The effects on student performance related to the contributions of the multiple intelligences theory

Dennis Derne Perez

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THE EFFECTS ON STUDENT PERFORMANCE RELATED TO
THE CONTRIBUTIONS OF THE MULTIPLE INTELLIGENCES THEORY

A Project
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Education

by
Dennis Derne Perez
June 1998
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Approved by:

Dr. Juan Gutierrez, First Reader
Dr. Rosa Gonzalez, Second Reader
ABSTRACT

Educational systems should provide students opportunity to succeed. Howard Gardner’s Multiple Intelligences Theory promotes involvement through the expansion of intelligences inside the classroom. The goal of the theory is to make learning accessible to all students. Though there is a struggle beyond the grasp of many communities to motivate students, those who make the efforts to be agents-of-change, find Multiple Intelligences an option worth exploring. Throughout the project, scholarly analysis, teacher observations and student input demonstrate contributions the theory has on academic performances.
ACKNOWLEDGEMENTS

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<table>
<thead>
<tr>
<th>TABLE OF CONTENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT .......... iii</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS ... iv</td>
</tr>
<tr>
<td>CHAPTER ONE: INTRODUCTION ... 1</td>
</tr>
<tr>
<td>CHAPTER TWO: REVIEW OF LITERATURE ... 4</td>
</tr>
<tr>
<td>Introduction of Review of Literature ... 4</td>
</tr>
<tr>
<td>Literature of Howard Gardner ... 4</td>
</tr>
<tr>
<td>Application ............ 6</td>
</tr>
<tr>
<td>Assessment ............ 9</td>
</tr>
<tr>
<td>Criticism and Comparison ... 18</td>
</tr>
<tr>
<td>Summary ............ 20</td>
</tr>
<tr>
<td>CHAPTER THREE: SIGNIFICANCE OF STUDY ... 23</td>
</tr>
<tr>
<td>Social Importance ... 23</td>
</tr>
<tr>
<td>Instrumentation/Data Collection ... 24</td>
</tr>
<tr>
<td>Data Treatment Procedures ... 25</td>
</tr>
<tr>
<td>CHAPTER FOUR: FINDINGS ... 27</td>
</tr>
<tr>
<td>Introduction to Findings ... 27</td>
</tr>
<tr>
<td>Self-Assessment ........ 28</td>
</tr>
<tr>
<td>Learning Survey ........ 29</td>
</tr>
<tr>
<td>First Year Teaching ... 30</td>
</tr>
<tr>
<td>Second Year Teaching ... 31</td>
</tr>
<tr>
<td>Third Year Teaching ... 37</td>
</tr>
<tr>
<td>Fourth Year Teaching ... 38</td>
</tr>
<tr>
<td>Specific Models for Students ... 39</td>
</tr>
<tr>
<td>Model #1 ............ 41</td>
</tr>
<tr>
<td>Model #2 ............ 43</td>
</tr>
</tbody>
</table>
CHAPTER ONE: INTRODUCTION

Imagine walking into a room where a ballet dancer, a painter, musician, orator, columnist, mathematician, comedian and a botanist are sitting around a table conversing about their experiences. To your interest, the discussions lead toward everyone’s accomplishments. You are very curious to why these people were gathered. The next person who walks into the room is a professor who explains the purpose to the meeting. The professor states that each one of these individuals possess talents and abilities which allow them to solve problems and produce results which are unique to their life’s. The host thanks the group before dismissing all but the orator and mathematician. The guests become confused to the professor’s directions but comply with the directive.

The professor requests the two remaining persons spend sometime thinking about what they perceive as the characteristics of learning. The orator is asked to produce a speech regarding learning, while the mathematician is expected to create graphs and charts which illustrate an understanding of learning. After the orator and mathematician complete their tasks, the six other specialists return to the room.

When they return, the mathematician and orator show the group what they had accomplished. The professor was especially praising of their ability to demonstrate their
understanding. The professor continues the forum by requesting the other six perform the same tasks in the same linguistical and mathematical manner as the first two specialists have done. The six people soon became frustrated because neither of them were particularly strong with their math or language skills.

The professor abruptly interrupts them and requests the eventual completion of the speeches and graphs, but also encourages them to adapt the assignment, by showing what learning is through their own special fields. The specialists began to complete the tasks more calmly and confidently using their own strengths and talents. When they were finished, the professor applauded their performances, before requesting the group discuss their experiences with the assignment.

The diverse clan quickly suggested they were at a disadvantage at the beginning of the lesson, because the mathematician and orator were allowed to complete the task using their own strengths, while everyone else were required to begin work outside their strengths. The observant group continued to discuss how much easier and obtainable the assignment was, when they were given the flexibility to utilize their talents.

The professor, quite impressed with their observations, explained that in the learning environments of a classroom, the mathematician's and orator's skills of math and
linguistics, respectively, have been the skills that have traditionally dominated in the field of education. Other strengths, that individuals might have, have been either neglected or not nurtured.

The professor concludes by explaining how the playing fields need to be made more equal. This can be done by allowing the strengths of every student to be their driving force to their successes. The professor also emphasized the deep need to know how to read, write and count, in order to function in society, but that learning the content, which helps connect the students to problems and conditions, can be acquired in numerous ways.

This scenario demonstrates the Multiple Intelligence Theory developed by Dr. Howard Gardner, a clinical psychologist at Harvard University. He believes the educational system has failed to nurture the strengths of most students and has limited the greatest learning experiences to the mathematical and linguistical driven learners.
CHAPTER TWO: REVIEW OF LITERATURE

Introduction of Review of Literature

The review of the literature found limited information regarding validity or accuracy of assessment tools used in conjunction with the Multiple Intelligences Theory. Since the theory is relatively new to the educational field, teachers rely heavily on observations to determine assessment. According to Zook (1996), a Corona-Norco alternative educator, researchers have not specifically identified in the brain exact locations and functions of the intelligences. Until more empirical evidence is obtained about the brain, teacher observations related to Multiple Intelligences will be subject to interpretation.

Literature on Howard Gardner

Gardner's Theory, which was being developed in the late 1970's, first emerged publicly with his book Frames of Mind (Gardner, 1983). The theory, which identifies eight distinct brain-based intelligences, emphasizes the kind of smart you are, rather than how smart you are. These intelligences are categorized as bodily/kinesthetic, logical/mathematical, linguistic, intra-personal, inter-personal, musical, spatial and naturalist.

After Gardner published Frames of Mind (1983), it soon became known as the bible of Multiple Intelligences. Gardner contends humans possess several distinct intellectual faculties that develop and operate independently, rather
than the traditional belief of just one intelligence (1998). He suggests as long as you can lose one ability, while the others are spared, you cannot just have a single intelligence, but several (Gardner, 1998).

The evidence for the independence of the intelligences surfaced when Gardner was studying brain damaged patients back in the 1970's. Gardner began a long series of important studies investigating cognitive problems in people suffering from brain damage (Gardner, 1998). He observed when a person had a stroke, to be able to identify the certain parts of the injured brain, would help indicate the function of the particular brain area (Gardner, 1998).

An example Gardner (1998) gives, is when he observed brain damaged individuals who lost their ability to play music, but could still talk Gardner took the research about brain damage and began to identify factors relating to his theory. A primary importance to Gardner was that any intelligence had to be valued for the ability to solve problems in a culture (Gardner, 1998). For example, the musicians ability to manipulate notes and rhythm to read a musical score is consistent with the problem solving capability, while music is valued in society (1998).

Besides the culturally related problem solving capability, Gardner established three other conditions to identify intelligence: 1) The conditions consider whether there is brain representation for the intelligence; 2)
whether there are individuals in the population who are especially good or especially impaired in the intelligence; and 3) the final condition focuses on an evolutionary history of the intelligence in animals other than humans (Gardner, 1998).

As previously mentioned, Gardner has presented eight intelligences, he is currently researching a ninth intelligence called existentialist. This intelligence refers to the human inclination to ask the basic questions about existence. Gardner suggests that the existentialist intelligence allows individuals to know the internal and external worlds. The only reason Gardner has not approved the this ninth intelligence, is it has not shown good brain evidence yet on its existence in the nervous system, which is one of the criteria for an intelligence (Gardner, 1998).

