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The effectiveness of instruction in a third grade classroom utilizing the theory of multiple intelligence

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THE EFFECTIVENESS OF INSTRUCTION IN A THIRD GRADE CLASSROOM UTILIZING THE THEORY OF MULTIPLE INTELLIGENCE

by
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ABSTRACT

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The purpose of this study was to investigate the effectiveness of utilizing Howard Gardner's Theory of Multiple Intelligence in a third grade classroom. An experimental group (n = 21) received the treatment teaching method over a two week period. A control group of students (n = 20) was instructed the same unit over the same two week period utilizing a traditional teaching method. Both groups were intact classes prior to the research beginning. A pretest and posttest were administered and a t-test for independent samples was employed to determine if there was a significant difference in achievement between the groups. Analysis indicates there was no statistically significant difference between the experimental and control groups' posttest scores. The implications of the use of Multiple Intelligence centered curriculums are discussed further.

Acknowledgements

I begin by thanking Dr. Randall Robinson for all his time and patience. I am not sure how I could have maintained my focus throughout this experience without his guidance. I would also like to thank Mrs. Sylvia Dawson, my cooperating teacher, mentor, and friend. I have learned more about the art of being a teacher and a role model from her example than I could have from any book or class. Most importantly, I need to thank my wife Katie. I'm sure she has at times felt like a single mother over the last year. I would never have had the courage to even begin this journey without Katie's encouragement and unwavering faith in me though. A better friend I will never have.

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CHAPTER I

Scope of the Study

Introduction

What is intelligence? Most of us have come to think of it in terms of the standards that Alfred Binet and Theodore Simon established in the first half of the twentieth century. This view of intelligence grew out of a need to try and predict which children would be able to succeed in school (Papalia, Olds, & Feldman, 2002). The Alfred-Binet IQ test, it's American counterpart, the Stanford-Binet Intelligence Scale, and the Weschler Preschool and Primary Scale of Intelligence, Revised (WPPSI-R), are all modern interpretations of a cultural definition of Intelligence that is reflective of academic success. In fact, these tests, when given near the end of kindergarten, are the single best predictors for future academic success (Tramontana, Hooper, & Selzer, 1988 as cited in Papalia et al.). What do these instruments actually test though, and do they predict future non-academic success? Many would argue that IQ tests, and consequently schools, have only sought to look for and nurture achievement in a limited number of areas (Gardner, 1983). Our modern culture is in fact overflowing with examples of individuals that floundered, or even failed in school, only to go on and have tremendous success in entertainment, athletics, one of the trades, or the arts (Campbell et al., 2003).

The success of individuals in the real world that have not been successful in traditional academic settings implies that it may be necessary for a reevaluation of some of the basic assumptions about intelligence that we as educators and curriculum developers

have come to accept as true. Howard Gardner, in his groundbreaking 1983 book *Frames of Mind: The Theory of Multiple Intelligences*, redefined what many have come to believe intelligence is. He used a much more pragmatic framework and emphasized the following:

- The ability to solve problems that one will encounter in everyday life,
- The ability to generate knew problems to solve,
- The ability to make something or offer a service that is valued within one's culture.

Gardner felt their were seven unique intelligences and later added an eighth. They are: 1) linguistic intelligence, 2) logical-mathematical intelligence, 3) spatial intelligence, 4) bodily-kinesthetic intelligence, 5) musical intelligence, 6) interpersonal intelligence, 7) intrapersonal intelligence, and 8) naturalistic intelligence. Schools have traditionally emphasized success in the first two intelligences; linguistic (verbal) and logical-mathematical. The question then becomes one of how to develop curriculum that equitably incorporates all of these intelligences.

Statement of the Problem

Can effective curriculum be developed at the primary level that utilizes Howard Gardner's Theory of Multiple Intelligences? As soon as Gardner introduced his theory of Multiple Intelligences in 1983, educators were experimenting with its usage in the classroom (Teele, 2000). The theory has by no means been successfully applied every time it has been utilized (Hoerr, 1996). However, when utilized correctly and embraced by the instructor, it has shown remarkable promise (Latham, 1997). This research project at-

tempted to instruct a unit in social studies to a third grade class utilizing Gardner's theory. All of the intelligences were tapped into in different lessons.

Hypothesis

Research indicates that students presented with information utilizing a methodology that incorporates a variety of their intelligences will internalize the information more thoroughly (Latham, 1997). The hypothesis being investigated with this study dealt directly with the use of a Multiple Intelligence methodology in the classroom. Specifically, instruction and assessment of a social studies unit on San Francisco, CA in a third grade class utilizing Multiple Intelligence Theory would have a significantly higher level of effectiveness than a third grade class instructed using traditional teaching and assessment methods. The effectiveness of one methodology over another was measured with a pretest and a posttest.

Limitations

There were a number of limitations encountered in conducting this study. First, both the experimental group and the control group were groups of convenience. Both groups were intact classes prior to the arrival of the researcher in January. The groupings, therefore, did not reflect a true sampling of the third grade population in the school or the district.

A second limitation was the brevity of the study. The researcher was only in the classroom as a student teacher for a 16-week period. The unit taught to both the experimental group and control group was administered over a two week period. Proponents of

multiple intelligence curriculum feel that in order to see conclusive results, an instructor needs to immerse themselves in the theory and not teach it scattershot or in isolated instances (Gardner, 1983; Campbell, 1997; Teele, 2000). Due to the expectations and responsibilities associated with student teaching, it was not practical to immerse the class in experimental instructional techniques that deviated significantly from the prescribed curriculum already in place in the district.

