books are about teaching for Multiple Intelligences (Seven ways of Knowing) and with Multiple Intelligences (Seven Ways of Teaching). Lazear's goal is to help students transfer the

use of their intellectual potentials to their everyday life through metacognition. This guide contains twenty meta-intelligence lessons and one hundred twenty lesson extensions. Reproducible pages and notes to parents are included at the end of each chapter. Each lesson is well laid out and explained clearly and many interesting and helpful diagrams are included.

### **9) Celebrating Multiple Intelligences**

**Created by the Faculty of The New City School**

**St Louis, Missouri**

**The New City School, Inc.**

**1994**

Since the Multiple Intelligences theory is not a theory of education or curriculum design it can be adapted to each school's identity and personalty; this is the premise that The New City School has based its work on. This book is geared to facilitating the teacher in growing and developing in the area of Multiple Intelligences whether they have little support from other staff and parents or a great deal of support. This book is unique in that it is written by a whole staff in a totally Multiple Intelligence School. It is organized by intelligence and age/grade level. Each chapter includes several lesson plans and activities to suit each intelligence, how to identify each intelligence in students and lists of resources for students and teachers. Lots of checklists, charts, diagrams and blackline masters are included. Topics such as Diversity, Theme Teaching, Learning Centres and Assessment are addressed in the last section of the book.

### **10) Mapping Inner Space**

**by Nancy Margulies, M.A.**

**Tucson, Arizona**

**Zephyr Press**

**1991**

The technique described in this book as mind mapping will not only enhance thinking skills but encourage cooperative learning and make learning fun. Mind Mapping is a system for "pouring ideas onto paper". This system is used to replace traditional note taking by using a central image, key words, colours, codes and symbols rather than words in a linear fashion in one colour on lined paper. Each page of text is represented by a mind map to guide the reader and give ideas or to use as handouts. The system uses many of the intelligences, and helps improve study skills, develop a positive self image, and expand thinking skills. Sections on parents, children with hearing impairments and special learners are included.

### **11) Multiple Intelligence Approaches to Assessment- Solving the Assessment Conundrum**

**by David Lazear**

**Tucson, Arizona**

**Zephyr Press**

**1994**

Supporters of the Multiple Intelligences theory do not believe that standardized testing accurately demonstrates what a child knows. They believe that assessment needs to be restructured so that it becomes a learning experience in itself. Lazear compares the old paradigm of assessment to the new paradigm and goes on to describe tools for assessment that can be

integrated into the Multiple Intelligences teacher's repertoire. He uses games, complex problem solving, multi-perceptual formal testing and profiles for authentic assessment. A Multiple Intelligences progress report is included at the end of this book.

### **12) Integrating Curricula with Multiple Intelligences**

**by Robin Fogarty and Judy Stoehr**

**Arlington Heights, IL**

**IRI/Skylight Training and Publishing, Inc.**

**1995**

Fogarty and Stoehr address the many reasons a teacher may move to integrating the curriculum with Multiple Intelligences. These may include the need for holistic ways to present information and curriculum overload among others. There are four main sections in this book. The first chapter provides information from academia as well as the classroom on the theories which form the basis for the rest of the book. Chapter two describes teaching teams and holistic teaching while chapter three covers frames for developing units based on higher order thinking skills, mindful decision making and problem solving. Chapter four shows how to thread life skills within and across subject matter. The final, short section discusses the tri-assessment model.

### **13) Cooperative Learning**

**by Barrie Bennet, Carol Rolheiser-Bennet and Laurie Stevahn**

**Toronto, Ontario**

**Educational Connections**

**1991**

This book outlines the basic theory of Cooperative Learning as well as strategies for implementation in the classroom. The concepts can be applied to many learning situations including a Multiple Intelligences classroom. Metacognition, self reflection and evaluation, interdependence and authentic assessment are all incorporated into cooperative learning as well as into teaching with Multiple Intelligences. This book describes the many structures for cooperative learning and how to apply it in the classroom. Sample lessons are provided, many of which could be directly applied to Multiple Intelligences lessons.

### **14) How Are Kids Smart?**

**Video featuring Howard Gardner**

**Port Chester, New York**

**National Professional Resources, Inc**

**1995**

The teachers and administration of Fuller Elementary School in Gloucester, Massachusetts have produced this video to highlight their Multiple Intelligences Project. They present a review of each of the intelligences as well as some myths associated with Multiple Intelligences. Howard Gardner is featured several times on this video and gives his support of this project. The video mentions reasons to implement Multiple Intelligences, Multiple Intelligences theory in practice, inclusion of special needs children and parent involvement . This video is highlighted as an administrators version but it is an excellent overview for teachers, parents and administrators.

**15) An Introduction to Using Portfolios in the Classroom**  
**by Charlotte Danielson and Leslye Abrutyn**  
**Alexandria, Virginia**  
**Association for Supervision and Curriculum Development**  
**1997**

One effective and natural tool to evaluate student knowledge as encouraged in many Multiple Intelligence resources is the student portfolio. This handbook describes types of portfolios, the portfolio development process, the benefits and challenges of portfolios, and portfolio management. It offers several analytic rubrics for portfolio assessment and other charts that are easy to implement in the goal setting and portfolio process. This book could easily be read in one sitting and offers a great deal of information within its seventy pages.

**16) How to Differentiate Instruction in Mixed Ability Classrooms**  
**by Carol Ann Tomlinson**  
**Alexandria, Virginia**  
**Association for Supervision and Curriculum Development**  
**1995**

Differentiated instruction does not mean that each child is on an individualized program. This book explains that differentiated instruction means multiple approaches to teaching, in whole class, small group or individual settings. Multiple Intelligences is mentioned as one of these approaches among others that can be used in a classroom. The author explains the rationale for using differentiated instruction, the role of the teacher, strategies for managing a differentiated classroom, preparing students and parents for a differentiated classroom, some tips for lesson plans and assessment in the differentiated classroom. Examples are offered to illustrate how some teachers are differentiating instruction and an appendix at the end of the book shows some instructional and management strategies for differentiated, mixed ability classrooms. This book is a good example of how Multiple Intelligences can become part of a teachers total repertoire of teaching strategies.

**17) Education on the Edge of Possibility**  
**by Renate Nummela Caine and Geoffrey Caine**  
**Alexandria, Virginia**  
**Association for Supervision and Curriculum Development**  
**1997**

The Caines believe that society is being pulled into chaos and that educators can help change the direction of the turmoil. They have done much research on brain-based learning and this book gives the results and conclusions of using this approach in two schools. The book is divided into three sections which can each be read as a book in itself. Section one reviews the theory that reality is much more fluid and interconnected than previously thought and that educators need to rethink their roles in light of this new thinking. The second section describes how the Caines worked with teachers to implement brain-based learning. Section three highlights what the authors learned and how what they have learned should help in creating goals for instructional change. Much of the research and conclusions apply to the theory of Multiple Intelligences therefore this book offers good background knowledge into the latest research on learning.

**18) The First Seven... and the Eighth- A Conversation with Howard Gardner****by Kathy Checkley****Educational Leadership****Volume 55 Number 1****September 1997****Pages 8-13**

In this interview Gardner updates the reader on his current research in the area of Multiple Intelligences. He explains the eighth intelligence-the naturalist intelligence and how to develop the intelligences of students. A description and critique of the myths revolving around Multiple Intelligences follows. A brief overview of the intelligences is included.

**19) How Teachers Interpret Multiple Intelligences Theory****by Linda Campbell****Educational Leadership****Volume 55 Number 1****September 1997****pages 14-19**

The theory of Multiple Intelligences does not dictate one particular teaching or assessment style and as this article points out, teachers are using many different approaches to teaching with and about Multiple Intelligences. At least five curriculum formats are being developed and used: lesson designs, interdisciplinary curriculums, student projects, assessments and apprenticeships. Each format is described in this article although it is recognized that there are probably as many models of teaching Multiple Intelligences as there are teachers.

**20) Multiple Intelligences as a Partner in School Improvement****by Howard Gardner****Educational Leadership****Volume 55 Number 1****September 1997****Pages 20-21**

Gardner outlines some of the other articles in this issue of Educational Leadership but he also points out some other interesting thoughts that he has on Multiple Intelligences. He stresses that educators need to allow time for the full implications of Multiple Intelligences to be absorbed and understood. Within his description of the articles, Gardner issues some challenges for practitioners and encourages further communication between himself and educators implementing Multiple Intelligences.

**21) Integrating Learning Styles and Multiple Intelligences****by Harvey Silver, Richard Strong and Matthew Perini****Educational Leadership****Volume 55 Number 1****September 1997****Pages 22-27**

In this article, the authors describe an integration of learning styles and the Multiple Intelligences theory that may minimize the limitations of each while enhancing their strengths. They offer some background information and strengths and limitations on both learning styles and Multiple Intelligences as well as how the two could be integrated. A chart and lists of ideas are included in this article.

**22) Where Do the Learning Theories Overlap?****By Pat Burke Guild****Educational Leadership****Volume 55 Number 1****September 1997****Pages 30-31**

The author of this article states that Multiple intelligences, learning styles, and brain based education all are distinct fields of study but that they share similar outcomes when applied in the classroom. This articles explains six areas of overlap and commonalities and then lists some common cautions for these theories.

**23) The Greening of Learning****by Maggie Meyer****Educational Leadership****Volume 55 Number 1****September 1997****Pages 32-34**

This article details how some sixth grade teachers in Puget Sound have applied Multiple Intelligences directly to the curriculum of their school district. They have not only included the eighth intelligence called the naturalist intelligence but they have placed particular emphasis on developing this intelligence because of the strong interest in natural resources and the environment in their community. The article explains how the assignments were carried out by the students and some assessment choices that were used in this project.

**24) A Think Tank Cultivates Kids****by Jean Sausele Knodt****Educational Leadership****Volume 55 Number 1****September 1997****Pages 35-37**

There's a room in a Virginia school that "takes the lid off" of learning experiences for students.

The Kent Gardens School in Maclean, Virginia has Multiple Intelligences and critical and creative thinking as its focus. Within this school is a large room with windows, boxes of project material, rugs, pillows, plants and music playing in the background. Groups or individuals are invited to come into the “lab” and work on projects which reflect and develop the Multiple Intelligences. This article explains how this room is set up and why it was established as well as some of the interactions that go on in this special place.

**25) The Summer Stars Program**

**by Mary Lou Cantrell, Susan Austin Ebdon, Russell Firlik, Diane Johnson and Dianne Rearick**

**Educational Leadership**

**Volume 55 Number 1**

**September 1997**

**Pages 38-41**

The authors of this article have been running a summer camp for elementary children for the past three years based on Gardner’s theory of Multiple Intelligences. This article highlights a typical day at this camp, explains some problems that have arisen over the years and how they solved those problems. Next, the authors go on to tell their hopes and plans for the future of their camp. Some e-mail addresses are given in the references section of this article.

**26) Frog Ballets and Musical Fractions**

**by Thomas R. Hoerr**

**Educational Leadership**

**Volume 55 Number 1**

**September 1997**

**Pages 43-46**

At the New City School in St. Louis, Missouri the theory of Multiple Intelligences has affected how the curriculum is designed, how students are assessed, how teachers communicate with parents and how teachers teach. This article explains that this school has been a Multiple Intelligences school since 1988 and describes how the teachers are implementing some of the changes made over the years in curriculum development, student assessment, communicating with parents and faculty collegiality. The author also notes some challenges for the future which teachers of Multiple Intelligences should be aware of. A sample of a portion of the Fourth Grade Progress Report is presented and their World Wide Web site and an e-mail address is also included.