In recent years, Gardner’s, The Unschooled Mind and Multiple Intelligences (1991), attempts to narrow the gap between theoretical and practical uses of the learning theory (Gardner, 1998). While in his latest book, Leading Minds: An Anatomy of Leadership (Gardner, 1997), he focuses on the diverse and innovative talents that comprise that complex form of genius known as leadership (Gardner, 1998).

Application

In the application of Multiple Intelligences, Gardner (1998) contends progress can be made within the specific intelligence, although some people will improve in an
intelligence area more readily than others, either because biology gave them a better brain for that intelligence or because their culture gave them a better teacher.

Though the intelligence strengths need to be identified, Gardner suggests real world connections as true links to the Multiple Intelligences.

"If you cannot easily relate an activity to something that is valued in the world, the school has probably lost the core idea of Multiple Intelligences, which is that these intelligences evolved to help people do things that matter in the real world" (Gardner, 1998, p. 1).

While Gardner believes real world connections will make the difference with Multiple Intelligences, interpreting the theory as an instructional process can provide numerous entry points into lesson content. The decision when to develop abilities should be shared both early in life and daily in school activities (Gardner, 1998).

To begin lesson planning, teachers should reflect on a concept that they want to teach and identify the intelligences that seem most appropriate for communicating the content. This is not to say that a teacher should consistently avoid an intelligence because it is out of his or her comfort zone. Instead, teachers should team up with colleagues so that they can increase both their own and
their students' educational options (Multiple Intelligences, 1998).

Some educators use the Multiple Intelligences to promote self-directed learning. They prepare students for their adult lives by teaching them how to initiate and manage complex projects. Students learn to ask researchable questions; to identify varied resources; to create realistic time lines; and to initiate, implement, and bring closure to a learning activity. Regardless of the disciplinary focus, these projects typically draw on numerous intelligences (Multiple Intelligences, 1998).

By working through these project guidelines, students naturally engage several intelligences. In projects, such as studying optical illusions, many students might even use seven of the eight intelligences during the learning experience. Perhaps more important, by initiating and completing projects of their choice, they acquire valuable autonomous learning skills (Multiple Intelligences, 1998). When appropriate, students may even select the way they will demonstrate what they have learned. Some teachers have used Multiple Intelligences menus as assessment options. The teacher specifies criteria for quality work, knowledge, and skills, but leaves the students free to use flow charts, role play, original songs, or other approaches (Multiple Intelligences, 1998).
Assessment

Assessment begins in the classroom, and it must provide purpose. It allows educators to determine how students are doing and whether students are learning from the curriculum. It measures students’ attainment of standards, guides instruction, informs students and parents of progress, and provides information about program effectiveness (Wright, 1998).

As teachers begin to assess student performances using the Multiple Intelligences, Gardner continues to dispel the myth that, because we have seven or eight intelligences, we should create seven or eight tests to measure students' strengths in each of those areas. That is a perversion of the theory according to Gardner. "It's re-creating the sin of the single intelligence" (Gardner, 1998, p. 1).

Gardner does though strongly encourage authentic assessment. He contends the educational system needs to develop assessments that are much more representative of what human are going to have to do to survive in this society. Gardner’s example to this is related to literacy. He believes literacy should not be neglected, but rejects the measure of literacy through a multiple choice test that makes you select the best meaning of a paragraph (Gardner, 1998).

Instead, he would rather have you read the paragraph and list four questions you have about the paragraph and
figure out how you would answer those questions. Or, if someone wants to evaluate an individual's writing ability, provide that person, with an issue and see whether that person can write about that topic. In an even more authentic assessment, have students write an editorial in response to something they have read in the newspaper or observed on the street (Gardner, 1998).

Multiple Intelligence Theory is very congenial to an approach that says let us not just look at things through the filter of a short-answer test, but also look at the "performance that we value, whether it is a linguistic, logical, aesthetic, or social performance; and, two, let us never pin our assessment of understanding on just one particular measure, but let us always allow students to show their understanding in a variety of ways" (Gardner, 1998, p. 1).

Contemporary learning assessment has offered dynamic approaches to demonstrating evaluation toward students. With standardized testing criticized for its narrow documentation of student understanding and ability (Armstrong, 1994). Gardner's theory offers a fresh look at student assessment. He has promoted the expansion of intelligences inside the classroom since the early 1980s. Since then, attention to authentic assessment has become a greater issue for the educational system. With the
combination of intelligences and critical thinking activities as the underlying factors, authentic assessment centered on performance based results, have appealed to new and innovative educators and learners.

In an article written by Gardner, he describes a history lesson where students could demonstrate understanding through any one of the intelligences. The students performed skits, wrote stories, or built models to demonstrate their understanding. Gardner stated that teachers should assess for understanding with an appropriate method (Wright, 1994).

How the Multiple Intelligences Theory contributes to assessment is important. In a Missouri school site, educators created a curriculum based program using Gardner's theory (Hoerr, 1994). The Missouri teachers admit there is a change in the way they assess students with Multiple Intelligences but recognize there are not enough rules yet to establish strong assessment tools. Their hopes for these assessment tools surfaces through attending conferences that network the teachers with those who also engage the theory. Teachers have begun using portfolio assessment to demonstrate understanding. They have added dramatic performances, exhibitions and projects to their assessment style. With these remediations to previous assessment, they have seen a more accurate picture of each student's progress (Hoerr, 1994).
One of this programs benefits has been that teachers are working together and feel more unified. Teachers worked together to create an idea book for teaching Multiple intelligences. They have changed parent-teacher conferences to Multiple Intelligences conferences. Also, teachers and parents worked together to create student profiles (Hoerr, 1994).

They have also found several problems while using this program. Teachers have found it most difficult to integrate musical intelligence activities into the curriculum. They felt that this is because most teachers lack the musical intelligence as a strength. Also, teachers feel that it is very difficult to incorporate the Multiple Intelligences into the curriculum at sixth grade and higher because the students begin having multiple teachers each day instead of just one (Hoerr, 1994).

The curriculum at the secondary level is predominantly linguistical and mathematical. Researchers are still looking into the sixth grade curriculum to determine why this occurs.

They have continued to administer standardized tests, because that has been the traditionally accepted measurement, but have found these tests to be inadequate. Teachers at this school in Missouri feel that they found a more accurate form of assessment through portfolios (Hoerr, 1994).
Teachers at Eleanor Roosevelt Elementary School in Vancouver, Washington, have developed approaches that involve both parents and students in assessment. Students individually evaluate the skills and knowledge they have acquired and include their assessments in their portfolios. They also work in groups to assess another student's projects and evaluate their courses and teachers (Multiple Intelligences, 1998).

Portfolios that use self-evaluation and mix intelligences when testing in specific intelligences are not always accurate. Osborne's research found that there was not an easy test or method for evaluating students' progress in the individual Multiple Intelligences. They attempted to use Multiple Intelligences tests that are currently being used in classrooms around the country but found inadequate results. Students using self-evaluation were unable to assess their use of multiple intelligence properly and efficiently Osborne determined that progress in each modality needed to be tested separately (Osborne,1995).

Assessment tools should not involve any of the other intelligences, stated Osborne (1995). Using linguistic to self-evaluate math was not an accurate test of mathematics progress. Often teachers use this form of self-evaluation in portfolio assessment or mix projects with several intelligences. Osborne believes that tests still need to be made to accurately assess progress made by students in
each of the intelligences. While assessment tools, such as the portfolios, are still being considered for authentic evaluations.

Armstrong (1994) concurs with Osborne and is very critical of standardized tests. He believes any test should give parents, teachers and students information about the students' progress. In addition, Armstrong suggests, "standardized testing reduce children and all their thoughts, feelings, behaviors and achievements to a handful of percentiles, rankings, letter grades and fancy sounding labels" (Armstrong, 1994, p. 87).