A third limitation was that none of the students in the experimental group had been exposed to multiple intelligence-centered lessons prior to the experimental unit being taught. Evidence indicates that learners who are aware of their strengths and weaknesses in regards to their multiple intelligences, are more likely to utilize learning strategies that are reflective of them (Campbell et al., 2003).

Lastly, the pretest and posttest consisted of 20 multiple-choice questions. This type of paper and pencil assessment tends to emphasize linguistic intelligence (Gardner, 1983). Consequently, students with higher intelligences in other areas may not have been suitably assessed.

Definition of Terms

The following definitions were provided to ensure consistency and understanding throughout the study:

Curriculum is the entirety of the learning experiences to be taught to a particular group of students, in a particular content area, that have been filtered through appropriate psychological and philosophical filters and then organized into a logical sequence (Tyler, 1949). There have been innumerable other definitions of curriculum developed over the last 50 years (Ornstein, 1999), but most find their origins in Tyler.

Multiple Intelligences refers to the eight different kinds of intelligence as defined by Howard Gardner in his book *Frames of Mind: The Theory of Multiple Intelligences* in

1983. The eight intelligences are: 1) linguistic intelligence, 2) logical-mathematical intelligence, 3) spatial intelligence, 4) bodily-kinesthetic intelligence, 5) musical intelligence, 6) interpersonal intelligence, 7) intrapersonal intelligence, and 8) naturalistic intelligence.

CHAPTER II

Review of the Literature

Introduction

The Theory of Multiple Intelligence was first introduced in 1983 by Howard Gardner in *Frames of Mind: The Theory of Multiple Intelligences.* It has since been adopted by many in the educational establishment as a very effective and equitable way to address all of your students' needs in the classroom (Stanford, 2003). The eight intelligences are: 1) linguistic, 2) musical, 3) logical/reasoning, 4) spatial, 5) kinesthetic, 6) interpersonal, 7) intrapersonal, and 8) naturalistic. Gardner more completely defined intelligence as the ability to provide something of value in one's own culture. All human beings are born with the full palette of intelligences but will have a unique intelligence fingerprint in regards to which ones they are strong and weak in (Gardner, 1983). There is no single means of interpreting Multiple Intelligence Theory or putting it into practice in a classroom. This study examined the effectiveness of a Multiple Intelligence centered social studies curriculum compared to a traditional instructional method in two third grade classrooms. The researcher expected to find that the Multiple Intelligence centered approach would be most effective as measured in a pretest and posttest. The literature review which follows will begin by defining Multiple Intelligence. This will be followed by a discussion of some of the common criticisms of Multiple Intelligence Theory, an examination of each of the eight intelligences, and a discussion of the pedagogy of Multiple Intelligence usage.

What is Multiple Intelligence?

Any teacher can take a mental inventory of their students and begin categorizing them by the talents they exhibit. Every classroom has natural leaders, the students everyone else seems to turn to when a classroom decision has to be made. There are children that are successful in sports, amazing you with their physical abilities. Some children are always asking for extra time to read and seem to find your traditional multiple choice and fill in the blank tests tiringly simple.

There will always be a few students that find mathematics easy and will sit at the seats doing extra math problems if you allow it. Many students sign up for musical instrument instruction or the chorus, but only a few will show a natural affinity to music and have people standing in the aisles for a chance to hear them. Some students will show a wide array of personal insight, "street smarts", or empathy for others while other children will spend the entire day drawing and doodling if you let them (Campbell, Campbell, & Dickinson, 2003). Whom would you characterize as intelligent out of all these children? One's first instinct is to look at a grade book, report card, or, better yet, an IQ test. However, what if you were able to peer into the future and see the above children as successful businessmen, professional athletes, authors, engineers, musicians, therapists, and cartoonists. Who would you classify as more intelligent using this cultural light of success? Even though many would still insist on looking at IQ test scores, many more are embracing the concept that perhaps intelligence has been far too narrowly defined as academic success. Each of the above examples show successful individuals with talents held in high regard. How does it make sense to characterize one individual as intelligent and another as not if both have obtained comparable success in non-academic settings? The

means to manage this problem are to shift one's paradigm and redefine what intelligence is (Gardner, 1983).

In 1983 Howard Gardner first proposed, in *Frames of Mind: The Theory of Multiple Intelligences,* that there might be more to intelligence than what the western world has traditionally said there is. Gardner looked at intelligence from a slightly different viewpoint than his predecessors:

> To my mind, a human 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 entail the potential for *finding or creating problems* – thereby laying the groundwork for the acquisition of new knowledge. These prerequisites represent ... those intellectual strengths that prove of some importance within a cultural context. (p 60-61)

Gardner went on to describe what he believed were seven distinct intelligences and offered observational proof to prove his hypothesis. He later added an eighth intelligence (Gardner, 1997).

Gardner felt that everyone possesses each of the intelligences. However, each person has a unique mixture of strengths and weaknesses. At one extreme is an idiot savant or severely autistic child that may show severe retardation in most of his or her intelligences, but be gifted beyond imagination in the remaining one or two intelligences. At the opposite extreme is an individual that seems to be gifted in most of the intelligences (Gardner, 1983). For example, a professional athlete that has earned a degree in accounting, has a successful career in sports broadcasting after retiring from sports, and is a gifted singer or musician. Most people fall somewhere in between the two aforementioned extremes. Every individual will exhibit the range of intelligences, and there is no required relationship between any of them. Additionally, everyone will have a unique

intelligence fingerprint, unlike anyone else's (Gardner, 1983; Karma & Mahul, 1999).