**27) A Multiple Intelligences Inventory**

**by Veronica Borruso Emig**

**Educational Leadership**

**Volume 55 Number 1**

**September 1997**

**Pages 47-50**

Emig, a Social Studies teacher in Pennsylvania has applied the theory of Multiple Intelligences to her teaching and assessing of students and feels she is a better teacher because of it. She outlines

two examples of how she teaches and assesses her students and includes a Teachers' Multiple Intelligences Inventory to self evaluate these two lessons. Her e-mail address is included.

**28) From Crocket to Tubman**  
**by Wendy Ecklund Lambert**  
**Educational Leadership**  
**Volume 55 Number 1**  
**September 1997**  
**Pages 51-54**

Using project based learning and Multiple Intelligences, this teacher has taught American history at the high school level for a number of years in an exciting way. This article outlines how she has used these strategies beginning with a Personal Inventory of Strengths and moving to how the students decide on their projects. She ends her article by quoting some of the responses from her students. A wonderful poem written by one of her students is also included. The author's e-mail address is offered.

**29) Three Billy Goats and Gardner**  
**by Gayle Emery Merrefield**  
**Educational Leadership**  
**Volume 55 Number 1**  
**September 1997**  
**Pages 58-61**

The speech-language pathologist who wrote this article worked directly with the teacher of a preschool special education program in creating and carrying out a project for children with disabilities. These disabilities included speech- language delays, auditory memory difficulties, impulse control problems and emotional difficulties among others. The author and the teacher had been using many of Gardner's techniques unknowingly and wanted a theoretical underpinning that they could explain to parents and colleagues. They also wanted to increase learning for the students even further. They were not able to find much literature on the topic of Multiple Intelligences and special needs children, particularly preschool children, so they began to record their own results. This article explains what the teacher, the speech-language pathologist and two teaching assistants did to help their preschool special education children learn through a Multiple Intelligences approach to "The Three Billy Goats Gruff". The author's e-mail address is included.

**30) Multiple Intelligences Meet Standards**  
**by Jan Greenhawk**  
**Educational Leadership**  
**Volume 55 Number 1**  
**September 1997**  
**Pages 62-64**

This article describes how a school in Maryland explained the theory of Multiple Intelligences to the parents of the students in their school and convinced teachers of the benefits as well. The goals of the project are outlined in the article but among them was a need for higher scores on

standardized tests. A brief explanation is given of the approaches that were used with the students but more detail is given as to the interactions and concerns of the parents and how these issues were dealt with. This school has seen very positive results with the Multiple Intelligences approach to learning.

**31) In Australia: Multiple Intelligences in Multiple Settings**  
**by Wilma Vialle**  
**Educational Leadership**  
**Volume 55 Number 1**  
**September 1997**  
**Pages 65-69**

Wilma Vialle is a Professor with the University of Wollongong in Australia and has had the opportunity to observe Multiple Intelligences classrooms in thirty schools as well as interview one hundred fifty teachers since 1993. She has discovered that many teachers in Australia are teaching to or through Multiple Intelligences or are using a combination of both. These teachers include those who teach preschool, elementary, special education and high school. Several examples are given as to how the units are planned and carried out as well as some positive changes that have been noticed since Multiple Intelligences has been applied. Some ideas are mentioned as to how some teachers keep parents informed and some teacher comments are presented. An e-mail address is given.

**32) In New South Whales: The Brain- Flex Project**  
**by Christopher Bounds and Lyn Harrison**  
**Educational Leadership**  
**Volume 55 Number 1**  
**September 1997**  
**Pages 69-70**

Since curriculum in this authors' New South Whales school district is defined and structured by the government an attempt is being made by the Marist priests and lay teachers at this author's school to allow time for students to learn strictly for the sake of learning through individual Multiple Intelligences projects. The Marist tradition states that school is an extension of the family and that the curriculum should focus equally on the physical, intellectual, moral and spiritual development of the child. The "Brain Flex" project is designed to challenge students to stretch themselves in their learning through a) choosing a topic, b)writing a contract and c)following through on the contract. Background information is offered in this article as to why the school chose a Multiple Intelligences approach and a home page address is given.

**33) Using Multiple Intelligences Theory to Identify Gifted Children**  
**by Carol Reid and Brenda Romanoff**  
**Educational Leadership**  
**Volume 55 Number 1**  
**September 1997**  
**Pages 71-74**

A gifted program has been in operation in the author's North Carolina school since the mid

1960's but in 1991 the program for the younger students was changed when the teachers began assessing, designing curriculum and teaching based on the Multiple Intelligences theory. This article explains some characteristics of gifted students and how this particular school identifies them. It also describes the philosophies at this school and some of the results of using Multiple Intelligences. It also explains how performance assessments are carried out at this school. An e-mail address is given.

### **34) Quantifying Multiple Intelligences' Gains**

**by Andrew Latham**

**Educational Leadership**

**Volume 55 Number 1**

**September 1997**

**Pages 84-85**

This article is basically a review of the Multiple Intelligences theory with some references to specific schools. Some "Myths and Traps" are mentioned as is the fact that standardized test scores have not shown an increase in students who learn through Multiple Intelligences. However, it is made clear that Multiple Intelligences has many other advantages to student learning. An e-mail address is given.

### **35) Web Wonders**

**by Carolyn R Pool**

**Educational Leadership**

**Volume 55 Number 1**

**September 1997**

**Pages 86-87**

These two pages are full of sites on the World Wide Web that are related to Multiple Intelligences and Learning Styles. Each site is annotated with a brief description and highlights of the site. More information about Web sites on Multiple Intelligences is offered elsewhere in this annotated bibliography.

### **36) Beyond The I.Q.: Education and Human Development**

**by Howard Gardner**

**Harvard Educational Review**

**Volume 57 Number 2**

**May 1987**

**Pages 187-193**

In this article Gardner describes his design of an ideal school which would be based on the assumptions that not everyone learns in the same way and that no one person can learn all there is to learn. The article begins with some history of the I.Q. test, then moves to why and how the Multiple Intelligences theory was developed and what the seven intelligences are. It also offers an overview of two of Gardner's research sites and presents some cautions in utilizing the Multiple Intelligences Theory. He ends this article with his version of the three biases that our society suffers from- The "westest", the "bestest", and the "testest" biases.

**37) Multiple Intelligences: Seven Ways to Approach Curriculum**  
**by Thomas Armstrong**  
**Educational Leadership**  
**November 1994**  
**Pages 26-28**

This short article offers an exciting strategy for teaching “Time” to grade one students. Armstrong utilizes almost all of the intelligences in his hour and a half lesson and suggests other possibilities for extensions of this theme. A list of questions to ask when planning a Multiple Intelligences lesson is presented. Armstrong insists that Multiple Intelligences is not only for use in the primary grades and gives suggestions for teaching at the high school level.

**38) Promoting Social and Emotional Learning**  
**by Maurice J. Elias...(et al.).**  
**Alexandria, Virginia**  
**Association for Supervision and Curriculum Development**  
**1997**

Teachers are discovering that when student’s social and emotional skills are attended to, their academic achievement improves. Studies in the field of neuropsychology have shown that relational, social and emotional skills are essential for cognitive development. Because the Multiple Intelligences are socially based and interrelated, this book is very helpful for teachers wanting to employ this theory. The book discusses what social and emotional learning is, how teachers can help develop social and emotional skills in their students and how these can be evaluated. It also contains a self reflective chapter and several appendixes.

**39) The Cooperative Think Tank**  
**by James Bellanca**  
**Palatine, IL**  
**IRI/Skylight Training and Publishing**  
**1990**

This is a book designed to help teachers motivate their students to think more skilfully in a cooperative classroom. It contains visual organizers which are based on cooperative learning lessons to bring thinking to the metacognitive level. Venn Diagrams, The Ranking Ladder, The Pie Chart, The Mind Map and The Right Angle are only a few of the many visual organizers provided in this book. Each lesson states a purpose, vocabulary and what thinking skill is being targeted. Samples are provided for the elementary level, the middle school level and the high school level within each lesson.

**40) Seven Areas of Smartness**  
**by Francis Sheridan Goulart**  
**Brio Magazine**  
**September 1996**  
**Page 19**

This one page questionnaire is targeted at teenage girls to help them discover their strong areas

of intelligence and to realize that they can develop other areas. It consists of 30 true-false questions and a score chart to indicate where their strength is. This questionnaire could be applied to adults as well as teenagers although more processing and development should occur for one to get a true picture of strong intelligences at any age. This survey is intended as a fun, quick, self reflective activity.

#### **41) Reflections On Multiple Intelligences - Myths and Messages**

**by Howard Gardner**

**Phi Delta Kappan**

**November 1995**

**Pages 200-209**

In the twelve years since Gardner developed the Multiple Intelligences theory, many interpretations of how to apply it have arisen. During this process at least seven myths have grown up around the theory and Gardner uses this article to juxtapose some “realities” against these myths. Some of the myths include: a desire to create seven tests to identify the seven intelligences, an intelligence is the same as a domain or a discipline, an intelligence is the same as a learning style or working style and Multiple Intelligences theory is not empirical. Gardner also describes three ways that education can be enhanced by a Multiple Intelligences approach.

#### **42) Nurturing Kids' Seven Ways of Being Smart**

**by Kristen Nelson**

**Instructor**

**July/ August 1995**

**Pages 26-34**

This is a very helpful article which outlines an introductory unit for using Multiple Intelligences in the classroom. Nelson explains why Multiple Intelligences is needed in today's classrooms, what the intelligences are and how to carry out a beginning unit in math using Multiple Intelligences. She explains what is meant by the term “flow”, discusses many flow area ideas and offers a checklist entitled “How to Enhance Your Teaching Smarts”. Through the use of a pie chart and a “Draw Out Your Student's Strengths” chart, Nelson demonstrates how she teaches the concept of Multiple Intelligences to her grade six classes. Many practical examples are offered as is a list of resources for further growth in the area of Multiple Intelligences.

#### **43) How the New City School Applies the Multiple Intelligences**

**by Thomas R. Hoerr**

**Educational Leadership**

**November 1994**

**Pages 29-34**

At The New City School in St Louis, MO., Multiple Intelligences has become more than just a theory of intelligence. It is a philosophy about education with implications for how kids learn, how teachers teach and how schools should operate. The staff at this school has brought Multiple Intelligences from a professional development focus to an application level where it has affected the development of curriculum, assessment of students and the communication with parents. This article explains how this transformation took place and how this school continues to incorporate

the theory of Multiple Intelligences in a practical way. Some detail is given in how assessment has improved at this school with an emphasis on Genuine Understanding. Some obstacles are also shared with the realization that some problems require more time to come to a solution.

**44) The First Grade Plant Museum**  
**by Christine Wallach and Susan Callahan**  
**Educational Leadership**  
**November 1994**  
**Pages 32-34**

This article is nestled within the article entitled “How The New City School Applies the Multiple Intelligences” and gives a more specific view of one particular project that was completed at The New City School. This project was conducted by Grade One students and involved a great deal of thinking, reading, researching and designing on their part. After a study on plants and museums the teachers and students embarked on the task of creating a plant museum at this school. The project is outlined from start to finish in this article with many exciting suggestions.

**45) On Teaching For Understanding: A Conversation with Howard Gardner**  
**by Ron Brandt**  
**Educational Leadership**  
**April 1993**  
**Pages 4-7**

This conversation with Howard Gardner is based on his book entitled “The Unschooled Mind” (1991). Gardner’s research has shown that students don’t truly understand most of what they are taught. They are not able to take knowledge and apply it to another setting. Gardner sites several examples in different subject areas where this has proven to be true and then goes on to explain what can be done to resolve this problem.