An analysis of standardized versus authentic assessment compares the Bell-Shaped Curve and the J-Curve. Though Armstrong recognizes the Bell-Shaped Curve can offer averages of certain given variables, he is critical of making any assumption of human growth along this traditional measurement. Armstrong strongly suggests the J-curve, is a more accurate tool for human growth. The J-curve demonstrates human growth in a “compounding fashion” (Armstrong, 1994, p. 88). Under this more contemporary educational tool, the J-Curve considers the knowledge that is acquired to enhance our life experiences. Armstrong adds, "If our assessment practices are to reflect this growth, we must provide opportunities for students to demonstrate their growing knowledge and
learning to us in whatever ways we can”

Gardner echoes Armstrong's assessment paradigm shift by suggesting all assessments should be based primarily to aid students. He addresses the need for the assessor to provide feedback beneficial to the students' present needs. For example, if the student is creating a poster board for a history project, the assessor needs to provide information regarding the strength and the weakness of the performance of the student. This is not necessarily a rubric alone, but conversations with the student to identify the students' needs. Gardner suggests feedback should include,

“concrete suggestions which indicate relative strengths to build upon, which are independent within ranks a comparative group of students”
(Gardner, 1998, p. 1)

Armstrong (1994) discusses Gardner's development of natural learning environments. He summarizes Gardner's believe that the world has a set of skills it values and naturalistic settings of assessing which is diminished by artificial tests that are correlated to produce data no necessarily authentic or relevant results.

In summary, Armstrong and Gardner see the best assessment as one that provides natural learning environments which have obtainable and challenging goals. They see each learning experience as a process. And within
each process, the teacher needs to provide valuable
information that helps student growth. After the students
receive the teacher's help, they should continue
independently or in a group to complete the task.

In the collaborate learning model, one that Gardner and
Armstrong praise, students move through a circular cycle
that considers the value of experiential learning, the
teacher facilitates the progress more humanistically by
providing interaction not necessarily present in traditional
learning models.

According to Zook (1996), one component with the
Multiple Intelligence Theory is determining the location of
each intelligence and how each intelligence is processed in
describes the assumed functions of the two hemispheres of
the brain. While, the left hemisphere is responsible for
the speech language, words, writing and logic of a
person, the right hemisphere is associated with spatial, art,
music, architecture, mathematics and emotions of humans
(McMahon, 1991).

With not knowing exactly the location and the process
of each intelligence, it becomes a difficult task of
assessing accurately or manipulating the assessment tool for
future effectiveness. Gardner addresses this concern by
identifying the number one assessment tool for teachers as
daily observation of student progress and growth.
Both Armstrong and Zook’s colleague, Reddish (1996), discusses the observation process which merges Bloom’s Taxonomy with the Multiple Intelligence Theory to create assessment tools that consider both the cognitive and the intelligence development of each student. Reddish (1996) describes the process as a horizontal and vertical transportation system. He suggests the Multiple Intelligence Theory functions as a highway with many cars to choose from, while Bloom’s Taxonomy functions as an elevator, that carries the learner to higher thinking outputs.

Armstrong echoes Reddish’s ideas with matrixes that combine both the cognitive and intelligence choices for the learner. Armstrong describes the merger between Bloom’s Taxonomy and Multiple Intelligences as a very cohesive match of tools. He sees Bloom’s functions as a “quality-control mechanism” (Armstrong, 1994), which monitors the students’ critical thinking as they process through their own intelligence areas.

In conclusion, it is that obvious researchers are making progress with authentic assessment. As secondary education continually moves toward better assessment tools, authentic assessment should integrate the curriculum, instruction and assessment in natural environments so these three components are unified to represent student progress not as a statistic but as a observable and measurable outcome.
Criticism and Comparison

Harry Morgan (1992), a professor of early childhood education, is critical of the Multiple Intelligence Theory. Morgan believes that Multiple Intelligences is not about new intelligences, but rather, "a reframing of what others have defined as cognitive styles" (Morgan, 1992, p.1). He suggests Multiple Intelligences is nothing more than the re-labeling of the primary abilities in factor analyses of his Cognitive Styles Theory derived from intelligence and re-labels them as intelligences (Morgan, 1992, p.1).

Morgan (1992), though is hesitant to credit Gardner with originality of his ideas, sees the Multiple Intelligences Theory having numerous capabilities between the Cognitive Styles Theory. For example, Morgan suggests that Gardner's logical/mathematical intelligence is what Morgan identified in his Cognitive Styles Theory as someone who is field-independent with numerical ability. Morgan's theory does not separate the abilities into separate intelligence like Gardner's does. Morgan feels the labeling of separate intelligences for aspects of cognition does not appear to be warranted (Morgan, 1992).

Though Armstrong is a strong supporter of Gardner, he, like Morgan, is critical of components of the Multiple Intelligences Theory. Armstrong comments how the Multiple Intelligence is a difficult model because it lacks a compliment of techniques and strategies (Armstrong, 1994).
He suggests that Gardner has left the application of Multiple Intelligences to others. In Gardner's defense, he has published The UnSchooled Mind (1991) and Theory in Practice (1993) which both address the practical issues of Multiple Intelligences.

Henry Levin (1994), a Stanford University professor, was critical about the effectiveness of Gardner's ideas in Multiple Intelligence: The Theory in Practice (1993). Levin suggests that the chapters discussed applications that were created for research information rather than focusing on the application for the classroom.

Others have come before Gardner, such as Morgan (1992) regarding multiple learning categories. One example is Jerome Bruner, who in 1960's classified learners into three types: enactive, ikonic, and symbolic. His divisions have similarities to Gardner's theory. The enactive learner is represented in Multiple Intelligences as the kinesthetic learner, while the Ikonic learner was equivalent to Gardner's spatial intelligence. Bruner's final category is the symbolic learner, which is similar to the linguistic learner.

Bruner explained that traditionally students have been using symbolic modality, making success more difficult for enactic and ikonic learners (Bruner, et al, 1967), much like Gardner's contention the field of education is tailored toward the linguistic and math strengths.
Summary

Throughout the literature review, it was obvious there is a growing dynamics involved with meeting the needs of the students. Gardner patiently suggests the disservice to the learning environment that has occurred for many years. Most of the criticism with the Multiple Intelligence Theory rests with not enough practical assessment tools. Though, Morgan (1992) makes parallels with the Cognitive Styles Theory and Multiple Intelligences Theory, both he and Gardner aligns themselves with Armstrong's contention that observation is a key to authentic assessment.

Gardner does not suggest a complete overhaul of the educational system, but merely an adapted format which demonstrates the inclusions of the seven to eight intelligences he has identified. The three primary conditions used to identify intelligences help to establish greater claim to understanding the human learning process.

All three conditions for intelligences, representation in the brain, ability differentiation and the evolutionary history, provide the basis for Gardner's theory. Gardner also believes there is a problem solving factor involved within each of the divisions of the intelligences.

Educators also using the Multiple Intelligence Theory should be cautious about not over using it or being to specific with it. Levin (1994) was very critical of finding greater assessment tools to help evaluate Multiple
Intelligence performances. Since schools should be a place where individual talents need to be fostered, the modern classroom should be a live performance of talents not a stage for a teacher's overhead and notes.

Multiple Intelligences is driven largely by students' talents, strengths, and interests. The great future of the classroom will be designed as an evolutionary experience not necessarily looking the same, day to day, but adapting to every new teachable moment. Teachers are recommended to team teach as much as possible with the Multiple Intelligence Theory. This is not to say that a teacher should consistently avoid an intelligence because it is out of his or her comfort zone. Instead, teachers should team up with colleagues so that they can increase both their own and their students' educational options. The choices and options are key to a natural learning environment.

Secondary education, who does not incorporate the Multiple Intelligence Theory should do so. Traditionally, the theory's elements are highly visible in the elementary environment where a teacher is teaching multiple subjects, but the need is still great at the middle and high school levels. The Multiple Intelligences projects allow more of a comprehensive approach over a longer period of time giving the students opportunity to choose pathways to greater success.
Multiple Intelligences, theorists, such as Gardner and Armstrong, agree that children do learn in a variety of ways. They also agree students should actively participate in learning. Multiple Intelligences Theory indicates that children should connect not only intellectually, but also physically and emotionally with the topics they are studying. The affective and cognitive domains combined with the application of information creates the natural learning environment. Howard Gardner certainly accomplishes this feat with the Multiple Intelligence Theory.
CHAPTER THREE: SIGNIFICANCE OF THE STUDY

Social Importance

The social importance to the study is the need to motivate students to be prepared to meet the demands of not just college, but the work force. According to a national survey called the Scans Report (Martin, 1991), complaints from the job market contend that the educational system is sending students into the work force with inadequate basic skills and inability to critically think.