Common Criticisms of Multiple Intelligence Theory

Multiple Intelligence (MI) Theory is by no means universally accepted as empirically or pedagogically sound. Some point out that Multiple Intelligence Theory has little evidence to support it from a neurological or evolutionary standpoint and that some of Gardner's claims concerning the intelligences being located in discreet modules in the brain is based on nothing more that observation and hypothesis (Klein, 2003). Others caution that from a curricular standpoint, some MI theorists lack focus and are not concerned enough with insuring students gain fundamental skills in reading, writing, and mathematics (Hoerr, 1996). Even Howard Gardner himself warns of utilizing MI Theory without a sound educational philosophy in which your goals consist of preparing individuals for life beyond school and making sure core knowledge is mastered (Gardner, 1997). Lastly, one can look at MI Theory in the light of standardized testing. There is little, if any, sound empirical research indicating MI Theory has either a positive or negative impact on standardized tests scores (Latham, 1997).

The objections concerning the use of MI Theory in the classrooms would beg the question of why bother with it if no quantifiable gains can be seen (Latham, 1997)? The answer from teachers that effectively use MI Theory is that they can reach more students, particularly students with learning disabilities. It helps their students accept and celebrate the differences in themselves and their classmates (Gardner, 1983; Campbell et al., 2003; Latham, 1997; Campbell, 1997; Gardner, 1997; Stanford, 2003).

The Eight Intelligences

The eight intelligences found in human beings encompass the full spectrum of human accomplishment. This makes MI Theory the first attempt at a truly cross-cultural definition of what intelligence is (Gardner, 1983; Campbell et al., 2003). However, in order to go any further with a discussion on the topic, a brief description of each of the eight intelligences is in order.

The first of the intelligences is *linguistic-intelligence.* This intelligence refers to the production of language, abstract reasoning, symbolic thought, reading and writing. Individuals that exhibit high levels of intelligence in this area are able to express themselves effectively in words. These individuals use language to both express and appreciate complex concepts (Gardner, 1983; Stanford, 2003). Persons with strength in this area will often gravitate towards careers as authors, poets, journalists, and newscasters (Campbell, et al., 2003; Gardner, 1983).

Music consists of a few core elements. The most important would be pitch (melody) and rhythm. Pitch is emphasized to a greater degree in some cultures. This is particularly true in some Asian societies. Rhythm is more central to many cultures in sub-Saharan Africa. The third quality of music is timbre, or tone. Musical intelligence refers to individuals that have a natural ability or sensitivity to any, or all, of these aspects of music. Surprisingly, this intelligence is not inaccessible to persons lacking auditory function. Rhythm can be demonstrated by some deaf persons to a degree rivaling and even surpassing those that are not hearing impaired (Gardner, 1983). A person that shows high aptitude in this intelligence is likely to become a composer, conductor, musician, critic, or instrument maker (Campbell et al., 2003).

Logical-mathematical intelligence is the second of the intelligences. It is what enables a person to work with abstract symbols, calculate mathematical equations, and see how separate objects are related (Gardner, 1983; Stanford, 2003). People with high levels of competence in this intelligence often end up with jobs in which numbers will routinely be used. These jobs would include engineering, accounting, and computer science (Campbell, et al., 2003).

Spatial Intelligence consists of one's ability to think three-dimensionally. This intelligence is often erroneously referred to as "visual intelligence" in the literature. However, Gardner dedicates many pages in *Frames of Mind: The Theory of Multiple Intelligences* to explaining why he feels the two words are not synonymous or indelibly linked. For instance, many visually impaired children that have never experienced vision will show an innate ability to use tactile maps to locate objects in a room. The types of work one would associate with this type of intelligence would be sailors, pilots, sculptors, painters, and architects (Campbell et al., 2003).

Bodily-kinesthetic intelligence is often misunderstood or taken the least seriously by lay persons. Unlike Western societies, there are many places in the world where physical skills are highly valued, if not necessary for survival. This intelligence describes a person's ability to manipulate either objects or their physical self. It can also be exhibited through the use of fine motor skills (such as a surgeon or jeweler), or gross motor skills (such as some craftspeople or military personnel) (Gardner, 2003; Stanford, 2003; Campbell et al., 2003).

Interpersonal intelligence refers to a person's ability to understand and relate to other human beings. Students that work better in cooperative groups than alone may be

have above average capabilities in this intelligence. Successful teachers, social workers, actors, and even politicians are likely to have strong interpersonal skills (Campbell et al., 2003).

There are individuals that seem to be very connected to themselves and are able to naturally construct an accurate perception of who they are and where they want to go in life. Individuals with high achievement in their intrapersonal intelligence may gravitate towards theology, psychology, and philosophy (Campbell et al., 2003).

The last of the eight intelligences, naturalist intelligence, is in some ways difficult to understand. Gardner looks at this intelligence as having an innate ability to observe patterns in nature and to identify and classify objects. Not until you look at some of the professions that exhibit this intelligence does it make a little more sense. Farmers, botanists, hunters, ecologists and landscapers would be considered skilled naturalists (Campbell et al., 2003).