**46) Five Standards of Authentic Instruction**  
**by Fred M. Newmann and Gary G. Wehlage**  
**Educational Leadership**  
**April 1993**  
**Pages 8-12**

Although this article does not refer to Gardner or to Multiple Intelligences it does support many of the points that are brought out in the Multiple Intelligences Theory. In 1990 Newmann and Wehlage began to explore why many innovations in education fail to improve the quality of instruction or student achievement. They found that two main problems exist that cause conventional schooling to be unauthentic: often the work does not allow the students to use their minds well and the work has no value to the students beyond success in school. The authors created five standards or scales for evaluating instruction that represented the quality of intellectual work. These scales or standards are not tied to any particular teaching method. The five standards are; Higher Order Thinking, Depth of Knowledge, Connectedness to the World Beyond the Classroom, Substantive Conversation, and Social Support for Student Achievement. Each scale is described in this article as well as how the authors are using the framework in observations.

**47) Using Multiple Intelligences to Set Goals****by Launa Ellison****Educational Leadership****October 1992****Pages 69-72**

During conferences with parents and students in September and February this teacher discusses goals, strengths and difficulties the child may be experiencing. A goal setting form based on the Multiple Intelligences theory is used during this conference and a sample is included in this article. Some guiding questions for the teacher are offered as well. The goal setting conferences are an important part of this teachers assessment documentation.

**48) How Our School Applied Multiple Intelligences Theory****by Thomas Hoerr****Educational Leadership****October 1992****Pages 67-68**

This article is written as a caution to schools who are planning to use the Multiple Intelligences approach within school wide themes. The New City School in St. Louis, MO. decided to use school wide themes when implementing a Multiple Intelligences focus in their school and they found several problems with this approach. These problems are detailed and some solutions are offered which this school found helpful. The article briefly addresses some of the assessment issues that come with applying Multiple Intelligences as well as stating some added benefits to using this approach.

**49) Quest 2000- Exploring Mathematics****by Ricki Wortzman, Lalie Harcourt, Brendan Kelly, Peggy Morrow, Randall I. Charles, David C. Brummett, Carne S. Barnett****Don Mills, Ontario****Addison Wesley Publishers Ltd.****1997**

This new math series is based on ten Program Principles which include; learning through problem solving, communicating is core to all mathematics activities, mathematics is accessible to children of different experiences, interests, language, learning styles and abilities and assessment should be broad based. Since these are part of the principles of the Multiple Intelligences theory, this math series would fit well in the Multiple Intelligences classroom. Each unit is based on a key question, core activities, "Math Workouts", and culminating activities. Assessment is done through embedded assessment, performance assessment, portfolios and student self assessment. The "Exploration Centres" are specifically geared to accommodating various learning styles, and these could be adapted to become Multiple Intelligences activities although not all intelligences are addressed. This series runs from Kindergarten to Grade 6 and challenges students to use higher order thinking skills throughout. The student books are not typical "workbooks" and some parents may have problems as they may not be able to help their child as much at home. Teachers need to be sure they have a good understanding of the lessons

before facilitating students, but the results are worth the effort.

**50) Project Spectrum: An Innovative Assessment Alternative**

**by Mara Krechevsky**

**Educational Leadership**

**February 1991**

**Pages 43-48**

In a political climate that places increasing pressure on educators, Project Spectrum based on Howard Gardner's theory of Multiple Intelligences, offers a developmentally appropriate alternative to instruction and assessment. This approach is centred on a wide range of activities and assessment is part of these activities not a separate undertaking. The areas of cognitive ability are examined in this article as well as distinctive features of the Project. Advantages and Disadvantages are mentioned with the disadvantages being focussed on the reaction of parents to the application of Multiple Intelligences.

**51) Educating for Insight**

**by D.N. Perkins**

**Educational Leadership**

**October 1991**

**Pages 4-8**

Since students are not demonstrating insight or deep understanding, this author and university professor, along with Howard Gardner and Vito Perrone launched an inquiry into approaches for teaching deep understanding. They found that although almost all teachers were anxious to teach for understanding, most students were not getting as much insight as desired. This article describes several approaches which help students understand better such as mental models, coaching and teaching for transfer. Perkins also argues for a connected curriculum not only within subject matters but across subject matters. Not many practical ideas are offered in this article but some good background knowledge is given. Many references are listed at the end of the article which may prove helpful for developing knowledge on deeper understanding.

**52) What Really Counts in Schools**

**by Elliot W. Eisner**

**Educational Leadership**

**February 1991**

**Pages 10-17**

Eisner believes that although everyone is born with a brain, they do not necessarily possess a mind. This must be developed through experiences throughout ones' lifetime. Learning does not end after schooling. Eisner then goes on to list his national educational imperatives which he feels really count in schools. These imperatives are: teaching children that the exploration of ideas is sometimes difficult but often fun and that the journey is the reward, helping youngsters learn how to formulate questions and find answers to these questions, the development of multiple forms of literacy, teaching the young the importance of wonder, helping children realize that they are part of a caring community and teaching children that they are unique and special. These imperatives blend in well with the Multiple Intelligences Theory.

**53) The Theory of Multiple Intelligences : Beyond Math and Verbal Abilities  
by Dr. Edward F. Droge, Jr.**

**Internet:** <http://www.parentsplace.com/readroom.authors/droge/multint.html>

**Accessed:** November 19, 1997

This is a very brief article explaining the theory of Multiple Intelligences with an outline of what each of the intelligences is. Dr. Droge points out that recently the interpersonal and intrapersonal intelligences have been highlighted by phrases such as Emotional Intelligence and that much research has been conducted in this particular area. This article is taken from a website which consists of a parent newsletter with news on nutrition, health, cooking etc. See the annotation on this website in this bibliography.

**54) The Naturalist Intelligence  
by Thomas Hoerr**

**Internet:** [http://www.newhorizons.org/trm\\_hoerrmi.html](http://www.newhorizons.org/trm_hoerrmi.html)

**Accessed:** November 19, 1997

The Multiple Intelligences Theory is being used by educators because it gives students more opportunities to succeed. The eighth intelligence, the naturalist intelligence, is described by Hoerr and several examples of how it can be used are laid out in this article. He also discusses how Meriwether Lewis, of the Lewis and Clark expedition, and Charles Darwin each showed a strong naturalist intelligence. Gardner's Criteria for Intelligence is presented. This article is taken from the New horizons web site and from one of Hoerr's books. See more information about this website elsewhere in this bibliography.

**55) Multiple Intelligences**

**Internet:** [http://www.ascd.org/Multiple Intelligences/lessons/lesson1.html](http://www.ascd.org/Multiple%20Intelligences/lessons/lesson1.html)

**Accessed:** September 20, 1997

The Association for Supervision and Curriculum Development offers a website among other resources to promote quality education. The website presents a set of eight lessons on Multiple Intelligences. The first lesson explains intelligence, the theory of Multiple Intelligences and the seven intelligences. Thereafter, each lesson explains an intelligence, gives examples of questions to develop that intelligence and a Classroom Connection. The lessons can be taken at one sitting or on different days at the convenience of the learner. Some video and audio of Howard Gardner is offered however the learner's computer must have a realaudio plug-in. Some parent advice is presented and many other links on Multiple Intelligences are offered for those who wish to further explore this topic. Related readings are also mentioned. For more about the ASCD website, see the listing elsewhere in this bibliography.

**56) Multiplying Intelligence in the Classroom****by Bruce Campbell****On The Beam****Winter 1989****Internet: [http://www.newhorizons.org/art\\_miclsrm.html](http://www.newhorizons.org/art_miclsrm.html)****Accessed: November 6, 1996**

Bruce Campbell became intrigued with the theory of Multiple Intelligences and developed a program to teach the seven intelligences to his third grade class. Through centres and a thematic approach, Campbell's students have learned about Planet Earth using their seven intelligences. Campbell states what his centres consist of and briefly explains the layout of his classroom.

**57) The Research Results of a Multiple Intelligences Classroom****by Bruce Campbell****On The Beam****Fall, 1990****Internet: [http://www.newhorizons.org/art\\_mireserch.html](http://www.newhorizons.org/art_mireserch.html)****Accessed: November 5, 1996**

Campbell embarked on an action research project during the 1989-90 school year to explore the results of Multiple Intelligences based instruction with his third grade class. After retesting and verifying his observations, Campbell developed ten hypotheses regarding a Multiple Intelligences based approach to teaching. He lists these ten hypotheses as well as a surprise result within himself.

**58) Multiple Intelligences****Open Learning Technology Corporation Limited****Internet: <http://www.oltc.edu.au/cp/04m.html>****Accessed: November 5, 1996**

An overview of Multiple Intelligences is given in this article as well as detailed explanations on each of the seven intelligences. After each explanation a list of links to other sites is presented to answer other questions the learner may have about Multiple Intelligences. Some of the titles are; "What is the traditional view of intelligence?", "How has this view impacted schools historically?" and, "How can Multiple Intelligences be applied in a real-world context?"

**59) Multiple Intelligences****Internet: <http://www.cms.k12.nc....1s/Sharon/Multipl.html>****Accessed: November 5, 1996**

The theory of Multiple Intelligences has been at the base of curriculum design at Sharon School for the past three years. This is a very brief but informative article that explains the seven intelligences and what the child who is strong in each intelligence likes to do. It is interesting to note and read about the number of different schools that are applying Multiple Intelligences.

**60) Humour and the Multiple Intelligences****by Dee Dickinson****Internet: [http://www.newhorizons.org/rech\\_mi.html](http://www.newhorizons.org/rech_mi.html)****Accessed: October 28, 1996**

Teaching with a sense of humour is a special tool for learning and survival in today's classroom. In this article Dickinson offers several ideas for how a sense of humour can be added to a Multiple Intelligences classroom. She lists each intelligence and gives one or two suggestions for humorous ways to support the lesson or how students can build humour into their responses.

**61) Practical Intelligence for Success in School****by Robert Sternberg, Lynn Okagaki and Alice S. Jackson****Educational Leadership****September 1990****Pages 35-39**

Tacit knowledge is the knowledge that is not explicitly taught or even verbalized but is necessary for an individual to thrive in an environment. Many students do not appear to have this knowledge and therefore do not know how to allocate time for homework, prepare papers, study for tests or talk to a teacher. This article explains the Yale Practical Intelligence for School curriculum, the teacher training and lesson designs and gives results of the field study that was carried out. The project was a result of a blending of the Multiple Intelligences theory and Sternberg's triarchic theory of human intelligence. An easy to understand chart is presented as well as a list of some of the skills required within tacit knowledge.

**62) Understanding a Brain based Approach to Learning and Teaching****by Renate Nummela Caine and Geoffrey Caine****Educational Leadership****October 1990****Pages 66-70**

The Caine's research has shown that basic assumptions about traditional education are being challenged. They have found that emotions, stress and threat affect learning, memory and motivation more than previously thought. They explain twelve principles for brain-based learning and offer implications for education. The authors suggest that not only do we learn from experiences but that there is much more to this process than educators have appreciated. The Multiple Intelligences theory is based on experiences and meaningful learning therefore it would be beneficial for the Multiple Intelligences teacher to read this article.

**63) Learning Through Many Kinds of Intelligence****by Dee Dickinson****Internet: [http://www.newhorizons.org/art\\_lrnthrumi.html](http://www.newhorizons.org/art_lrnthrumi.html)****Accessed: November 5, 1996**

Dickinson presents a brief overview of the Multiple Intelligences theory as well as a chart listing each of the intelligences and what it involves. This chart also tells how each of the intelligences may be exercised.