Unless there is change that recognizes the dynamics of the individual toward the social arena, any restructuring will lead back to ineffective measures. Educational participants such as Garcia (1996), a superintendent for the Corona-Norco Unified School District in California, comments about the philosophical switch that the educational field has begun to react toward how Multiple Intelligences might help increase student involvement and performance and reduce the skill deficits the Scans Report suggests.

Garcia (1996) visions future classrooms where both the educators and learners are capable of intelligence styles. By understanding individual strengths, those unmotivated or uninvolved will be offered options and choices. It is essential, to get them not only involved, but also have them produce quality performances, if their the skills are going to improve. The unfortunate conclusion, is that this a time
consuming effort to identify and observe individual capabilities.

Instrumentation/Data Collection

The Multiple Intelligences Theory was researched because it has been a primary source of instruction and assessment for my classroom the past four years. The data collection instruments included an interview conducted with the superintendent of my district, the Corona-Norco Unified School District. He was selected because of his leadership with Multiple Intelligence. Garcia has promoted the theory throughout his schools, while his administrators have encouraged the daily use by teachers and students (Garcia, 1996).

Other interviews were conducted within the district at an alternative education school with a regular high school. Zook and Reddish (1996) were selected because their teaching model, which has promoted Multiple Intelligences, has been used in my classroom the past four years.

Their alternative education program was initiated with a pilot program back in 1993. The mission of the program was to support academic and social deficient students (Zook, 1996). Zook and Reddish (1996) have since developed the curriculum to include interactive, critical thinking projects which encourage students to use their learning strengths.
One of the most important groups that provided information for this research were the students at Norco and Santiago High Schools. The students became the catalyst behind the research, because the data was useful to analyze with Gardner's Theory. The self-assessment of Multiple Intelligences, that the students completed, was used to establish patterns of their strengths and intelligences, while the learning survey provided information related to their feelings toward authentic assessment compared to standardized testing.

Data Treatment Procedures

Inductive logic was applied to this study. Since Multiple Intelligences is an evolving and progressive methodology, the inductive conclusions provide patterns of learning for each of the intelligences.

The data has been classified using the interview questions and survey responses. The interviews were incorporated into discussions with the paper, while the self-assessment, the learning survey, and the models revealed the students information.

The emergent design procedure related to this study began with preconceived ideas of the researcher. When the study began, the researcher believed that Bloom's Taxonomy was used to assess students' mastery of the curriculum. Through library research, interviews and observations, it became apparent that Bloom's Taxonomy was well crossed with
Thomas Armstrong's work of combining the Multiple Intelligences Theory and Bloom's Taxonomy. As the review of the literature progressed, portfolios, projects and simulations were typical assessment tools that the Multiple Intelligences classroom utilized.

Within the evolution of this study, mastery of the content was incorporated with the learning experiences of the projects. The students were expected to engage the learning process, as they progressed through each learning experience. The mastery of the process became the key to their successes. The content was integrated into the projects, making it almost impossible to complete the assignment without acquiring the knowledge of the content. So the assessment tools became the completion of process of the product, rather the isolated evaluation of just the content. Throughout the project time, those who were aware of the process, had less difficulty completing the tasks, compared to those who struggled unsure of the process.
CHAPTER FOUR: FINDINGS

Introduction to Findings

Multiple intelligences impacts the contemporary dynamics and diverse American classroom. Garcia (1996), who has worked with Roger Taylor, a researcher of Howard Gardner’s theory, expresses the realistic cornerstone of this theory. He describes the current state of the Multiple Intelligences Theory as something that makes the, "kids feel better, but is still lacking enough data to determine whether students score higher on assessment tests because of specific Multiple Intelligences strategies.

Regardless of the validity that might be necessary to bring greater attention to the reliability of the theory, Garcia (1996) suggests reasons behind why the school system is encouraged by the theory’s implications. “Howard Gardner’s book has been successful,” (Garcia, 1996) the superintendent stated. “I think people have a lot of kids who have been successful with it, (who) usually don’t feel connected to (school)” (Garcia, 1996).

Student Multiple Intelligence Survey

The next paragraphs consist of student responses to this learning method and comments on classroom management of the Multiple Intelligences. The students at Norco High School were given an opportunity during the week of March 6, 1996 to provide feedback about their feeling on Multiple Intelligences. The feedback was a general oral discussion
regarding Multiple Intelligences. Approximately 55 students, (20 freshmen and 35 sophomores) from two classes, completed the oral questioning about the Gardner's theory. Most of the students in the sophomore class were receptive to the new learning method. Their most critical comments centered around learning the new method. Some found it difficult to memorize all the categories and criteria for each intelligence, while others enjoyed the challenge.

The students thought the learning method offered the opportunity to be more creative than past classroom experiences. The out-going students were glad to be in groups to complete projects, but realized the work required was very time involved. The freshman class offered similar sentiments about Multiple Intelligences. One of my top students commented that this method was better, because it allowed for more creativity, but at the same time made her think harder. One student found it to be useless, but showed praise for the method because he was allowed to draw more often, and he considered himself a good drawer.

Self-Assessment

My students at Santiago High School completed a self-assessment of their multiple intelligences at the beginning of the fall of 1997. The assessment purpose was to indicate some patterns of interest or ability. Thirty-seven sophomores students completed the assessment. The students seemed motivated by the assessment activity,
even though it did not appear to be the strongest indicator of their intelligence strengths or interests. A more effective indicator of their strengths and interests appeared to be a combination of their final products and their day to day problem solving in the classroom. Though it does provide a starting point for new teachers who want to explore this learning theory. Of the thirty tenth grade students who participated, 16 were females, 18 were males and three did not divulge their gender.

Learning Survey

My tenth grade students at Santiago High School were surveyed about the issues of standardized testing versus alternative assessment in April, 1997. Each student answer is followed by a response by me. All questions are independent of each other, meaning the students who responded to one question, may not have necessarily answered all the other questions. Since this was an optional survey, many student chose only to answer particular questions. When their answers were selected to be included in this study, it was based on clear and thoughtful responses. Though there was a preconceived notion that students would prefer alternative assessment, the answers varied to their reasons for preferring performance based learning over standardized tests. (Appendix E)
First Year Teaching

My first awareness of the Multiple Intelligences Theory was during a prerequisite education classroom subsequent to student-teaching. During this time, the professor introduced surface level ideas regarding Gardner’s theories on learning. A fortunate long-term teaching position at Norco High, two months later, put me closer to the functional use of the theory. Within an alternative educational setting and a standard class setting in 1994, the first attempts of using Multiple Intelligences occurred. Since my experience and knowledge base were so low, the students were introduced to the names of the seven intelligences and were given the opportunity to do activities so that would allow them to show they could recognize some particular abilities.

In one specific regular 11th grade class, the class was required to do a nine week project that integrated Multiple Intelligences and a literary time period. The project fell under Gardnerís suggested uses of project and outcome based performances to demonstrate Multiple Intelligence effectiveness. The class size was 36 with 60% males. The class was required to write a five-page term paper and produce a project that used all seven Multiple Intelligences.

The results were not extremely satisfying. But, considering this was the first attempt at Multiple
Intelligences, the students were commended. The projects that they completed were done in groups of four to six people and only one group showed effectiveness in explaining how each of the seven Multiple Intelligences was used. My greatest satisfaction was that students completed the experience and there were good data that was used to help create a more effective future Multiple Intelligences experience.

Second Year Teaching

A year later, after student-teaching was completed, a contract to teach under similar 1994 conditions was offered to me. This time, it was clear that the vision was to take Gardnerís theory and teach it from ground zero with one class of freshmen and two classes of sophomores. The problem that occurred in 1994, related to attempting to utilize the Multiple Intelligences strategies consistently in all six classes. The task became overwhelming, because of the time necessary to identify strengths of over 120 students, while patiently learning the concepts for myself. By the second semester of the 1994-95 school year, only half of the classes were being introduced to the Multiple Intelligences concepts.

The initial concern with my first attempt with Multiple Intelligences was it lacked any solid assessment tool. Gardnerís suggestions were transferred into lesson plans and then the teacherís subjectivity of the activities produced a
grade without much thought beyond how nice it looked, compared to what levels of Bloom's Taxonomy did the student achieve during the process of the activity.

In my second attempt at a classroom utilizing the Multiple Intelligences strategies, the teacher’s role as an observer became apparent.