One can see how different intelligences will work together in unique ways to create individual genius. For example, a professional mime will have a high spatial and kinesthetic intelligence (Gardner, 1983). We are all different combinations of strengths and weaknesses. Often, if a student is able to utilize multiple intelligences in a lesson, he or she will retain information, avoid frustration, and seek out new learning experiences (Campbell et al., 2003).

The Integration of Multiple Intelligence Theory and Curriculum

Few curricularists would find MI Theory pedagogically undermining as long as it was not used contrary to a school system's existing educational philosophy (Ornstein,

1999). In order to successfully utilize MI Theory, a core understanding of the theory and eight intelligences is necessary, and a willingness by teachers to leave their own comfort zones (Gardner, 1997; Campbell et al., 2003).

There has been rather extensive usage of MI theory over the last 20 years. There has also emerged no one-size-fits-all approach to putting MI Theory into practice. On the primary levels, it can be a daunting task to try and teach in modalities that are not natural for you (Campbell, 1997). Most teachers find though that practice makes them increasingly comfortable stretching their own limits (Armstrong, 1997). The curricular formats are multi-facetted and too numerous to explore exhaustively. However, a number of formats seem to have emerged as preferred methods of integrating MI Theory into the classroom.

The first, and most common, of these methods of integration of MI Theory entails simply integrating it into individual lesson plans. A subject such as mathematics is ideal for introducing kinesthetic exercises in place of pencil and paper ones. For example, a teacher could use the large squares that the lines in a concrete courtyard. Students are able to plot themselves on a large coordinate grid that they become a part of (Campbell, 1997). Teaching young children to tell time on the floor, having them play the part of the movement of the hands on a clock, can give a child an additional method of relating time to themselves and imbed the concept in their mind (Armstrong, 1997). Students could also make up songs about a fictional character in a book in order to tap into their musical intelligence (Campbell et al, 2003) or create a skit depicting a famous moment in history (Teele, 2000). Whatever the case, individual lesson plans are the means by which a teacher can best get their feet wet with MI Theory.

A second means of utilizing MI Theory is the use of interdisciplinary curriculums. Most secondary schools already have the foundations in place to effectively introduce an interdisciplinary curriculum due to their departmentalization and the consequent expertise of instructors in those departments (Campbell, 1997). Collaboration between colleagues is often all that is required to formalize curriculum. Elementary teachers already have a great deal of control in the planning for all subjects and can typically interweave disciplines into lessons quite easily (Gardner, 1997).

Students have been completing projects for school for many years. However, when utilizing MI Theory, students are expected to be much more independent and to generate project ideas and methods. Teachers need to train students in the skills of asking researchable questions, identifying resources, creating viable time lines, and bringing the project to closure (Campbell, 1997; Campbell et al., 2003). Students should be encouraged to pursue project ideas that highlight their strengths (Gardner, 1997).

Assessment is one of the most controversial aspects of educational theory, let alone MI Theory. There is little empirical evidence that MI Theory has any appreciable effect, either positive or negative, on any type of standardized test (Latham, 1997). Additionally, standardized paper and pencil tests tend to emphasize linguistic intelligence only (Gardner, 1983). Teacher written assessments most often reflect what was actually taught in class and can be effectively written to strengths of the class (Ediger, 2001). Portfolios are an assessment method often used in a classroom in which MI Theory is being practiced (Campbell, 1997; Teele, 2000; Ediger, 2001). Portfolios should demonstrate higher order thinking skills including generalizing ideas and synthesizing new questions (Campbell, 1997).

Apprenticeships are perhaps the least utilized approach to instructing in a multiple intelligence landscape. However, the approach was initially suggested by Gardner in 1983. Apprenticeships would not track students into career paths but expose them to different types of people utilizing different intelligence modalities in a real world situation. Gardner actually felt the younger you could begin a child in this type of program, the more effective it would be. The most important lesson for students to learn in these apprenticeships would be the value of learning a particular skill to mastery, be it a technical skill, a craft, an athletic or physical ability, or some combination of a number of intelligences (Campbell, 1997).

Summary

The most effective method seems to be for a teacher to use as broad a range of teaching strategies as possible over the course of a day. If an instructor shifts their intelligence emphasis from lesson to lesson, every student in the class will be experiencing, at some point in the day, a lesson that is aimed at their most highly developed intelligence. This is most effective with students that have learning disabilities. These students often have significant deficiencies in one or more of the intelligences normally used most of the day in a typical classroom. Putting a balance in instructional strategies levels the playing field for many of these students and fosters a sense of accomplishment as they begin to succeed (Stanford, 2003).

Multiple Intelligence Theory is not the magic bullet for solving all of the educational establishment's woes (Klein, 2003). What it is, is a very useful tool a teacher can use to create a sense of accomplishment in their students and in their school (Gardner,

1997). Multiple Intelligence centered instruction has been shown to encourage self-direction and cooperation as well as self-discipline (Stanford, 2003). Additionally, children that are taught utilizing the theories report better metacognitive skills; they understand their strengths and weaknesses better and have developed strategies to compensate for them (Campbell et al., 2003). This is the first step in assuring our students reach adulthood with as full a knowledge of their intelligence fingerprint as possible and the tools necessary to insure they are able to contribute their unique strengths to society at large (Gardner, 1983).