**64) Multiple Intelligences and Technology**

by Jack Edwards

Internet: [http://www.firn.edu/~f...ut/dec95/mult\\_int.html](http://www.firn.edu/~f...ut/dec95/mult_int.html)

Accessed: October 28, 1996

Edwards states in this article that curriculum design and delivery must change so that all of the intelligences are addressed. Due to the recent advances in software and hardware one way that this can be done is through the use of technology. Edwards then presents a description of what characteristics a student would demonstrate in each of the intelligence areas and offers suggestions for integrating technology into each area to strengthen it.

**65) Multiple Ways of Knowing: Howard Gardners Theory of Multiple Intelligences Extend and Enhance Student Learning**

by Marian S. Beckman

Internet: <http://www.earlychildh...om/articles/artmi.html>

Accessed: October 28, 1996

Dr. Beckman is conducting a research project using the theory of Multiple Intelligences in her multi-age 2/3 classroom. She has found that the benefits far outweigh the frustrations in preparing the centres that were set up. This article begins with a description of some of the underlying frameworks within the Multiple Intelligences Theory and then moves on to an explanation of how the centres were set up in her classroom. Beckman also relates how a "Celebration of Learning" is accomplished at the end of a unit.

**66) Patterns and the Eighth Intelligence**

by Robert Barkman

Internet: [http://www.newhorizons.org/trm\\_mipattern.html](http://www.newhorizons.org/trm_mipattern.html)

Accessed: September 20, 1997

Barkman believes that the eighth intelligence not only has its' own identity but that it also enriches the other seven intelligences. While the eighth intelligence is labelled the naturalist intelligence, Barkman points out that the ability to recognize and classify comes from a natural ability to identify patterns. He then goes on to explain how patterns can be found in mathematics, body movements, space and language and how this enriches the other seven intelligences.

**67) Multiple Intelligences Theory and the Arts**

by Kathleen Gaffney

Internet: <http://www.njcommunity.org/artsgenesis/chrysalis.html>

Accessed: September 20, 1997

This is a chapter taken from Gaffney's book entitled Chrysalis: Multiple Intelligences Theory and the Arts (1995). After a brief history of the theories of intelligence and Multiple Intelligences, Gaffney explains how the arts need to be included as core curriculum subjects. She then explains each of the intelligences and how the arts could play a part in developing that intelligence.

**68) The Naturalist Intelligence****by Bruce Campbell****Internet: [http://www.newhorizons.org/article\\_eightintel.html](http://www.newhorizons.org/article_eightintel.html)****Accessed: September 20, 1997**

After a brief explanation of the eighth intelligence, Campbell lists a Menu of Instructional Strategies for the Naturalist Intelligence, Some Naturalist Subjects and Some Naturalist Resources. Since no explanations are given not all the ideas on the lists will be easily utilized by teachers of Multiple Intelligences.

**69) Intelligence in Seven Steps****by Howard Gardner****Internet: [http://www.newhorizons.org/crfut\\_gardner.html](http://www.newhorizons.org/crfut_gardner.html)****Accessed: September 20, 1997**

In this article, Gardner describes seven historical steps that have occurred in the development of theories on intelligence. He then explains what is happening at Project Spectrum, a curriculum and assessment project for children, Arts Propel, a cooperative project in arts and humanities assessment and the Key School, an experimental public school. Gardner's last two points are focussed around his hopes for future projects in the study of intelligence.

**70) A Fifty School Arts Education Demonstration Project****by Eric Oddleifson****On The Beam****Fall, 1990****Internet: [http://www.newhorizons.org/art\\_fiftyscharts.html](http://www.newhorizons.org/art_fiftyscharts.html)****Accessed: September 20, 1997**

Research results from fifty different schools which have incorporated the arts into the basic curriculum are presented in this article. The results suggest that when music, drama, visual arts dance and literature/creative writing are emphasized along with the other, more traditional subject areas, two modes of "doing" are engaged and this increases test scores. Several schools are mentioned in a chart with their previous history and their current academic status. This theory ties in well with the theory of Multiple Intelligences where the intelligences work together and overlap.

**71) Multiple Intelligences Power up Math Teaching****by Mark Wahl****Internet: [http://www.newhorizons.org/restr\\_wahl1.html](http://www.newhorizons.org/restr_wahl1.html)****Accessed September 20, 1997**

Although the National Council of Teachers of Mathematics supports the use of more projects, investigations and open ended questioning in math activities, Mark Wahl does not see this as enough to bring math to a personal level. Through one specific math problem, Wahl guides the reader through suggestions of how to teach math with each of the intelligences. Wahl is also the author of Math for Humans (1997).

**72) An Interview With Howard Gardner  
by Ronnie Durie**

**Internet:** [http://www.newhorizons.org/trm\\_duriemi.html#2](http://www.newhorizons.org/trm_duriemi.html#2)  
**Accessed:** November 19, 1997

Gardner states in this interview that everything can be taught in several ways and that the more educators can match approaches of teaching and learning to children, the more educational success they will have. Gardner also explains the naturalist intelligence and two goals that he has for the Multiple Intelligences movement.

**73) Multimedia and Multiple Intelligences  
by Shirley Veenema and Howard Gardner**

**The American Prospect  
November-December 1996  
Internet:** <http://epn.org/prospect/29/29veen.html>  
**Accessed:** September 20, 1997

This rather lengthy article examines one particular example of interactive technology and how it uses the intelligences to encourage students to learn. After a description of the history of cognitive science and of some trends in education, a CD-ROM which takes advantage of the intelligences is introduced. This CD-ROM shows how a variety of minds can gain access to knowledge. The CD-ROM, entitled Antietam/Sharpsburg revolves around an American battle which was fought at Sharpsburg, Maryland in 1862. Much detail is offered about this CD-ROM and how it encourages the use of many intelligences as well as critical thinking. The authors note that technology in itself cannot create a revolution in educational approaches or results but they state that educators need to make greater efforts to reach more students with a variety of intellectual strengths and styles.

**74) 7 Kinds of Smart: Identifying and Developing Your Many Intelligences  
by Thomas Armstrong**

**New York  
Penguin Books  
1993**

Using the theory of Multiple Intelligences as a base, Armstrong not only explains the theory itself and each of the intelligences, but he offers the reader 25 ways to develop each of the intelligences. He then guides the reader through the steps of awakening any late blooming intelligences and strengthening weak intelligences. The last chapters offer assistance to those wanting to match their career path to their intelligences and to those wanting to improve relationships with their partners. Armstrong includes many checklists and exercises throughout the book for those readers who are willing to do a lot of "homework". An extensive list of resources for developing each intelligence is offered at the end of the book.

**75) Multiple Intelligences: A Collection**  
**Edited by Robin Fogarty and James Bellanca**  
**Arlington Heights, IL**  
**IRI/Skylight Training and Publishing, Inc.**  
**1995**

This book opens with a Multiple Intelligences profile of Howard Gardner and moves to an interview with him. Through a series of articles by experts in the field, it then explains the theory and the practice of Multiple Intelligences by highlighting several classrooms and schools that are implementing it. A number of articles on Learning Disabled and Gifted Students are included as well as features which apply to setting goals, approaching curriculum and assessment. Some of the authors of the articles in this collection include Howard Gardner, Bruce Campbell, Thomas Armstrong, and Dee Dickinson.

**76) Multiple Assessments for Multiple Intelligences**  
**by James Bellanca, Carolyn Chapman and Elizabeth Swartz**  
**Palatine, IL**  
**IRI/Skylight Training and Publishing, Inc.**  
**1994**

Assessing students has become of great concern to educators lately because the government and general public are calling for schools to be more accountable. This emphasis on assessment has caused many educators to abandon the practice of Multiple Intelligences teaching due to lack of time, energy and resources. The authentic assessments in this book are meant to help teachers align their assessments with the Multiple Intelligences classroom teaching. The first two chapters focus on what is the meaning of standards and goes over some rubrics and other tools for assessment. Chapters four through nine give specific lessons and assessment tools for each of the intelligences. Chapters eleven and twelve discuss how to create a portfolio for students and how to communicate the assessment information to parents. Many examples are offered at different grade levels as well as many charts, checklists and frameworks. The authors conclude with some interesting comparisons between traditional assessment and authentic assessment.

**77) If The Shoe Fits...How to Develop Multiple Intelligences in the Classroom**  
**by Carolyn Chapman**  
**Arlington Heights, IL**  
**IRI/Skylight Training and Publishing, Inc.**  
**1993**

Chapman provides hundreds of tools and strategies for facilitating the development of Multiple Intelligences in the classroom. Set within the metaphor of shoes (football cleats representing the teamwork involved in using the interpersonal intelligence), Chapman presents numerous examples and ideas for using Multiple Intelligences at different grade levels. She first explains the theory of Multiple Intelligences and the criterion for an intelligence and then carries the reader through each of the intelligences with lesson ideas, how can this intelligence be used for problem solving, what is the developmental path for this intelligence, and how to meet the needs of the special student using this intelligence. Many charts, frames and reproducible pages are included. Ideas for integrating the curricula are also offered.

**78) Website:**

**<http://www.virtualschool.edu/mon/Academia/KierseyLearningStyles.html>**

This web site takes the learner directly to an article by Charles Schroeder on learning styles which also talks about how to bridge mismatched students and teachers. There are links to other websites and to the Sunsite Home Page which also offers answers to Frequently Asked Questions and Personality Type Sorters. There is also a Technology Exchange.

**79) Website:**

**<http://www.d.umn.edu/student/loon/acad/strat/lrnsty.html>**

Articles on learning styles, learning theories and domains are offered on this University of Minnesota web site. A Learning Style Inventory can be printed off and filled out by the learner. Some links are offered to other universities with more information on learning styles and theories.

**80) Website:**

**<http://www.shinbone.psych.brown.edu/sals/ldlinks.html>**

Although this page offers links to alternative learning and how to accommodate diverse learning needs, some links were “not found”. Many articles are presented and instructions given on how to join various organizations in the area of learning needs.

**81) Website:**

**<http://www.ascd.org/>**

This website offers much information and resources on Learning Styles, Multiple Intelligences and many other areas related to education. A course on Multiple Intelligences is presented in eight lessons complete with video clips of Howard Gardner, other Professional Development opportunities are listed as well as resources available through The Association for Supervision and Curriculum Development. A link to the experts at ASCD is offered for questions the learner may have on almost any education related topic and information is presented on how to join ASCD.

**82) Website:**

**[http://www.indiana.edu/~eric\\_rec/ieo/bibs/multiple.html](http://www.indiana.edu/~eric_rec/ieo/bibs/multiple.html)**

This ERIC website offers numerous links to articles, abstracts of books and pages on Multiple Intelligences. Some of the authors are Robin Fogarty, Thomas Hoerr and Carolyn Chapman. Ordering instructions are provided for those wishing to order full texts of articles.

**83) Website:**

**<http://www.NewCitySchool.org/>**

New City School is an Multiple Intelligences school that is online. This site offers much information about the school, their books, administration, family support and Multiple

Intelligences resources. They offer a media centre for the students which includes a NASA link to the Mars Pathfinder Home Page.

**84) Website:**

**[http://www.newhorizons.org/rech\\_mi.html](http://www.newhorizons.org/rech_mi.html)**

New Horizons is a leading edge resource for educational change. It consists of a newsletter online, descriptions of books and other resources as well as The Building which includes articles to help implement ideas in education that are not yet mainstream. Links are provided to the organizations mission statement, background and positive trends in learning.