The team of teachers, consisting of Zook and Reddish, were working with me in my two periods of alternative education, attempted to find a high school in November of 1995 that utilized Multiple Intelligences on a daily basis, in order to gain further insight toward assessment. After many attempts to locate an Multiple Intelligence classroom to observe at the high school level we were unsuccessful. What we observed was a progressive middle school in Fontana. The principal at the school, suggested we continue the alternative education with the Multiple Intelligences, while eventually, other teachers will naturally migrate toward the successes causing campus wide changes toward the authentic assessment model.

During the previous six months before January 1996, there was a search for any Multiple Intelligences assessment tools to help me prepare for the second semester’s Multiple Intelligences classroom. There were three tools that were identified as necessary to start an effective Multiple Intelligences classroom. The first tool was a self-assessment on abilities, which would eventually be used
to introduce future classes with the concepts of Multiple Intelligences. The other tool was practice material that would help the students practice Multiple Intelligences. These practice materials consisted of topics that students had to transform into different activities. For example, students would have the option of drawing or writing poems to demonstrate they had understood the concepts. The final material were assessments that would indicate how well a subject matter was learned under Multiple Intelligences.

Starting the first week of February 1996, my first and second period sophomore classes, and my fifth period freshmen received a self-assessment survey on Multiple Intelligences. The survey consisted of 30 true or false questions that were used to help show some indication toward their strengths in the Multiple Intelligences. After the survey was completed, the students were able to see scores ranging from 0-5 in each of the seven intelligence categories. Scores of three or above indicated the students might have high interest or aptitude for that particular category. The classes then were taken through each intelligence category in order to explain what each meant.

This step-by-step method of taking the students through and providing them with basic information greatly enhanced the performances compared to my first attempt with multiple intelligence a year earlier. There were still no distinguishable connections that could be used to offer
authentic assessment under assessable conditions. The other problem that occurred was one of the sophomore classes completely rejected the method by not doing the work necessary to understand the new learning method. This left me with two classes who showed some motivation to learn a new style. What I did was drop the Multiple Intelligences from first period and continued with second and fifth.

Dropping one class did not bother me, since the main goal was to create at least one fully functioning classroom which consistently used the Multiple Intelligences strategies. After reducing the attempt to create a consistent Multiple Intelligences to two classes, another decision was made to only teach the Bloom’s Taxonomy to the freshman class and continue to re-enforce the ideas of Multiple Intelligences in the sophomore class. This was done primary because my confidence and understanding of both Bloom’s Taxonomy and Multiple Intelligences was still limited.

In the sophomore class, they were given a series of options that helped weed them away from old assessment standards. For example, the class has been studying King Arthur for four weeks. The mid-term assessment provided them three options. Those three options were answering a multitude of questions that the book provided, take an in class test or create a multiple intelligence product that demonstrated knowledge of not just the different
intelligence categories but the seven intelligences interacting with the information on King Arthur.

The results had two students doing the project, two people doing the book questions and remaining thirty students taking the in class quiz. In the next available test though, 70 percent of the students opted either for the questions from the book or Multiple Intelligences activity. The satisfying results were the students were beginning to use the options and stay away from traditional standardized in class tests that might not be utilizing their best abilities.

The freshman class showed most effectiveness with the multiple learning strategies, than any other class incorporating the Multiple Intelligences methods. A possible reason for the freshmen success, and one that takes in consideration Gardner’s theory suggestions authentic assessment, was the integrating of Bloomís Taxonomy into the learning method. The freshmen were carefully introduced to Bloomís Taxonomy only after five weeks after getting introduced to Multiple Intelligences. The outcome appeared to have had positive results. The freshmen demonstrated understanding of both Multiple Intelligences and Bloomís Taxonomy as tools to quality learning.

Armstrong’s (1994) ideas on integrating Bloom's Taxonomy and Multiple Intelligences were attempted by this freshmen class. What the students had to do in class, was
take a topic and by this point in time they have also
integrated their literature, and completed activity similar
to this:

Multiple Intelligence and Bloom's Taxonomy Activity

Multiple Intelligence category: Mathematical

Topic from To Kill a Mockingbird: Atticus

Evaluation: Explain which character has the greatest advantages because of his height and why?

Synthesis: Draw a Graph that demonstrates how tall Jem might be when he reaches Atticus current age.

Analysis: Distinguish the size differences between Atticus and Boo Radley.

Application: Graph the size differences between Atticus and the other characters.

Comprehension: Identify this man is Atticus who is six feet tall.

Knowledge: Recognize the man is a particular size.

The students did this activity four times a week. The purpose of this exercise, was to be able to recognize the specific task for each intelligence category for each level of understanding. This person who would have done the above shown Multiple Intelligences and Bloom’s Taxonomy activity, hopefully would have stayed interested because he or she had an aptitude for math or just interested in this activity.

The students were required to do one of these activity sheets a day until the end of the quarter in April. At the
beginning of the fourth quarter, the freshmen began to do the activities that they have proposed in these activities sheets. Those who completed every activity for each level, while explaining how each level increases the thinking capacity, would have succeeded. The final examination at the end of the unit will consist of being able to take the story they have read and create this activity sheet for all seven categories and then perform all tasks required at each Bloom’s Taxonomy level. This was a time consuming effort, but if completed, there should be no doubt to their understanding and application of the information that was provided to them.

Third Year Teaching

In the fall of 1996, my duties as a teacher were transferred cross-town to Santiago High School. During the school year, the principal observed and evaluated my classroom twice. What he observed was my attempt to actively get the students to recognize Bloom’s Taxonomy and Multiple Intelligence within their activities and projects. The rational was if they could understand the process of the two, then they could manipulate it for greater use.

The principal suggested to reduce the attempt to have students understand all the teaching principles and focus on getting the student engaged with the learning activities which involve the content. The adjustments were made and students became less focused on the lingo of Multiple
Intelligences and Bloom's Taxonomy and concentrated on the experiences that utilized these two tools. Though it seemed the plan was a good one to get them to understand teacher techniques, they enjoyed the experiences better without the stress of understanding any of the learning theory.

Fourth Year Teaching

The students have been very focused on their own individual strengths even though some have worked in groups. The final project directs the students through what seems to be the best use of Multiple Intelligences: the interaction of students that is tied to accountability toward themselves and to the group. This final project requires a more step by step completion. The students must first complete an eight source bibliography using eight different topics within a particular time period. The requirements get very structured. Even though they are assigned groups, the first week is individual research work. The students in the group have the same topic, but they are not allowed to use any of the same sources. This becomes challenging and problem solving. Also at the completion of the annotated bibliography stage, every group member must meet the deadline or face a group penalty for the group stage of this project.

The concept is accountability. They not only have to meet a deadline, but they must interact to ensure that nobody has used the same sources. The next step is for them...
to take their research and construct a music video that depicts life in the time period assigned. Between lecture of the content material and activities to enhance their understanding, they will spend a week constructing their scenes, props, music and anything else that they need. This will complete phase two. Phase three is the performance, which culminates the research, preparation and then the application. The final stage is the viewing of the presentations that were taped. This stage will asked the students to analyze and evaluate their work. The end result is variety of intelligences interacting simultaneously to produce a performance that is strong with research and developed through intelligences.

Specific Models for Students

From the start, the clearest observations of what Multiple Intelligences offers came when students switched from traditional skill based or standard linguistic-logical structures to Multiple Intelligences options that provide choices for success, rather than absolute non-negotiable assignments. From my early understandings of Multiple Intelligence in 1994 to the final projects in 1998, these three models demonstrates the process and observations made under the learning theory’s methodologies.

My students spent from September of 1997, through January 1998, learning study skills and completing research under strict guidelines. These tasks were required, so the
students could acquire structure and discipline necessary to develop into independent learners who were capable of functioning in collaborative environments. While there was struggle for many students to maintain the discipline of notetaking, reading, discussing, writing and critical thinking, the majority eventually adapted to the discipline and found themselves more involved during that time period.

The three models consists of three students who showed distinct individuals who adapted to the Multiple Intelligences differently, but with each with their own positive results. The three students were categorized by their personality traits that represented their dynamics in my classroom.