CHAPTER III

Procedure

Introduction

The Theory of Multiple Intelligence was first introduced in 1983 by Howard Gardner in his book, *Frames of Mind: The Theory of Multiple Intelligences.* It has since been adopted by many in the educational establishment as an effective and equitable way to address all of your students' needs in the classroom (Stanford, 2003). There are eight intelligences found in human beings: 1) linguistic, 2) musical, 3) logical/reasoning, 4) spatial, 5) kinesthetic, 6) interpersonal, 7) intrapersonal, and 8) naturalistic (Gardner, 1983). Multiple Intelligence Theory has been utilized in innumerable ways in schools pedagogically. The most common of these means has been through the use of individual lesson plans, interdisciplinary curriculums, alternate assessments, projects, and apprenticeships (Campbell, 1997). Curriculums that are multiple intelligence centered have been shown to increase metacognition, self-discipline, self-esteem, and respect for others. Additionally, multiple intelligence centered lessons address many of the needs of learning disabled children in the classroom (Teele, 2001). Translating theory into practice can be a daunting task. This study investigated the effectiveness of different instructional techniques with a unit in a third grade social studies curriculum. A Multiple Intelligence methodology was used along side a traditional teaching methodology and the effectiveness of each measured with a pretest and posttest. The researcher hypothesized the Multiple Intelligence approach would result in a greater level of understanding of the material

and a consequent larger difference in pretest and posttest scores. In the following pages there is a description of the subjects that were involved in this research project, the procedure itself, and a brief description of the instrument used to collect data.

Description of the Subjects

The experimental group in this project consisted of a third grade class in Gloucester County, New Jersey. The class contained 21 students consisting of 10 girls and 11 boys. All of the children in the group were between the ages of eight and ten. None of the students were classified as special education. The experimental group had two students in the English as a Second Language (ESL) program. There was a girl from the West African country of Liberia and a boy from Viet Nam. There were also three boys in this class receiving speech therapy at least once a week. There were additionally two boys receiving Basic Skills Instruction (BSI) in this group.

The control group in this project consisted of a regular education third grade classroom in the same school in Gloucester County, New Jersey. The class contained 20 students consisting of 13 boys and seven girls. All of the children in the group were between the ages of eight and ten. None of the students were classified as special education. The control group had four students in the ESL program. There was a boy from Bangladesh, a girl from Turkey, a girl from Guatemala, and a girl from Puerto Rico.

The sample was one of convenience. Both the experimental and control groups were third grade classes that had been intact for over four months prior to the researcher's arrival at the school as a student teacher.

Design of the Study

The study was designed as quasi-experimental in nature, using an equivalent control group design. In this study, an intact group in which the subjects were randomly assigned prior to the researcher's arrival was chosen to receive the treatment (Multiple Intelligence centered instruction). Another intact group, whose subjects had been randomly assigned prior to the researcher's arrival, was selected as the control group (traditional instructional techniques). Baseline data was compiled from a pretest in order to assess any prior knowledge of the content area. Data was compiled using a posttest to assess learning of the students in each group. The data was used for comparative purposes between the two groups. Any significant difference in posttest scores were interpreted as being due to one group receiving the treatment through the study.

Procedure

Approximately two weeks prior to the start of the research, permission was received by parents of students participating in the study. Permission was obtained via a letter sent home to parents reintroducing the researcher, giving a brief overview of the research to the parents, and insuring anonymity and privacy protection for all participants (see appendix A).

The social studies unit to be taught covered the geography, history, and culture of San Francisco, California. There were also lessons on the cultural meaning of the piñata, the city of Nairobi, Kenya, and on prediction skills. The unit was taught over a two-week period in April 2004. The students in the experimental and control groups were given the same pretest on the first day in order to evaluate their prior knowledge level (see appen-

dix B). The researcher then graded each group's tests in order to determine prior knowledge and establish an experimental group and a control group average test grade. Additionally, the experimental group and control were divided into subgroups by sex and ESL status with mean scores determined for each. The experimental group and control group each covered similar content on each day of the unit. The control group was given a traditional, direct instruction method of teaching. The experimental group received the treatment teaching method utilizing Gardner's Theory of Multiple Intelligences.

The experimental group was taught using a different blend of intelligences each day of the unit. On the second day of the unit, the experimental group was introduced to the geography of San Francisco utilizing spatial intelligence, interpersonal intelligence, and logical reasoning intelligence. On day three of the unit, the students explored San Francisco's geography utilizing their linguistic intelligence, spatial intelligence, kinesthetic intelligence, and interpersonal intelligence. Day four of the unit investigated San Francisco's emergence as a major city due to the gold rush in 1849. This was accomplished utilizing linguistic intelligence, musical intelligence, kinesthetic intelligence, interpersonal intelligence, and intrapersonal intelligence. On day five of the unit, the students continued their explorations of San Francisco's history using their linguistic intelligence and interpersonal intelligence. The sixth day of the unit introduced the students to San Francisco's modern day diversity utilizing linguistic intelligence and intrapersonal intelligence. The seventh day of the unit introduced children to piñatas and utilized spatial intelligence and kinesthetic intelligence. The eighth day of the unit introduced children to Nairobi, Kenya and enabled them to contrast it with San Francisco utilizing linguistic intelligence, intrapersonal intelligence, and naturalistic intelligence. The ninth

day of the unit built predicting skills in students and used logical intelligence and naturalistic intelligence (see appendix C for copies of all lesson plans used with the experimental group).