**85) Website:**

**<http://www.magna.com.au/~cbounds>**

This is the Brain Flex home page which offers an independent learning program for secondary students in Australia. This site is geared for the students in this program but also offers information on new learning strategies and Multiple Intelligences links.

**86) Website:**

**<http://www.spu.edu/dcs>**

Since Seattle Pacific University offers a distance learning course on Multiple Intelligences, this site would be helpful for the learner who is interested in further study on the topic of Multiple Intelligences. Much information is presented regarding the course itself as well as other academic and continuing education programs offered at the University.

**87) Website:**

**<http://www.abacon.com>**

Allyn and Bacon offers resources for educators through this site as well as a web gallery and mailroom. They present programs and on-line activities as well as articles and ordering information for their resources.

**88) Website:**

**<http://www.iriskylight.com>**

Although this is a publishers website much more information is offered than just books and resources. Links to many other internet resources in the area of education are presented such as; Hot Educational Web Pages, an Multiple Intelligences exploration page, a chatline of Teachers Helping Teachers, and Multiple Intelligences Schools On-line. Of course, ordering information is also offered.

**89) Website:**

**<http://www.literacynet.org/>**

This website provides information to help instructors and students discover their intelligences and how to use them effectively in classrooms. It supplies teaching strategies, assessment

suggestions, case studies and teaching tips which would apply to grades K to 12 as well as at the college and university level.

**90) Website:**

**<http://www.parentsplace.com/readroom/authors/droge/multint.html>**

Although this address takes the reader to a specific article on Multiple Intelligences links are provided to the Parents Place Home Page. This page offers information in the form of a parent newsletter on Health, Cooking and Education etc. There are “Reading Rooms” with articles on Safety, Science Activities, Education Resources and Humour.

**91) Seven Windows to a Child’s World**

**by Anna T. O’Connor and Sheila Callahan-Young**

**Palatine, IL**

**IRI/Skylight Publishing Inc.**

**1994**

This book is designed specifically for kindergarten and early elementary students and can be easily applied to special needs students. The book is laid out in five themes and contains three lessons for each intelligence within each theme. Thus there are over one hundred lessons in total presented. A unit plan overview is offered at the beginning of each theme/chapter and some game boards, charts and diagrams are also supplied. Many of the lessons are based on literature. This is a very teacher friendly book; quick to read and very practical.

**Appendix B**  
**Pre-workshop Questionnaire**

**Multiple Intelligences  
Pre-Workshop Questionnaire**

Name(optional)\_\_\_\_\_ School(optional)\_\_\_\_\_

1) What position do you hold?

a) teacher b) assistant c) administration d) other (describe)\_\_\_\_\_

2) What grade of students do you work with most? \_\_\_\_\_

3) What would you say is your current knowledge of Multiple Intelligences?

a) I have no knowledge of Multiple Intelligences

b) I have a little knowledge but have never used the strategies in my classroom.

c) I have enough knowledge to have used it in my classroom but not enough to feel comfortable yet.

d) I have a good knowledge and feel comfortable using the Multiple Intelligences strategies in my classroom

4) Have you used the Multiple Intelligences strategies in teaching or are you currently using this approach?(Circle all that apply)

a) I am currently using Multiple Intelligences strategies in my classroom

b) I have used Multiple Intelligences strategies in the past.

c) I have never used Multiple Intelligences strategies.

5) Why are you interested in attending this workshop?(Circle all that apply)

a)I want to confirm how I am using the Multiple Intelligences strategies

b)I want to learn about the approach

c) I want a morning away from my classroom to generate some ideas.

d) I know the speaker

e)Other (please describe)\_\_\_\_\_

6) What would you like the presenter to cover at this workshop?(Circle all that apply)

a) the basics- I know nothing about it yet.

b) I would like to practice using some of the intelligences myself in a workshop setting.

c) I would like some general lesson plan ideas

d) I would like some lesson plan ideas specific to the grade and subjects that I teach (specify grade \_\_\_\_\_ and subject(s) \_\_\_\_\_)

e) I would like to know the advantages and disadvantages of using this approach.

f) Other (please describe) \_\_\_\_\_

7) Please rate your current level of knowledge of Multiple Intelligences. Please circle your answer. (1= low level of knowledge, 5= high level of knowledge.)

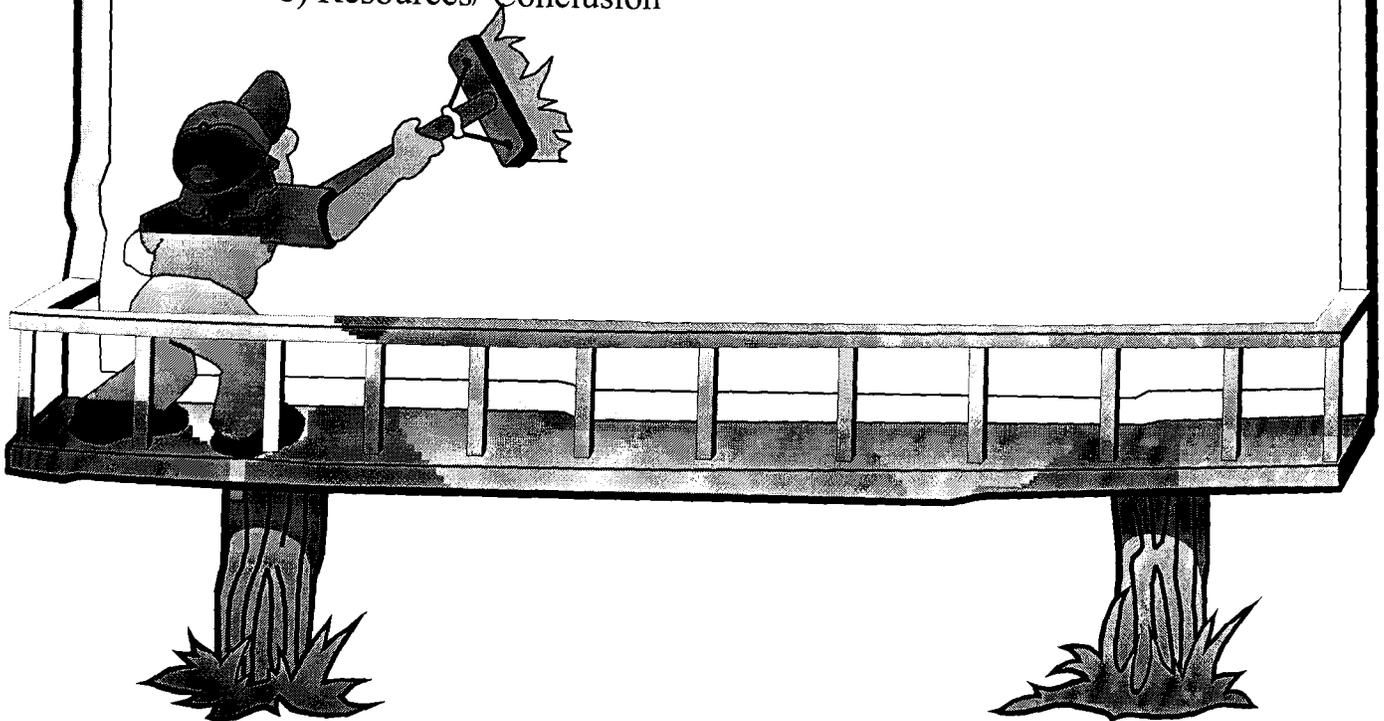
1      2      3      4      5

**Appendix C**  
**Workshop Handout**

**Workshop on Multiple Intelligences  
March 24, 1999  
for LSD #51 Teachers and Assistants**

**Outline**

- 1) Introduction
- 2) Brief History of Multiple Intelligences
- 3) What are the Intelligences?
- 4) Assessing our own Intelligences
- 5) How I used/use Multiple Intelligences
- 6) Suggestions for other grades/subjects
- 7) Research results
- 8) Resources/ Conclusion



## Multiple Intelligences Overview

### ❶ Verbal/ linguistic

Indicators: ease with reading and writing skills, and sensitivity to nuances, order and rhythm of words.

Some Activities for Development: reports, essays, creating, reciting, retelling, telling, listening and joking

### ❷ Kinesthetic/Bodily

Indicators: uses the body to solve problems, create products and convey ideas and emotions.

Some Activities for Development: dancing, sculpting, performing, acting, constructing and role playing

### ❸ Visual/Spatial

Indicators: the ability to create visual/ spatial representations of the world and to transfer those representations mentally or concretely: to think in pictures.

Some Activities for Development: painting, cartooning, observing, drawing, showing and illustrating.

### ❹ Mathematical/Logical

Indicators: the ability to reason deductively or inductively and to recognize and manipulate abstract patterns and relationships

Some Activities for Development: reasoning, collecting, recording, analyzing, graphing, comparing and contrasting.

### ❺ Musical

Indicators: includes sensitivity to pitch, timbre, and rhythm of sounds and responsiveness to music.

Some Activities for Development: singing, playing, composing, audio taping , improvising and attending concerts

### ❻ Interpersonal

Indicators: the ability to work effectively with others, and to understand them. To notice their goals, motivations and intentions.

Some Activities for Development: discussing, responding, dialoguing, reporting, surveying, clarifying and questioning.

### ❼ Intra personal

Indicators: to be deeply aware of inner feelings, intentions and goals.

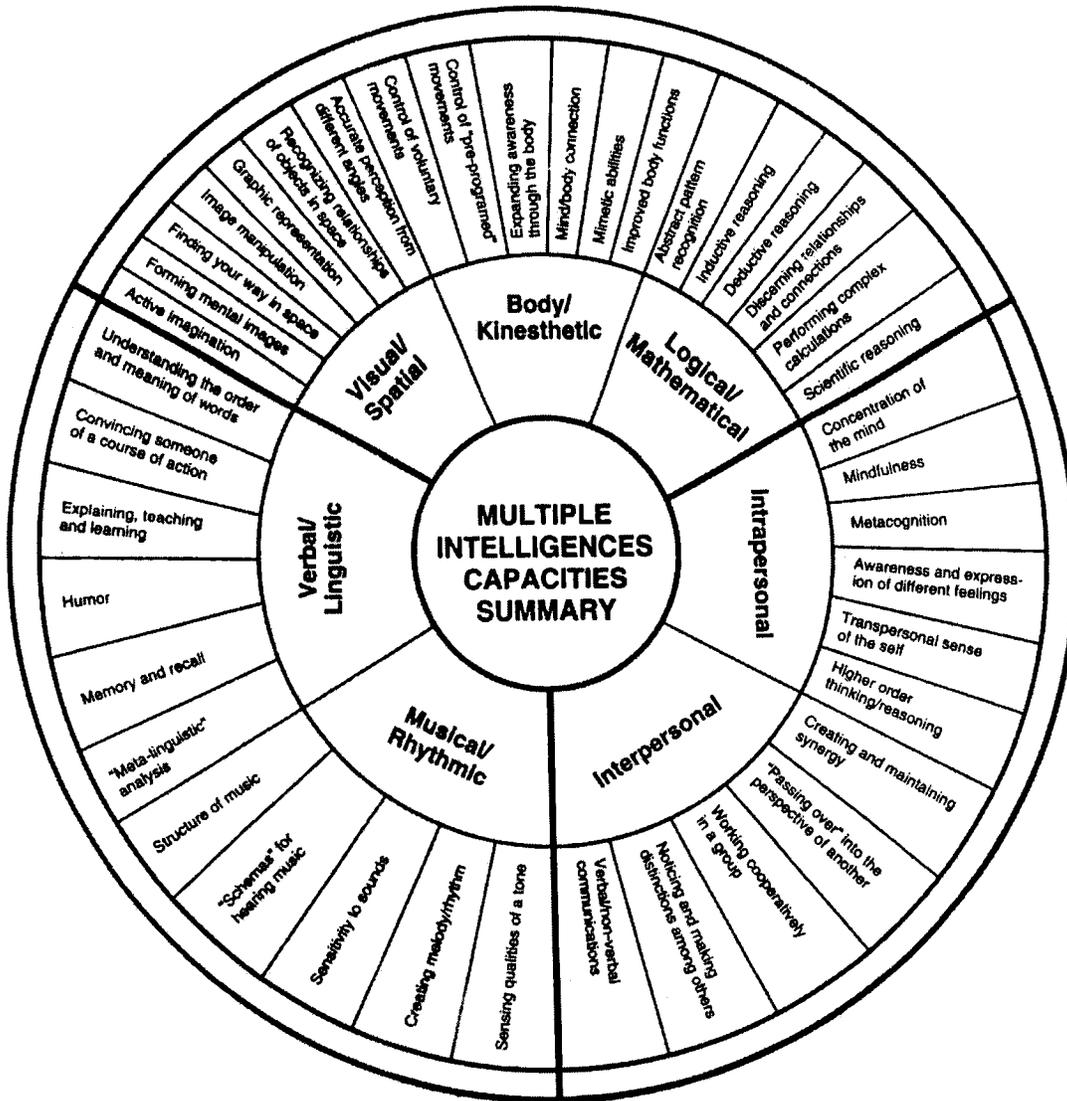
Some Activities for Development: journalling, reflecting, meditating, studying, rehearsing, and self assessing.