Paul is the first model, he represents the behaviorally challenged-underachieving students. Paul changed himself from a failing student, into a successful one, while he was under the consistent strategies of Multiple Intelligences Theory. The next model characterizes the bored but talented student. Jill was a bored achiever who was moved from the boredom to the challenged when she was given the opportunity to teach the class. The final model represents the structured and over achieving student. Rita can be defined as the traditional structured-logical and mathematical student. Rita was frustrated with the perceived unstructured environments she felt were created through Multiple Intelligences activities. But, Rita was once again
challenged by teaching the class in a creative but structured manner. Even though these are a small sample of my students who support Gardner's theory, these represent the overachievers, the underachievers and bored students that we must motivate every day in the classroom.

Model #1

The first example is a sophomore student who struggled to meet the needs of the highly structured first semester. In Paul’s first semester (Fall 1997), he showed low motivation, challenging behavior, and frustrated moments. The parents reaction was they hoped for a “C.” Well Paul received a “D,” and continued to create rebellious moments which challenged the order of the class. What appeared in the future for Paul was another quarter of struggle. Except, Paul was introduced to the multiple intelligence methods of learning from January 1998-May, 1998. Multiple Intelligences offered Paul choices and options not provided previously in this class for Paul.

This struggling student was asked not to read and write research, but to create a project of his choice, which demonstrated knowledge about World War I. Paul gladly volunteered to create a video. Though he was required to complete an annotated bibliography, Paul’s motivation was the video. His excitement and enthusiasm increased ten-fold compared to his previous semester. Paul not only received
an "A" for the project, but his peers voted his project, most creative and best depiction of World War I.

Between the top mark and recognition from his peers, Paul made an attitude and performance shift that was indicative to Gardner’s connection that students will provide quality and authentic work, when given choices and opportunities within their own learning strengths. Regardless of whether Multiple Intelligences actually functions as diverse learning communities, or the choices provided to the students provide increased motivation, the results look positive for someone like Paul who struggled through standard or traditional approaches to learning.

This model is indicative of the learning survey the Santiago High School sophomores completed in spring of 1998 (Appendix E). Throughout the survey, the students responses indicated a preference toward project based curriculums. As one student mentions about project based learning experiences, that students are allowed to do what they want as they demonstrate their talents. What the models do not show, which is important is the academics that are completed with in and around the projects.

Paul never discussed his other successes with me that related to the traditional learning environments, but they may be the true success story. While Paul was engaged in the Multiple Intelligences activities the second semester of the 1997-98 school year, his quiz grades, which were D's and
F's the first semester, were raised to a "B" average the second semester. His better attitude toward the tests contributed to his performance. During the first semester, Paul would complain and fail quizzes and test miserably, but in the second semester when he realized he could maintain his A's and B's by studying and focusing on achieving, his test and quiz performances far exceeded his scores from the previous semester (Appendix F).

Model #2

The next model represents the bored achiever. Jill received high marks the first semester (Fall 1997) and completed a strong research paper to earn an "A" for the first semester. Jill’s outgoing personality included strong signs of interpersonal intelligence. Examples of interpersonal intelligences was effective ability to work in groups and help classmates solve problems. Although Jill never refused a challenge, her restlessness possibly indicated boredom. At one point, Jillís behavior became disruptive, and she was removed from the class with an administrative referral and a telephone conversation with her mother. After her mother assured me Jill did not have a history of behavioral problems, her mother suggested her teen-ager needed further challenges to overcome her restlessness. Jill returned to school the next day and we talked about classroom expectations and then discussed her World War I project.
We negotiated Jill’s next project for the class. Since she had previously indicated a desire to teach, we explored the option. With a strict understanding that her behavior must be modified to meet the class standards, Jill was provided two days to provide students with review and understanding of the Treaty of Versailles. She was expected to do the proper research which transferred into learning activities. The results were very positive.

The first day, she brought in candy and played a review game, as well as provided the students notes. The second day she presented the class with a review, with short notes and a game of World War I Jeopardy. Jill was enthusiastic about this project as Paul was in the first case study. Jill’s success appeared consistent with Gardner’s theory. It was apparent the class had responded positively to her lesson and leadership.

The class perceived Jill as a special project to the class. In the learning survey the Santiago High School students completed, they indicated these kinds of activities as being fun for them. Not only did they mention fun, but also included creativity and learning more as elements to these projects or activities. Not only does this stay consistent with Gardner’s theory that suggest greater involvement through Multiple Intelligence (1998), but Caine (1991) whose research on the emotional and physical impacts of brain capable activities toward student success,
indicates how conducive role playing activities might be for positive learning environments. Anytime students are engaged in experiences and forget they are in a classroom, like the class Jill was teaching, the fulfillment of the Multiple Intelligences Theory comes closer to achieving its goal of increasing student performance and involvement.

Model #3

The third models discusses the traditional structured student. Rita was a my student in World History and United States History. Rita's self-assessment of the Multiple Intelligences indicated she was a strong linguistical-logical person. This is consistent with her highly structured lifestyle that is constantly looking for absolute answers. Rita, though, is able to succeed in both standardized and alternative learning environments because of her discipline and commitment to excel.

In the learning survey one response is indicative to the kind of learner Rita represents. The respondent suggests that multiple choice tests are better indicator of progressive because if you know the information you will receive good grades. The student, though, fails to recognize how little critical thinking might occur with multiple choices and more important how much learning is represented by a multiple choice test. But for this model, the attitude toward the multiple choice test indicates the different kind of learner the teacher needs to address.
In Rita’s case, this is consistent with this model of the structured student. Rita indicated early in the second semester, when the Multiple Intelligences activities were the primary learning sources, that she learned very little from these experiences, even though she produced outstanding products. She suggested her desire to create a game that would include the issues and concepts of the World War I the class was currently studying. What Rita did not realize at the time, was the instructions for the project (Appendix G) allowed for this creativity.

Rita’s game was also consistent with her structured personality, which is aligned with the mathematical and logical intelligence of the Multiple Intelligences Theory (Gardner, 1998). The war simulation she created, included problem solving questions related to the theme of power and control.

Rita initially divided the class into groups that represented countries involved in World War I. The groups were required to make their nation’s flag as preparation for the war simulation. After the flags were completed, the class answered a series of World War I, Jeopardy style questions, in order to demonstrate basic knowledge of the time period, as well as gain game pieces to play the board game Risk.

While the class played Risk with the regular rules that required the winners to take over the world, by eliminating
their opponents game pieces through a series of dice rolling confrontations, the purpose of Rita's game was to assign each student a particular job that required problem solving sessions before attacks or counterattacks were completed. The game, which lasted over four class periods, had a reflection period every day that required the students to write a summary discussing days activities were recorded. The final assessment was a discussion and a written evaluation to the problem solving techniques that was used to gain power and control over other countries during the game.
CHAPTER FIVE: SUMMARY

Conclusions

The experiential learning is regularly criticized for not having strong academic value. One of those criticisms surfaces due to many teachers using the experience as a filler that saves them or eliminates many hours of grading standardized assessments. This might be true to the extent that the person administering the alternative assessment is unaware of the dynamics or the awareness necessary to creating meaningful alternative assessment. But one thing that is obvious is an instructor knowledgeable in the numerous factors involving successful learning environments, will create situations more powerful than anything a multiple choice or lecture will ever consider accomplishing.

Social Science especially, has the opportunity to immerse itself in learning experiences far greater than the average learning environment. Why is this true? This is true because many humans tend to strive for social interactions. The language arts, science and math people do have specific skills they are building that will appear externally visible momentarily. Looking at successful math or science classes, especially a class like an honors chemistry, the instructors will point to their traditional approaches which are successful. Many of these teachers may be failing to recognize that it might not be traditional lecture style, but rather the hands-on laboratory experience.
that connects and motivates the student to the content and even the skill. So in social science, what is basically being done with these interactive hands-on activities, is creating what is equivalent to a social science laboratory experiences.

At my school, the social science department uses interactive learning materials developed by a series of companies. These materials are hands-on material that immerse the students into the content in a simulated incidental manner. Recently students were asked to provide me with information about a learning experience. They needed to tell me what they learned, how they learned, and what was the situation or condition they were in when the learning took place. To no surprise, the majority of the responses explained real life experience such as playing baseball and getting hit by a ball, to breaking up with a boyfriend or girlfriend. Our star pupils recognize what learning is, so we as educators must do the same.