The last day of the unit was the posttest. The posttest was identical to the pretest. The experimental group and control group were administered the posttest on the same day and in as standardized an environment as possible. No time limit was given to the children in either group. The posttest was administered as a closed book test. The researcher graded all posttests. The average score for the experimental group and control groups were determined for the posttest and compared to the average score on the pretest for each group. Scores were correlated by class, sex, and ESL status. Percent differences between the pretest and posttest were calculated for each of the subgroups listed above in the experimental group and compared to the comparable subgroup in the control group. This was done in order to determine if the treatment teaching method was more effective with both the experimental group as a whole and with particular subgroups within it. In the experimental group, different intelligences were focused on for each lesson (see table 1 for a matrix of which intelligences were focused on for each lesson).

table 1

Matrix of intelligence utilized in each lesson of the experimental group

	Intelligence Utilized							
Lesson Number	Linguistic	Musical	Logical	Spatial	Kinesthetic	Interpersonal	Intrapersonal	Naturalistic
Day 1 Pretest								
Day 2 Geography			√	√		√		
Day 3 Geography	√			√	√	√		

Day 4 Gold Rush	√	√			√	√	√	
Day 5 A Growing City	√					√		
Day 6 Immigration	√						√	
Day 7 The Piñata				√	√			
Day 8 Nairobi, Kenya	√						√	√
Day 9 Predicting Skills			√					√
Day 10 Posttest								

Description of the Instrument

The instrument used to measure mastery of the unit was the unit test supplied with the social studies textbook being used in the district, Macmillan/McGraw-Hill School Publishing Company's *Communities Near and Far* (see Appendix B). The textbook was published in 1993. Chapter 10 of the textbook was the basis of the unit taught. This chapter dealt with the geography, history, and modern day issues of San Francisco, California. The city of Nairobi, Kenya is also explored in order to give students the chance to compare and contrast a culturally different city. There was also a "skills builder" section of the chapter in which the students were given strategies on making predictions as well as a multicultural section dedicated to piñatas. Each lesson that the experimental group received targeted at least one of the eight intelligences.

CHAPTER IV

Data Analysis

Introduction

The Theory of Multiple Intelligence was first introduced in 1983 by Howard Gardner in *Frames of Mind: The Theory of Multiple Intelligences.* Over the next 20 years, many in the educational establishment have embraced the theory. It has been championed, in particular, by educators that seek equity in the classroom and a means by which to insure the needs are met of the children in special education or with learning disabilities (Stanford, 2003). Gardner theorized that there are eight intelligences found in human beings: 1) linguistic, 2) musical, 3) logical/reasoning, 4) spatial, 5) kinesthetic, 6) interpersonal, 7) intrapersonal, and 8) naturalistic (Gardner, 1983). Curriculums that are multiple intelligence centered have been shown to increase metacognition, self-discipline, self-esteem, and respect for others. Additionally, multiple intelligence centered lessons address many of the needs of learning disabled children in the classroom (Teele, 2001). Multiple Intelligence Theory can be utilized in innumerable ways in schools curricularly. This is most commonly and easily done by individual teachers creating individual lesson plans (Campbell, 1997). However, translating theory into practice can be a daunting task. This study investigated the effectiveness of different instructional techniques with a unit in a third grade social studies curriculum. A Multiple Intelligence methodology was used along side a traditional teaching methodology. The effectiveness of each method was measured with a pretest and posttest. The researcher hypothesized the Multiple Intelli-

gence approach would result in a greater level of understanding of the material and a consequent larger difference in pretest and posttest scores. The results of this study are outlined in the following pages.

Tabulation of Raw Scores

Prior to any instruction occurring, students in both the experimental and control groups were administered a pretest to ascertain their prior knowledge.

The pretest indicated little prior knowledge of San Francisco's geography and history in either the experimental or control group. In the experimental group, the high score was 26 (86.67%), the low score was seven (23.33%), and the mean was 17.24 (57.46%). The standard deviation of the experimental group was 5.421. The control group's scores were slightly lower. The high score was 23 (76.67%), the low score was 10 (36.67%), the class mean was 15.90 (53.00%), and the median was 16.50. The standard deviation of the control group was 3.323 (see table 2).

table 2

Pretest results

	n	high score	low score	class mean	*sd*
experimental group	21	26	7	17.24	5.421
control group	20	23	10	15.90	3.323

There was little difference in scores on the pretest when each group was separated into genders. There were 11 males in the experimental group. The high score among them was 26 (86.67%), the low score was eight (26.67%), and the mean was 16.90 (56.33%). The standard deviation of the group was 5.873. There were10 females in the experimental group. The high score among them was 24 (80.00%), the low score was seven (23.33%), and the mean was 18.50. The standard deviation for the group was 4.859.