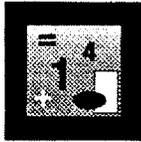
### ❽ Naturalist

Indicators: Understanding, appreciating and enjoying the natural world. Can recognize and classify many different species

Activities for Development: sensory encounters with the natural world-animals, plants, weather, Work with a microscope, categorizing items from nature, field trips to nature centres and parks, videos about nature etc.

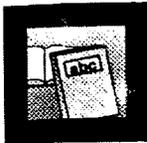
# Multiple Intelligences Capacities Wheel





### Logical/Mathematical Intelligence

Often called "scientific thinking," this intelligence deals with inductive and deductive thinking/reasoning, numbers and the recognition of abstract patterns.



### Verbal/Linguistic Intelligence

This intelligence, which is related to words and language—written and spoken—dominates most Western educational systems.



### Visual/Spatial Intelligence

This intelligence, which relies on the sense of sight and being able to visualize an object, includes the ability to create internal mental images/pictures.



### Intrapersonal Intelligence

This intelligence relates to inner states of being, self-reflection, metacognition (i.e. thinking about thinking) and awareness of spritual realities.

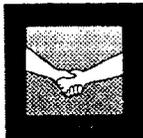


### Body/Kinesthetic Intelligence

This intelligence is related to physical movement and the knowings/wisdom of the body, including the brain's motor cortex, which controls bodily motion.



**MULTIPLE INTELLIGENCES**



### Interpersonal Intelligence

This intelligence operates primarily through person-to-person relationships and communication.



### Musical/Rhythmic Intelligence

This intelligence is based on the recognition of tonal patterns, including various environmental sounds, and on a sensitivity to rhythm and beats.

Name \_\_\_\_\_ Date \_\_\_\_\_

## Multiple Intelligences Profile

Rank each set of activities with a number from 1 to 7 where 1 is the lowest in total time, preference, or talent and 7 is the highest.

I spend the most time:

- \_\_\_\_\_ Playing an instrument (f)
- \_\_\_\_\_ Drawing or painting (b)
- \_\_\_\_\_ Being with others (d)
- \_\_\_\_\_ Writing poems, stories, or entries for my journal (a)
- \_\_\_\_\_ Working with computers, models, or science projects (c)
- \_\_\_\_\_ Doing things by myself (e)
- \_\_\_\_\_ Exercising or playing sports (g)

I prefer to:

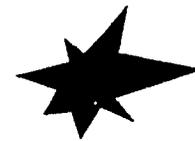
- \_\_\_\_\_ Take objects apart and figure out how they work (c)
- \_\_\_\_\_ Exercise, ride a bike, or be active with my body (g)
- \_\_\_\_\_ Look at comics, art, or movies (b)
- \_\_\_\_\_ Join clubs and social activities (d)
- \_\_\_\_\_ Listen to music (f)
- \_\_\_\_\_ Read a book (a)
- \_\_\_\_\_ Think about myself, my life, and how I handle situations (e)

I am good at:

- \_\_\_\_\_ Recognizing, remembering, humming, or singing tunes (f)
- \_\_\_\_\_ Understanding people, knowing and appreciating people (d)
- \_\_\_\_\_ Talking, writing, or playing with language and words (a)
- \_\_\_\_\_ Looking at things, drawing, using maps (b)
- \_\_\_\_\_ Using my hands or body to make or do things (g)
- \_\_\_\_\_ Constructing things, pulling them apart, or asking "why?" (c)
- \_\_\_\_\_ Being by myself, doing things at my own initiative and pace (e)

I learn best by:

- \_\_\_\_\_ Talking to others (d)
- \_\_\_\_\_ Tuning into rhythm, turning things into a song (f)
- \_\_\_\_\_ Seeing or making a picture, map, or diagram of an idea (b)
- \_\_\_\_\_ Practicing, moving around a lot, and doing things (g)
- \_\_\_\_\_ Taking time to understand things by myself (e)
- \_\_\_\_\_ Listening, reading and writing, or speaking to myself (a)
- \_\_\_\_\_ Analyzing, explaining, and understanding why (c)



### Profile

To score, add up the totals for each letter and place them next to the intelligence it represents. The highest number indicates the intelligence in which you have the greatest interest, time, energy, or skill. The lowest number indicates the intelligence in which you have the least interest, time, energy, or skill.

- |                               |                           |
|-------------------------------|---------------------------|
| a. Linguistic _____           | e. Intrapersonal _____    |
| b. Spatial _____              | f. Musical _____          |
| c. Logical-Mathematical _____ | g. Body-Kinesthetic _____ |
| d. Interpersonal _____        |                           |

## Lesson #3

### Multiple Intelligences Objective:

Students will explore the concept of geometric shapes through the musical-rhythmic intelligence.

### Alta. Ed G.L.E:

classifies three dimensional objects and two dimensional figures by naming the 3D objects as prisms or pyramids given the objects or the nets.

### Materials:

Math raps tape, paper, geometric shapes( plastic or wooden)

### Steps:

- Review the findings from yesterday
- Review key words that could describe a geometric shape. What makes a geometric shape a geometric shape? Put these on a chart for the students to see throughout this lesson.
- Ask the students to write a rap or song about a geom. shape. They can choose the shape.
- Play some raps and energetic songs for a few minutes to inspire and motivate them.
- Share these with each other and the class.
- Allow time for the students to fill out their journals.

### Evaluation:

- Did each child write and share a rap or song?
- Were proper names of shapes and the qualifying terms used in the rap or song?
- Did each child fill out the learning journal?

## Lesson #6

### Materials:

### Multiple Intelligences Objective:

The students will explore the idea of geometric shapes through the bodily- kinesthetic intelligence.

Alta Ed G.L.E.: constructs 3D objects

### Steps:

- Have the students go into groups of three or four and create a shape or shapes with their bodies. They need to be comfortable with who they are working with and this is why they need to be allowed to choose their own groups. There will be touching in order for this to work.
- Teacher can state the name of the shapes. They can be 3D or 2D.
- Share with the whole class how many edges, faces, vertices etc. you needed to make up your shape.

### Evaluation:

- Did every child create a shape with their bodies?

**Multiple Intelligences Unit Plan for Education 4950-  
Generic Novel Study**  
by  
**Ellen Meller**  
**July 29, 1998**

This novel study is a generic one intended for use with any novel. The objectives are based on the grade four level General Outcomes in the Western Canadian Protocol. Most of the students that I work with do not read above the grade four level. Although this is a generic novel study, some examples are given with *The Mouse and the Motorcycle* as the novel being studied.

These lessons do not need to be done in any order and to facilitate true choice for the students all the activities can be given to the students at one time so that they can choose which they will do when. If the latter system is used, a checklist or pie graph should be handed out to keep track of which intelligences they have worked on. The students can colour a section on the pie graph that corresponds with each intelligence as they complete the corresponding activity.

**Overall Objective:**

● the student will understand and appreciate language through Multiple Intelligences and use it confidently and competently in a variety of situations.

**Evaluation:**

● Through conferencing with the children on an individual level, a set of evaluative criteria will be developed. This may take the form of rubric, a checklist or a set of skills directly ties to the students' IEP.

**Lesson #1 Verbal/Linguistic**

**Alberta Education Objective:**

The student will explain connections between events and the roles of main characters in oral and literary texts.

**Materials required:**

paper or notebook  
novel read by student  
examples of acrostic poems

Choice #1

**Steps:**

- a) After the students have read the novel, ask them to write an acrostic poem using the letters in the main characters name.
- b) Show and discuss some examples of acrostic poems.
- c) Beside each letter of the name, the students will write a characteristic that describes that character or a behaviour that they exhibited in the story. (See example)
- d) Share with the class.

**Choice #2**

Draw a chart showing the name in the first column, the characteristic in the second column and the action in the third column. (See example)

**Lesson #2 Visual Spatial**

**Alberta Education Objective:** The student will identify mood evoked by oral, literary and media text.

**Materials:**

8x10 paper  
 crayons  
 novel  
 3x5 white paper  
 4x6 construction paper of various colours.  
 glue  
 scissors

**Choice #1****Steps:**

- a) fold a piece of 8"x10" paper in half by length. Cut the paper in three equal sections up to the fold (see example)
- b) in each box, draw a picture of the beginning, middle and the end.
- c) under each picture, in the folded, cut section, write the mood of the scene.

**Choice #2**

- a) take three 3x5" pieces of paper and draw the beginning, middle and end on each paper.
- b) choose a colour of construction paper that indicates the mood of that scene and glue the picture on the appropriate colour of 4x5" construction paper.

**Lesson #3 Bodily/Kinesthetic and Interpersonal****Alberta Education Objective:**

- the student will prepare and share information on a topic using print and non-print aids to engage and inform an audience.
- the student will use cueing systems to construct and confirm meaning.

**Materials:**

novel  
 variety of props as decided by students

Choice #1

Have the students prepare and present a readers' theatre of their favourite part of the story.

*N.B. Readers theatre is an oral reading of one short passage of the text, chosen by the student, with actions, props and sound effects.*

Choice #2**Steps**

- a) Students will choose several words from the text that were new to them or that they think other children will not know or understand.
- b) Students will act out these words and the other children have to guess what the word is.

Choice#3

Have the students make up a dance that tells the story.

### Lesson #4 Musical and Intrapersonal

**Alberta Ed Objective:** The student will experiment with arranging ideas and information in a variety of ways.

Choice #1**Materials:**

tapes of a variety of music  
double tape player(one that can record from another tape)

Have the students go through tapes from your collection or from home and find the music that best suits this story or parts of the story. They can then retape these on another tape. Add this to the readers theatre production or discuss with various parts of the story.

Choice#2**Materials:**

paper  
pencil

Write a song to tell the moral or lesson of this story. The teacher could offer some simple tunes as a framework for the students to use. Some tunes could include: Humpty Dumpty, ABC and other nursery rhymes.