But, what can teachers do to create these natural learning environments? The answer is simple but time consuming. Teachers need to understand all the dynamics of the classroom such as content, behavior, learning styles, intelligences, and classroom management. These factors are social science related and when understood, the manipulation of the natural learning environment becomes a playground for success.
Final Commentary on Study

During the course of this study, information has been provided that describes the outcomes that teachers see in the classroom when teaching with the Multiple Intelligences Theory. Zook and Reddish (1996) have found that students feel better about their work and their learning. Garcia (1996) felt that teachers who taught using Multiple Intelligences gave all students a chance for success. This study suggested that Multiple Intelligences should be taught using a balance of factors. These successful components were Bloom's Taxonomy, and the Multiple Intelligences Theory.

Teachers like Zook and Reddish constantly evaluate the impact the Multiple Intelligences program has in their classrooms so they can adapt to the needs of the students. Both teachers encourage observation as a good method of assessment. Although, both the review of literature and interviews indicated success using the Multiple Intelligences Theory, appropriate assessment tools beyond observation are welcomed and desired.

Recommendations for Further Research

The researcher recommends a quantitative study demonstrating evidence of academic progress directly resulting from the use of Multiple Intelligences.

This researcher recommends school districts conduct seminars to demonstrate to teachers how to better identify
student strengths and abilities, so this information can be applied to lesson planning. Other recommendations include, identifying educators who utilize Multiple Intelligences in their classrooms and survey them to see what assessment tools they use to accurately assess the Multiple Intelligences activities.

Multiple Intelligences projects will continue in my future classes. One goal, is to eventually turn the top students into student assistants for the following years. They would help struggling students, while directing the high performing students to greater critical thinking experiences.
APPENDIX A: PRE-STUDY CONSIDERATIONS

Assumptions

1. All students are capable of learning.
2. All students learn different ways.
3. Higher order thinking is essential for meaningful growth.
4. Education needs to be tailored to the individual student.

Research Questions

The following questions and probes were used in the interviews:

1. What are Multiple Intelligences?

2. Why are they valuable tools to be used in a classroom?

3. Is it possible to correctly assess the learning styles of all students in a classroom?
   Do you provide any particular experiences to see what they are doing, or do you just watch during the class?
   Do you find girls and boys are different in what they will attempt to try as the different styles?

4. Does the teacher's learning style affect the use of Multiple Intelligences?
   If a teacher had been taught and was comfortable with visual and auditory learning styles, would they probably find it difficult to use the others?

5. Do you as a teacher feel your evaluation tools are accurate when used with Multiple Intelligences?
What was the event or change, or society need for the Multiple Intelligences Theory?

6. In the United States student growth is evaluated by scores on the standardized testing. Do you find intelligences score at grade level on the standardized tests? Are we directing or developing a new kind of student or are we adapting to a student of a new generation?

7. Is multiple intelligences used to achieve mastery or is Multiple Intelligences synonymous with mastery?

8. Is Bloom’s taxonomy used in connection with Multiple Intelligences in you classroom?

Foreshadowed Problems

1. There might factors other than multiple intelligences that could contribute to student success.

2. Failure under multiple intelligence use may be due to lack of effort, not the method itself.

3. There are limited numbers of teachers who have experience at accurately assessing multiple intelligence.

4. The number of interviews were kept low due to time constraints.
APPENDIX B: DEFINITIONS OF TERMS

1. **Assessment/measurement** is a way progress may be evaluated.

2. **Authentic assessment** is evaluation through observing a student's progress in a natural environment.

3. **Bloom’s Taxonomy** is a higher order thinking process that produces greater critical thinking as one moves through the six levels. Recall is recognizing information. Comprehension is to explain the information that one recognizes. Application is to use the information that one has recognized and explained. Analysis is to use the information that one has recognized, explained and applied. Synthesis is creating new information from the previous information learned. Evaluation is providing judgment and appraisal towards previously learned information.

4. **Bodily-kinesthetic** is one of the intelligences that involves learning best by touching, moving, interacting with space, and processing knowledge through bodily sensations.

5. **Cognition** is being aware of thinking or of using Multiple Intelligences.

6. **Gardner, Howard** is the author of the Multiple Intelligences Theory.
7. **Interpersonal intelligence** involves learning best by sharing, comparing, relating cooperating, and interviewing sharing.

8. **Intrapersonal intelligence** is learning best by working alone, individualized projects, self-paced instruction, and having one's own space.

9. **Kid watching** is when teachers use informal assessment of student performance within the classroom.

10. **Learning tool** is any activity or object used to create learning, such as a multiple choice test or project.

11. **Linguistic intelligence** is learning best by saying, hearing, seeing words, and is being good at memorizing, names, places dates and trivia.

12. **Logical-mathematical intelligence** is learning best by categorizing, classifying and working with abstract patterns/relationships.

13. **Modality** is the way people process information through their senses.

14. **Multiple Intelligences** are eight different methods that students use in order to learn material and create a product.

15. **Musical intelligence** is learning best by rhythm, melody and music.

16. **Observation** is the processes of viewing and assessing Multiple Intelligences through the modalities.
17. **Patterning** is students make connections to real life situations that have surfaced through problem solving.

18. **Portfolio** is a compilation of projects done by one student that represents the learning in each intelligence.

19. **Projects** are Multiple Intelligences based experiential learning experiences providing choices of content and format for the outcome.

20. **Presentation evaluations** are student assessment of classmate's project presentations based on what they learned from the project, what they already previously knew about the content or format of project and a positive comment towards the presentation.

21. **Reddish, Phillip** is an alternative education teacher who specializes in Multiple Intelligences methodology.

22. **Spatial intelligence** is learning best by visualizing, dreaming, using the mind's eye, and working with colors/pictures.

23. **Multiple choice test** is a standardized test consisting of series of choices relating to a question.

24. **Naturalist intelligence** is the ability to effectively classify and categorize life's divisions.

25. **Taylor, Roger** is a researcher in the application of the multiple intelligence.

26. **Zook, Katherine** is an alternative education teacher who specializes in Multiple Intelligences methodology.
APPENDIX C: SELF ASSESSMENT

This assessment will help you identify your Multiple Intelligences.

Mark "T" for true and "F" if it does not apply.

1. I would rather draw a map than give someone verbal directions.
2. I can play a musical instrument.
3. I can associate music with my moods.
4. I can add or multiply quickly in my head.
5. I like to work with calculators and computers.
6. I pick up new dance steps fast.
7. It is easy for me to say what I think in an argument or debate.
8. I enjoy a good lecture, speech or sermon.
9. I always know north from south no matter where I am.
10. Life seems empty without music.
11. I always understand the directions that come with gadgets.
12. I like to work puzzles and play games.
13. Learning to ride a bike was easy.
14. I am irritated when I hear an argument that sounds illogical.
15. My sense of balance and coordination is good.
16. I often see patterns between numbers faster than others.
17. I enjoy building models.
18. I am good at finding the fine points or word meanings.
19. I can look at an object and be able to see it turned just as easy.
20. I often connect a piece of music with some event in my life.
21. I like to work with numbers and figures.
22. Just looking at shapes of buildings is pleasurable to me.
23. I like to hum, whistle, and sign, when I am alone.
24. I am good at athletics.
25. I would like to study the structure and logic of languages.
26. I am usually aware of the expression on my face.
27. I am sensitive to the expressions on my face.
28. I stay in touch with my moods. I have problem identifying them.
29. I am sensitive to the moods of others.
30. I have a good sense of what others think of me.

Scoring:
Place a check mark by each item which you marked as true.
Add your totals. A total of four in any of the categories A through E indicates strong ability. In categories F through G a score of one or more means you have abilities in theses areas as well. The naturalist intelligence has not been incorporated into this assessment because it has just recently been established.
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APPENDIX D: LEARNING SURVEY

Grade:
Gender:

Question #1
Do you prefer to complete projects or multiple choices tests, why?

Question #2
What is the difference in the learning that occurs during a multiple choice test versus during a project?

Question #3
What is a better learning tool, presentation evaluations or multiple choice tests, why?

Question #4
What is the learning difference between a research paper and a project?
APPENDIX E: LEARNING SURVEY RESULTS

Question #1
Do you prefer to complete projects or multiple choice tests, why?