The control group had 13 males. The high score among them was 23 (76.67%), the low score was 11 (36.67%), and the mean was 16.31 (54.37%). The standard deviation was 3.250. There were seven females in the control group. The high score among them was 18 (60.00%), the low score was 10 (33.33%), and the mean was 15.14 (50.47%). The standard deviation of this group was 3.579 (see table 3).

table 3

Pretest results by gender

	n	high score	low score	mean	*sd*
experimental group males	11	26	8	16.90	5.873
experimental group females	10	24	7	18.50	4.859
control group males	13	23	11	16.31	3.250
control group females	7	18	10	15.14	3.594

There were two ESL students in the experimental group. They scored slightly higher on the pretest than the rest of the group. One scored 22 (73.33%) and the other 14 (46.67%). Their mean was 18.00 (60.00%) and they had a standard deviation of 5.657. There were four ESL students in the control group. They scored slightly lower on the pretest than the rest of the control group. The high score among them was 18 (60.00%) and the low score was 10 (33.33%). Their mean was 14.75 (49.17%) and they had a standard deviation of 3.594 (see table 4).

table 4

Pretest results for ESL students

	n	high score	low score	mean	*sd*
experimental group ESL	2	22	14	18.00	5.657
control group ESL	4	18	10	14.75	3.594

The posttest data showed improvement in all groups. The experimental group's mean increased by 8.19 (47.51%) to 25.43. The group high score was 30 (100%), its low score was 13 (43.33%), and the standard deviation was 3.854. The control group's mean increased by 8.40 (52.83%) to 24.30. The control group's high score was 30 (100%), its low score was 17 (56.67%), and the standard deviation was 3.181 (see table 5).

table 5

Posttest results

	n	high score	low score	class mean	increase	*sd*
experimental group	21	30	13	25.43	8.19	5.421
control group	20	30	17	24.30	8.40	3.323

When looked at by gender, the males in the experimental group showed the greatest net increase in posttest mean score while the females in the experimental group showed the smallest net increase. The experimental group males had a mean of 25.09 (83.63%) with an increase of 9.00 (55.94%). They had a high score of 30 (100%), a low score of 20 (66.67%), and a standard deviation of 2.982. The females in the experimental group had a high score of 30 (100%), a low score of 13 (43.33%) and a standard deviation of 4.780. The control group males had mean of 24.69 (82.30%) with an increase of 8.38 (51.38%). They had a high score of 30 (100%), a low score of 19 (63.33%), and a standard deviation of 3.199. The females in the control group had a mean of 23.57 (78.57%) with an increase of 8.43 (51.38%). They had a high score of 27 (90.00%), a low score of 17 (56.67%), and a standard deviation of 3.259 (see table 6).

table 6

Posttest results by gender

	n	high score	low score	mean	increase	*sd*

experimental group males	11	30	20	25.09	9.00	2.982
experimental group females	10	30	13	25.80	7.30	4.780
control group males	13	30	19	24.69	8.38	3.199
control group females	7	27	17	23.57	8.43	3.259

ESL students in the experimental group showed the lowest increase of any group or subgroup. They had a posttest mean of 23.50 (78.33%) with an increase of 5.50 (30.56%). The high score was 26 (86.67%), the low score was 21 (70.00%), and the standard deviation was 5.667. The control group ESL students had a posttest mean of 24.00 ((80.00%) with an increase of 9.25 (62.71%). They had a high score of 28 (93.33%), a low score of 17 (56.67%), and a standard deviation of 4.967 (see table 7).

table 7

Posttest results for ESL students

	n	high score	low score	mean	increase	*sd*
experimental group ESL	2	26	21	23.50	5.50	3.536
control group ESL	4	28	17	24.00	9.25	4.967

Analysis of Data

The pretest showed the control group scored lower than the experimental group.

This can most likely be attributed to a number of factors outside the control of the researcher affecting each student enrolled in the third grade academic school year in both groups. A t-test for independent samples was utilized to determine if the lower scores indicated the groups began the study at a different level. Levene's Test for Equality of Variances was performed resulting in a significance of .023 indicating that the two variances were significantly different. This resulted in a t value of .958 with 33.418 degrees of freedom and a significance of .345. This value was well above the established level of significance (.05) indicating there was no significant difference between the two groups prior to the pretest. Essentially, for the purposes of this study, both the experimental and control groups began the unit with comparable levels of prior knowledge.

Posttest scoring revealed both the experimental and control groups made gains in total scores. Table 2 shows the pretest scores and table 5 the posttest scores for both groups. As with pretest scores, a t-test for independent samples was run for posttest scores. Levene's Test for Equality of Variances resulted in a significance of .767 indicating the two variables were approximately equal. This resulted in a t value of 1.200 with 39 degrees of freedom and a significance of .314. This value was well above the assumed level of significance of .05. Therefore, after receiving a treatment for the duration of the study, the experimental group displayed no significant difference in posttest scores when compared to the control group.

The results for the experimental and control groups were mirrored by the results when significance was looked for by gender. The male subjects showed no significant difference with their pretest scores. The t-test for independent samples generated significance of 0.35 for Levene's Test for Equality of Variances indicating variances were not

equal. This resulted in a t value of -.109 with 15.015 degrees of freedom and a significance of .915. This value was well above the assumed level of significance of .05 indicating no significant difference between the groups. The t-test for independent samples generated for posttest scores generated a significance of .536 for Levene's Test for Equality of Variances indicating variances were approximately equal. This resulted in a t value of .314 with 22 degrees of freedom and a significance of .757 indicating no significant difference between the two groups of males.

The female subjects showed no significant difference with their pretest scores. The t-test for independent samples generated significance of 0.275 for Levene's Test for Equality of Variances indicating variances were approximately equal. This resulted in a t value of 1.551 with 15 degrees of freedom and a significance of .142. This value was above the assumed level of significance meaning there was no significant difference between the groups. The t-test for independent samples generated for posttest scores generated a significance of .653 for Levene's Test for Equality of Variances indicating variances were approximately equal. This resulted in a t value of 1.067 with 15 degrees of freedom and a significance of .303 indicating no significant difference between the two groups of females.