An example for the Mouse and the Motorcycle, ( to the tune of ABC)

Ralph oh Ralph how could you go  
take the motorcycle so?  
you were told to leave it there  
Now your friendship is almost bare

Ralph oh Ralph how could you go  
take the motorcycle so?

The song is not intended to be a retelling of the story however parts of the story can be incorporated into the song. The lesson or moral is what needs to be clear in the song.

## Lesson #5 Intrapersonal

**Alberta Education Objective:** the student will explore a variety of forms of expression for particular personal purposes.

**Materials:**

tape player  
paper  
crayons  
plasticine  
Polaroid camera and film  
cardboard

Choice #1

Imagine that you are one of the main characters. Think how the story would be different if it happened to you. Discuss this, write about it, tell it into a tape player, draw a picture of it or sculpt it in plasticine.

Choice #2

Make up a list of questions you would like to ask the main character if you met him/her.

Choice #3

Take Polaroid pictures of you being the main character and acting out the beginning, middle and the end. Glue onto cardboard and write captions of how the main character felt as the scene was happening to him.

## Lesson #6 Mathematical/ Logical

**Alberta Education Objective:** the student will experiment with arranging ideas and information in a variety of ways to clarify understanding.

Choice #1

Draw a time line of the main events of this story

Choice #2

Analyse the similarities and differences between this story and another novel we have studied this year or one you have read before. Use a Venn diagram or draw a chart showing the similarities and differences.

**Choice#3**

Write a similar story using a story grid.(Seven Ways of Teaching-page 135)

**Lesson #7 Naturalistic****Alberta Education Objective:**

the student will create original texts (such as murals, scripts, charts) to communicate and demonstrate understanding of forms and techniques.

**Materials:**

poster paper or large pieces of cardboard  
glue  
materials from nature (nothing live)

**Steps:**

- a)Go outside and collect "stuff" from nature.
- b)Bring these materials back to the room and create a collage or display telling the most exciting part of the story.

**VERBAL/LINGUISTIC**

- Reading
- Vocabulary
- Formal Speech
- Journal/Diary Keeping
- Creative Writing
- Poetry
- Verbal Debate
- Impromptu Speaking
- Humor/Jokes
- Storytelling

**LOGICAL/MATHEMATICAL**

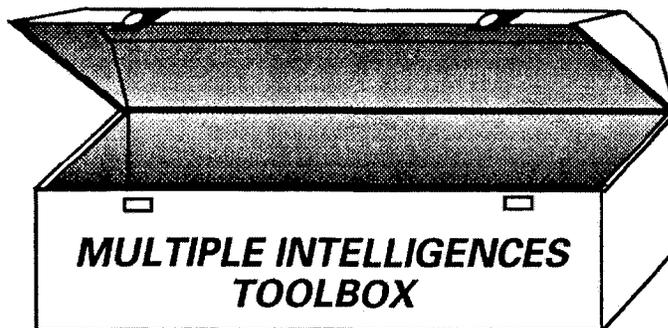
- Abstract Symbols/Formulas
- Outlining
- Graphic Organizers
- Number Sequences
- Calculation
- Deciphering Codes
- Forcing Relationships
- Syllogisms
- Problem Solving
- Pattern Games

**VISUAL/SPATIAL**

- Guided Imagery
- Active Imagination
- Color Schemes
- Patterns/Designs
- Painting
- Drawing
- Mind-Mapping
- Pretending
- Sculpture
- Pictures

**BODY/KINESTHETIC**

- Folk/Creative Dance
- Role Playing
- Physical Gestures
- Drama
- Martial Arts
- Body Language
- Physical Exercise
- Mime
- Inventing
- Sports Games

**MUSICAL/RHYTHMIC**

- Rhythmic Patterns
- Vocal Sounds/Tones
- Music Composition/Creation
- Percussion Vibrations
- Humming
- Environmental Sounds
- Instrumental Sounds
- Singing
- Tonal Patterns
- Music Performance

**INTERPERSONAL**

- Giving Feedback
- Intuiting Others' Feelings
- Cooperative Learning Strategies
- Person-to-Person Communication
- Empathy Practices
- Division of Labor
- Collaboration Skills
- Receiving Feedback
- Sensing Others' Motives
- Group Projects

**INTRAPERSONAL**

- Silent Reflection Methods
- Metacognition Techniques
- Thinking Strategies
- Emotional Processing
- "Know Thyself" Procedures
- Mindfulness Practices
- Focusing/Concentration Skills
- Higher-Order Reasoning
- Complex Guided Imagery
- "Centering" Practices

## WINTER UNIT OUTLINE



### LINGUISTIC

***The Snowy Day*** Children generate a list of snow activities and properties. After listening to *The Snowy Day* by Ezra Jack Keats, they compare their list to Peter's experiences.

***Telling Winter Stories*** After the teacher tells a winter story from memory, children create their own versions. Children practice, then tape-record their stories.

***Snow Poems*** After reading a variety of winter poems, children generate lists of sound, sight, and feeling words associated with snow and ice, then create their own winter poems.



### LOGICAL-MATHEMATICAL

***The Mitten*** After listening to a folktale, children organize information from the story by variables such as size and order.

***Snowman Math*** Children demonstrate their knowledge of number operations using paper snowmen.

***Winter Paths*** Children discover how to make paths on Geoboards and record their discoveries.



### SPATIAL/ARTISTIC

***Mosaic Snow People*** Children cooperate in creating giant snow people using small white paper squares.

***A Winter's Day*** Children use an Epsom salt wash to create a frosted effect on an original crayon drawing.

***Animals in Winter*** Children use magazine pictures of animals to create a winter habitat mural.



### INTER- AND INTRAPERSONAL/SOCIAL

***Winter Charade*** Children take turns pantomiming winter activities while peers try to identify the actions depicted.

*Making Choices on a Winter Day I* Children choose from a variety of inexpensive objects. Children discuss and reflect on their decision-making process, then make their choices.

*Making Choices on a Winter Day II* Children reflect on the choices they made and discuss the consequences of those choices.



### SPATIAL/ASSEMBLY

*Marshmallow Snow Shelters* Children use marshmallows and toothpicks to construct forts or houses.

*Underground Sleepers* Children construct an underground diorama of hibernating animals using shoe boxes, socks, clay, etc.

*Igloo Construction* Children assemble sugar cubes to make a model of an igloo.



### BODILY-KINESTHETIC

*Snow Fun* Children play follow the leader, make angels in the snow, and create their own snow fun.

*Freeze Tag* A “snowman” tags children who become “ice sculptures.”

*Body Sculptures* Children take turns as the “sculptor” and the “block of ice” being molded.

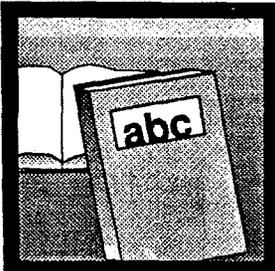


### MUSICAL

*The Jacket I Wear in the Snow* Children act out a story and add sound effects.

*Winter Poetic Sounds* Children use musical instruments to “decorate” original winter poems.

*Winter Duets* Children use xylophones to create musical conversations to accompany a winter snowfall.



## LESSON PLANNING IDEAS

# *Verbal/Linguistic*

| HISTORY   | MATHEMATICS   | LANGUAGE ARTS   | SCIENCE & HEALTH  | GLOBAL STUDIES & GEOGRAPHY                                     | PRACTICAL ARTS & P.E.  | FINE ARTS   |
|---|---|---|---|--|--|---|
| Play "What's My Line?" with figures from history    | Write a series of story problems for others to solve              | Teach "concept mapping" to help remember content ‡                | Write a humorous story using science vocabulary/formulas    | Read stories, myths, and poetry from other cultures            | Give verbal explanation of gymnastic routines                    | Listen to a piece of music and make up a story about it     |
| Debate important issues and decisions from the past | Explain how to work a problem to others while they follow         | Write a sequel/next episode to a story or play                    | Create a diary on "The Life of a Red Blood Cell"            | Hold a "Countries of the World" spelling and pronunciation bee | Write instructions for use and care of shop machines             | Verbally describe an object while a partner draws it        |
| Create limericks about key historical events        | Make up puns using math vocabulary or terms                       | Create crossword puzzles/word jumbles for vocabulary words        | Write steps used in an experiment so someone else can do it | Keep an "Insights from other Cultures for Us" log              | Tell another how to run a word processing program—then do it     | Tell a partner the steps to a dance while they perform it   |
| Study poetry from different periods of history      | Solve problems with a partner—one solves and one explains process | Play "New Word for the Day" game—learn it/use it during the day † | Make up an imaginary conversation between parts of the body | Study a road map and give verbal instructions to get someplace | Pretend you're a radio sportscaster describing a game in process | Turn a Greek/ Shakespearean tragedy into a situation comedy |
| Compile a notebook of history jokes                 | Create poems telling when to use different math operations        | Practice impromptu speaking and writing                           | Give a speech on "Ten steps to healthful living"            | Learn basic conversation in several foreign languages          | Play "Recipe Jeopardy"—make questions for answers given          | Describe an emotion/mood and play music it suggests         |

† See Glossary

‡ See Glossary and Appendix C

Bruce Campbell ( a grade three teacher in USA) has found the following results using Multiple Intelligences:

- 1) Increased responsibility, independence and self direction
- 2) Improvement in behaviour
- 3) Improvement in co-operative skills
- 4) Improvement in ability to use many modes of presentation
- 5) Leadership skills emerged
- 6) Music and movement helped retain information
- 7) Teacher became more facilitator than director
- 8) Teacher sees children in different ways

**Appendix D**  
**Post-workshop Questionnaire**

**Multiple Intelligences  
Post- workshop Questionnaire**

Name(optional)\_\_\_\_\_ School(optional)\_\_\_\_\_

Please Note: all questions are optional!!

1) What position do you hold?

a) teacher b) assistant c) administration d) other (describe)\_\_\_\_\_

2) What grade of students do you work with most?\_\_\_\_\_

3) Have you used Multiple Intelligences before?

a) yes b) no

3) Do you plan on using the Multiple Intelligences approach in your teaching?

a) yes b) no

4a) If you answered 'yes' to #3, how do you see yourself using this approach?

Please describe. \_\_\_\_\_

---



---



---

4b) If you answered 'no' to question #3 please comment \_\_\_\_\_

---



---

(Over)

5) Would you feel competent using the Multiple Intelligences approach in your classroom ?

a) I already felt competent using Multiple Intelligences strategies before the workshop

b) I feel very competent now that I have attended this workshop

c) I feel only a little more comfortable with this approach because of this workshop

d) No, I don't feel competent using this approach (comments) \_\_\_\_\_  
\_\_\_\_\_

e) Other (please describe) \_\_\_\_\_  
\_\_\_\_\_

6) Please rate your current level of knowledge of Multiple Intelligences. (1= low level of knowledge, 5= high level of knowledge) Please circle your answer.

1      2      3      4      5

7) Did you learn what you had hoped to learn at this workshop?

a) Yes (please comment) \_\_\_\_\_  
\_\_\_\_\_

b) No (please comment) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8) Please list some recommendations for changes in future workshops on this topic.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

9) Would you be interested in some kind of follow up for people who use Multiple Intelligences strategies? If so, would you prefer...

a) regular meetings once a month

b) regular meetings once every two months

c) connecting via e-mail (perhaps a list-serve)

d) other (please make suggestions) \_\_\_\_\_

Thank you so much for attending the workshop and for completing this questionnaire! Your input is very valuable to me.

Ellen Meller

-----

If you are interested in networking please fill in the following information so that I can get in touch with you. This is a tear off sheet to preserve the anonymity of the above questionnaire.