STUDENT #1 “Yes, because I can do better at projects than tests. I can express my self better.” (female, 10th grade)
RESEARCHER RESPONSE: The student chose the word “express,” which is a key element to the learning process. She suggests by her comments the lessening effect of the standardized test to create process conducive for allowing different learning intelligences to express themselves fully.

STUDENT #2 “Multiple choice tests because that way we will learn the information and when we take a test of multiple choice, if we know the information we will get it right.” (female, 10th)
RESEARCHER RESPONSE: The student is focused on a teacher-centered mentality and as a transfer student is still not fully grasping the concepts of the multiple intelligence learning environment. This is not untypical of a student who transfers into the class. She was successful under the standardized methodologies. My experience has shown the studentís comfort zone was established in the
other class and she is struggling to find her new one in this class.

STUDENT #3 "I would rather do projects versus the multiple choice test. The reason why is you can not go wrong with a project! You will always do better on a project than a test! You always want the better grade!" (female, 10th)

RESEARCHER RESPONSE: She hits a fundamental focus of multiple intelligence: motivation. The student recognizes that she can’t go wrong, meaning she is truly tested on what she knows rather than what she does not. Students tend to like this focus because first it is more positive approach, but also it allows a degree of space for them to growth instead of metaphorically shrink.

STUDENT #4 “I definitely prefer projects because they are more fun, you get to be creative and you learn a lot.” (male, 10th)

RESEARCHER RESPONSE: One of the few students who commented on creativity. The creative mind seems to produce greatness in its own world. Much like a mechanic friend who needed space and distance to perform his miracles on cars. This student recognizes the components that made his project successful.
STUDENT #5 "Projects are better because you can do what ever you want and your talents show.” (male, 10th)

RESEARCHER RESPONSE: Anytime you can get a student to recognize that his talents have been revealed it can’t be a bad thing. Gardner professes this idea of identifying strengths. Now can this talent be transferred so people understand the learning that has been established?

Question #2
What is the difference in the learning that occurs during a multiple choice test versus during a project?

STUDENT #1 “I think on a test you have to study (which people tend to forget to do.) And you get better grades on presentations.” (female, 10th grade)

RESEARCHER RESPONSE: Students do recognize the value of studying but also the impact of presentations on their individual performances for the classroom assignments.

STUDENT #2 “In multiple choices you have to study: with doing projects you can apply your information to help others understand what happened.” (female, 10th)

RESEARCHER RESPONSE: I am measuring their level of awareness to what learning actually is in order to concentrate on scenarios that would be best fit for their learning experience. This student hit it directly. Learn to
so you can teach. Teach it and you will know it. Find the tool that helps you learn it then you can teach it back a variety of ways.

STUDENT #3 "I think that tests only tell what you don't know. But projects tell everything you do know. Projects give you hands-on learning, but tests are just studying and memorizing. I think it's easier to keep information in your mind with a project." (female, 10th)

RESEARCHER RESPONSE: She identified basic fundamentals to learning. She connected understanding with the process of the project and commented on the simplicity and possible ineffectiveness of standardized tests.

STUDENT #4 "In a test you worry about remembering all the information. But with the project you are interested in what actually happened before." (male, 10th)

RESEARCHER RESPONSE: He made a key distinction to the notion of motivation. Why we learn! He understood that the test did not necessarily do much more than remember facts, while the project helped you understand the ideas. Maybe a true partnership would be helpful for the students.

STUDENT #5 "A test is what you want us to learn and projects are what we want to learn." (male, 10th)
RESEARCHER RESPONSE: The gap between the students interests and the teacher's curriculum has always been a challenged. But the teacher has the ability to manipulate the interests of the students by identifying the catch necessary to hook the students' interest.

STUDENT #6 "You learn more doing projects because you want to learn while you're having fun. Plus it challenges the mind to do projects and look up information yourself. With tests, you just have to memorize the information." (female, 10th)

RESEARCHER RESPONSE: The students makes an excellent observation pertaining to challenging the mind. She makes the complex observation of showing the possible complexity of the brain process during a completion of a project versus preparing for a multiple choice test or fill in the blanks.

STUDENT #7 "I think the projects are better because you do about three projects which you can improve, but on an essay it is only one chance."

RESEARCHER RESPONSE: This student recognizes the concept of improvement versus one shot opportunity. This progress made through the three projects promote the using of their strengths to get a stronger mark. It's much like the concept of the athlete. You practice, perform, fix the mistakes, strengthen your strong points and then get back out there.
and perform. The concept that Multiple Intelligences teachers neglect the fundamentals is ludicrous when you understand that all parts must be present for improvement to be a permanent growth.

Question #3
What is a better learning tool, presentation evaluations or multiple choice tests, why?

STUDENT #1 "You learn more because you do research and you have to talk in front of people and you need to know what to say because you don't want to look stupid.” (female, 10th grade)

RESEARCHER RESPONSE: The student appears to recognize the accountability factor is greater during projects and suggests no one likes looking bad in front of their peers. The need to communicate publicly was also identified by the student. The dynamics of the experience is obvious greater during projects than standardized test, but still does more involvement constitute greater learning?

STUDENT #2 “I like the evaluations because you must stay informative or listening which means they make you learn more in a fun way.” (male, 10th)

RESEARCHER RESPONSE: The automatic focus required in this activity indicates students will begin the incidental learning when they perceived the activity as fun. The
teacher who recognizes this can adapt situations to create the notion of fun and fulfill the understanding that is required for the students.

STUDENT #3 "A multiple choice test is better because everyone has to know useful information about everything. While in a project all you have to do is know a lot about a little section." (male, 10th)

RESEARCHER RESPONSE: This student has made a commentary on the notion that more information is better than a little. This might be true, if everyone was able to process information the same as this person. But as research continues to indicate this is not true. Thus multiple intelligences, offer the revelation that we do not all process information the same, thus though more information may be valuable to this student, another student may lose full focus do to an overwhelming of information in a format which may not be his or her strength.

STUDENT #4 "In a multiple choice test, you wonít remember or care about the information you just learned. But with a project evaluation, you are interested in what happened and what information they collected."

RESEARCHER RESPONSE: The motivation factor is revealed in this studentís statement. The unconnected multiple choice test is like a book without pictures, unexciting to the
child. While the project is like a playground with different components to keep the student interested.

STUDENT #4 “It was a better learning experience by evaluating the projects because I learned more by seeing the topics and a lot of the information stuck out in my mind.” (male, 10th)

RESEARCHER RESPONSE: First, the student has suggested a different way he retains information better. This is a first indication that learning is a dynamic process which needs to be treated that way. Also he offered a category plus an explanation, a good indication of a student capable of providing valuable information.

STUDENT #6 “I paid more attention to the project because I had to evaluate and look through it.” (male, 10th)

RESEARCHER RESPONSE: This student echoes many of the sentiments of the other students that they had to pay more attention to the evaluation because it required their attention to complete the answers.

Question #4
What is the learning difference between a research paper and a project?
STUDENT #1 "The more work you do the more you learn, but if your interested in something, you'll learn more with less work." (10th grade)

RESEARCHER RESPONSE: The concept that more work does not equate to more is recognized by the student.

STUDENT #2 "The difference is that I learn better doing a paper than a project. A project can be of all pictures and no information. But a paper you have to read and research." (female, 10th)

RESEARCHER RESPONSE: The linguistic intelligent strength is commenting on the value of reading and researching as a good means of processing. The more you read and research the more information that can be acquired. This produces the issue of information versus application. We can produce many information filled students, but are they students able to used the information.

STUDENT #3 "The sixty page paper is long and boring and you'll probably forget all the information, with a project, the information is fresh in your mind and ready to come out." (female, 10th)

RESEARCHER RESPONSE: This student recognizes the connection of a hands on experience knowledge retention versus a long drawn paper.
STUDENT #4 "In a sixty page report you are applying your information onto paper into words. The projects give you a chance to teach those who can’t work as well at 60- page reports." (female, 10th)

RESEARCHER RESPONSE: This student has really made the connection between learning and teaching and value of the project versus the paper. The writing skill should not be neglected it is a tool like understanding how to add, but the way someone learns something can be different than the final process of communicating using language skills.
APPENDIX F: PAUL'S PERFORMANCE RECORD


Class grade scale:  
- A: 100-90%
- B: 89-80
- C: 79-65
- D: 64-50

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REFERENCES

Armstrong, T. (1994). Multiple Intelligences in the Classroom, VA.