Name \_\_\_\_\_

School \_\_\_\_\_

e-mail address \_\_\_\_\_

Phone number \_\_\_\_\_

Thank you!

**Appendix E**  
**Edited Workshop Notes**

## Appendix #5

### Edited Workshop Notes:

Go over plan of the morning- first page of hand-out.

Sign up sheet for subs?

Explain sticky notes for questions (write down questions as you think of them and I'll try to answer them at natural breaks and/or at the end of the morning.

Some of the research that I have been reading on PD suggests that rather than having teachers act as children during a workshop it is better to observe each other and even evaluate each other while using a new method. It also suggests support teams etc. are needed for the innovative ideas to keep being used. Therefore as this workshop progresses, please think about how you can support each other if you plan to use Multiple Intelligences in your classroom. (meta-cognition)

First of all, thank you to those teachers and assistants who filled out the survey and returned them to me. This workshop is based on those responses.

One of the comments made on several surveys was that teachers may have used the Multiple Intelligences teaching strategies but under a different name. I am here to tell you that yes, you likely have used most of the activities that I am going to mention today. However, it is the combination of activities and the careful planning to meet the different intelligences that makes this approach different. So it is not the individual activities themselves that make this approach unique. It is how the activities are used and combined to develop the intelligences, either using stronger intelligences or developing weaker ones, that is why I like Multiple Intelligences.

#### Brief History and explanation of Multiple Intelligences

##### The Multiple Intelligences Theory (Overheads 1-4)

The research on the brain and learning is currently expanding at an explosive rate as modern methods of research aid in easier access to the brain and patterns of neurons(mention some of the books that I have brought)

In 1983, Howard Gardner, a cognitive psychologist, published a book entitled *Frames Of Mind* in which he outlined his theory of Multiple Intelligences.

He had established that everyone has a set of intelligences which are likened to capabilities or potentials.

There are at least seven intelligences (recently Gardner announced that he has discovered intelligence number 8 and number 8 ½)

When the intelligences are combined with an individual's personality a certain cognitive profile emerges.

Not all intelligences are equally developed in each person, and different intelligences are stronger in different people, so each profile is very unique.

Multiple Intelligences challenged a previously accepted theory proposed by Alfred Binet at the beginning of the twentieth century that we all have one intelligence and that it remains constant throughout ones' life. Traditionally if one is intelligent they are quick-witted, scientifically astute, obedient, quiet, or adaptable. This definition has been used in a judgmental way over the years. According to Binet, who in 1900 created the I.Q. test, the definition of intelligence is based on the ability to use language and do mathematics. This was considered to be a fixed ability and could not be changed throughout ones' life. It stated that an individual can be described as having only one intelligence that is measurable. There were no attempts at improving intelligence, only establishing how intelligent one was.

Gardner states that our intelligences can be developed over time and with practice and use.

Professional educators were attracted to the theory, and this has become the area where Multiple Intelligences has been the most used and accepted.

Gardner theorizes that human intelligence contains three components:

- ❶ a set of skills that enables an individual to resolve genuine problems encountered in ones' life
- ❷ the ability to create an effective product or offer a service that is of value in one's culture and
- ❸ the potential for finding or creating problems which enables an individual to acquire new knowledge.

Gardner has established a set of 8 criteria that must be met before something is admitted as an intelligence. In this workshop I won't go over what the criteria are but they are stringent.

Each intelligence has been subjected to these criteria, and any new ones will have to follow the same system for them to qualify as an intelligence in Gardner's structure.

Multiple Intelligences is a tool for differentiating instruction or allowing multiple options for taking in information, making sense of ideas, and expressing what they learn. Because we are all individual and different, we need different types of learning strategies.

Each intelligence has its own sequence of development, and this can occur at different times in one's life. The musical intelligence seems to develop the earliest. Creativity can be expressed through all the intelligences, but most people are creative in one domain.

Most people excel in one or two intelligences.

A combination of intelligences is required to fulfill roles in every culture.

Gardner sketches an individual-centered curriculum which emphasizes understanding, application and higher order thinking skills. He does not wish that Multiple Intelligences become a rigid pedagogical framework but rather an appropriate tool for content.

A teacher or student should not avoid an intelligence because they know they are not strong in that area. The teacher especially needs to model that intelligence can be developed and that it is acceptable and even desirable to work out of one's own comfort zone for awhile.

How are the Intelligences Expressed and Strengthened?(Use overhead#5)

The eight intelligences have several indicators of their strength of expression, some of which are listed below. The intelligences can be developed through specific activities such as those suggested.

**❶ Verbal/ linguistic**

Indicators: ease with reading and writing skills, and sensitivity to nuances, order and rhythm of words.

Some Activities for Development: reports, essays, creating, reciting, retelling, telling, listening and joking

**❷ Kinesthetic/Bodily**

Indicators: uses the body to solve problems, create products and convey ideas and emotions.

Some Activities for Development: dancing, sculpting, performing, acting, constructing and role playing

**❸ Visual/Spatial**

Indicators: the ability to create visual/ spatial representations of the world and to transfer those representations mentally or concretely: to think in pictures.

Some Activities for Development: painting, cartooning, observing, drawing, showing and illustrating.

**❹ Mathematical/Logical**

Indicators: the ability to reason deductively or inductively and to recognize and manipulate abstract patterns and relationships

Some Activities for Development: reasoning, collecting, recording, analyzing, graphing, comparing and contrasting.

**❺ Musical**

Indicators: includes sensitivity to pitch, timbre, and rhythm of sounds and responsiveness to music.

Some Activities for Development: singing, playing, composing, audio taping , improvising and attending concerts

### ⑥ Interpersonal

Indicators: the ability to work effectively with others, and to understand them. To notice their goals, motivations and intentions.

Some Activities for Development: discussing, responding, dialoguing, reporting, surveying, clarifying and questioning.

### ⑦ Intra personal

Indicators: to be deeply aware of inner feelings, intentions and goals.

Some Activities for Development: journalling, reflecting, meditating, studying, rehearsing, and self assessing.

### ⑧ Naturalist

Indicators: Understanding, appreciating and enjoying the natural world. Can recognize and classify many different species

Activities for Development: sensory encounters with the natural world-animals, plants, weather, Work with a microscope, categorizing items from nature, field trips to nature centres and parks, videos about nature etc.

Show other two overheads (#6 and 7) and refer quickly to them as other ways of saying the same thing

Assessing our own strong and weak intelligences

There are many tools that can be used to assess our own intelligences where we are strong and where we are weak. We will use 2 today

Go through Multiple Intelligences Profile (Overhead #8) as in handout- there are 2 copies, one for you to use now and one for you to copy for your kids.

TIMI- Teachers guide highlighted in green

Did you find any surprises?

Show Video clip- this video is available from the media centre-Section on describing the Multiple Intelligences

How I used Multiple Intelligences in a 4/5 multi-age class

What I did

I chose to apply the seven intelligences described above to a math unit on Geometry as my pilot project.

I began the unit during a math class by asking them what they thought it meant to be smart. I listed their replies on the overhead projector, and we discussed the variety of ways that people can be smart and how this can be useful to us.

I then showed them a large poster and a pie chart (overhead #9) that I had made up which listed all the intelligences (I called them “smarts”) in one column, the characteristics of people who are strong in each intelligence in another column and lists of famous people who were or are strong in each intelligence in the last column.

I showed overhead pictures of the famous people or of some work they had accomplished. I asked the students to think what areas they thought they may be strong in and emphasized to them that we can use all the intelligences in many different areas of our lives. (Overheads #10-17)

Over the next seven math classes, I focused on one intelligence a day and the students explored geometry through that intelligence. For example, in one lesson the students were asked to write a rap about a geometric shape using words and terms qualifying geometric shapes that we had brain stormed earlier in the lesson. Each lesson included objectives from the Alberta Education Program of Studies as well as a Multiple Intelligences objective (Black Binder)

Go through lesson #3 and lesson #6 (Overheads 18 and 19)

Each class lasted about 45 minutes and ended with time to write in a learning journal. (Overhead #20) I had prepared the learning journal in advance as a graphic organizer, asking many questions to focus the students' thoughts. I asked them to fill in their choice of two columns a day responding to a variety of questions such as what they learned, how they felt, what they liked about the lesson, what they did not like about the lesson, how this lesson could be applied to another area of their lives and what they would like to learn more about.

Go Over examples (overheads 21, 22 &23)

At the end of the eight lessons the students were very aware of the seven intelligences and where they could be used. The enthusiasm and enjoyment of learning were also very evident in both their daily performance and in the journal responses.

### Results of the Journals

After reading through all 50 of the learning logs or journals with the student's responses, I was able to see numerous main threads or themes which will guide me in further teaching using Multiple Intelligences. One expression of feeling that came through many times was that of enjoyment. Most of the students seemed to enjoy this new, multi-modal approach to learning about geometry. The comments ranged from "This was fun" to "I hope we can do more of this". Many of the students expressed an interest in learning more about geometric shapes and several mentioned that they wanted to learn more about the different kinds of smarts. A few students mentioned the areas that they think they are smart in, and one mentioned that he could not believe that a woman would dedicate her life to helping others, referring to Mother Teresa. This comment was from a boy in my class who is very aggressive and often has violent themes in his drawings, stories and even his rap. It was significant to me that he would notice this quality in another person.

I was impressed with how well the students articulated their thoughts, feelings and learning. Many wanted to try more in the areas of writing raps and riddles, some even saying they would try this at home. I was also impressed that some students mentioned how much they liked someone else's ideas. One mentioned how good he felt that

everyone liked his idea.

The things that the students did not like were going out on a cold day and the difficulties in social skills of some of the other students.

One student mentioned that he was disappointed that he did not get to share his riddle. Unfortunately this was the same boy who said that his partner made him do all of the work.

I found that the area where the students had the most difficulty expressing themselves was in the area called "How this can be useful to me". Most of the students were not able to think past the stage of these activities helping them to know more about geometry or how to write songs.

Samples of the learning logs are included in the black binder as well.

One way that I use Multiple Intelligences now in teaching reading in the special ed room is with a generic novel study.

This unit is included in the hand-out

Go through one or two examples from this unit.

Suggestions for other grades

I use the Multiple Intelligences toolbox (overhead # 24) as a base for activities after I identify learner expectations from the curriculum guides.

Here are some suggestions for other grades/activities. However you would need to go through the books and ideas as well as the curriculum guides for your grade to see what exactly matches your needs and the needs of your students.

Overheads- Lower elem or spec ed- "Winter"(overheads 25 and 26)

Elementary- "Exploring Natural Objects"(Overhead 27)

Research results: Overhead # 28

Bruce Campbell ( a grade three teacher in USA) has found the following results using Multiple Intelligences:

- 1) Increased responsibility, independence and self direction
- 2) Improvement in behaviour
- 3) Improvement in co-operative skills
- 4) Improvement in ability to use many modes of presentation
- 5) Leadership skills emerged
- 6) Music and movement helped retain information
- 7) Teacher became more facilitator than director
- 8) Teacher sees children in different ways

Resources

A lot if not all of the books on Multiple Intelligences are based on US curriculum.

However, I have found that looking through them and thinking about my own curriculum gives me ideas to meet the needs of the kids I teach.

Go through the resources brought and discuss as time permits.

Quote from article in Educational Leadership (highlighted in green)

However, I have found that looking through them and thinking about my own curriculum gives me ideas to meet the needs of the kids I teach.

Go through the resources brought and discuss as time permits.

Quote from article in Educational Leadership (highlighted in green)