ESL students showed improvement comparable to the rest of their classmates in both groups. When their pretest scores were analyzed with the t-test for independent samples, Levene's Test for Equality of Variances yielded a significance of .378 indicating variances were approximately equal. This generated a t value of .892 with 4 degrees of freedom and a significance of .423 indicating no significant difference between the experimental and control groups. Posttest scores when analyzed with the t-test for inde-

pendent samples resulted in a significance of .668 for Levene's Test of Equality of Variances meaning variances were approximately equal. This resulted in a t value of -.124 with four degrees of freedom and a significance of .907. Therefore no significant difference exited between the two groups' posttest scores.

CHAPTER V

Summary, Conclusion, and Recommendations

Introduction

The Theory of Multiple Intelligences was introduced in 1983 by Howard Gardner in his book *Frames of Mind: The Theory of Multiple Intelligences.* In it he contends that culturally we have much too narrowly defined intelligence. Gardner claims that the overemphasis placed on linguistic and mathematical achievement unfairly labels individuals who are highly successful in other areas as unintelligent (Gardner, 1983). He identified eight distinct intelligences found in humans. They are: linguistic, spatial, musical, logical/reasoning, kinesthetic, interpersonal, intrapersonal, and naturalistic. Many pedagogists in education quickly embraced the concept and found that it offered a means by which to make a classroom more inclusive for special needs children, learning disabled students, and even gifted and talented children (Teele, 2000). Instruction utilizing Multiple Intelligence Theory will most often incorporate individual lesson plans, but also use interdisciplinary curriculums, alternate assessments, projects, and even apprenticeships. (Campbell, 1997). This study investigated whether or not there would be a measurable difference in achievement between a group of third graders instructed utilizing a Multiple Intelligence approach to a social studies unit and a group instructed using traditional teaching methods.

Summary of the Problem

Can effective curriculum be developed at the primary level that utilizes the Theory of Multiple Intelligences? As soon as Howard Gardner developed his theory of Multiple Intelligences in 1983, the educational establishment were experimenting with its usage in the classroom (Teele, 2000). This research project attempted to develop and instruct a unit in social studies to a third grade class utilizing the theory.

Summary of the Hypothesis

The hypothesis being investigated with this study dealt directly with the utilization of a Multiple Intelligence centered methodology in a primary classroom. Specifically, instruction and assessment of a social studies unit on San Francisco, CA in a third grade class utilizing Multiple Intelligence Theory would have a significantly higher level of effectiveness than a third grade class instructed using traditional teaching and assessment methods.

Summary of the Procedure

The research took place over a two week period. A social studies unit from the district's curriculum was taught utilizing a Multiple Intelligence approach (treatment method) to a third grade class. Simultaneously, the same unit was being taught to another third grade class utilizing traditional teaching methods. The students in both the experimental and control groups were given a pretest at the beginning of the unit in order to ascertain prior knowledge in each. At the conclusion of the unit, each group was given a posttest in order to determine the effectiveness of each method. The difference between pretest and posttest scores was calculated for each group and t-tests for independent sam-

ples were run for each group, just males, just females, and just ESL students to determine if there was a statistically significant difference between any of the two groups or subgroups.

Summary of the Findings

Statistical analysis of pretest scores for both the entire experimental and control groups as well as the subgroups of males, females, and ESL students indicated no significant difference in abilities at the time of the pretest. Additionally, no. significant difference between any of the groups was seen after statistically analyzing posttest scores. This indicated similar levels of achievement for all groups.

Conclusions

In conclusion, the researcher determined that posttest scores revealed no significant difference between instructional methods affecting retention of knowledge in a social studies unit. This is actually consistent with the literate, which has shown that Multiple Intelligence centered instruction has essentially no effect, either positive or negative, on any type of standardized test (Latham, 1997).

The philosophy of the Multiple Intelligence approach is one in which all students' strengths are at some point focused on in the instruction. This philosophy has been shown to make learning much more meaningful to students through the varied experiences they receive with it. This philosophy can be very different from a traditional teaching methodology that can tend to focus on repetition and rote-memorization. In the long run, a more meaningful learning experience will undoubtedly be more enjoyable, but

also result in an increase in learning and the internalization of material. The researcher saw this most starkly in children that were low achievers in the experimental group. Their posttest scores taken by themselves may have been unimpressive, but their increase in performance from the pretest was comparable to high achieving students. This indicates comparable, although not statistically significant, achievement. Informal, visual observations of each group also indicated to the researcher that the experimental group had a more enthusiastic and anticipatory attitude towards social studies than did the control group. The researcher should have perhaps designed a study in which enjoyment levels of the two groups were explored.

Finally, the pretest and posttest was a written, multiple choice exam. This type of exam has been shown by numerous proponents of Multiple Intelligence Theory to only test two of the eight intelligences; linguistic and logical reasoning. These are precisely the same two intelligences most routinely focused on in a traditional curriculum and standardized testing. A posttest utilizing alternate assessments in which students were able to provide proof of acquisition of knowledge utilizing the intelligences they were strongest in would have been more consistent with the theory of Multiple Intelligences as defined by Howard Gardner.

Recommendations and Implications

Posttest statistical analysis indicated there was no significant difference between the achievement of the experimental and control groups. Regardless of this fact, it is the researcher's opinion that instruction in a Multiple Intelligence centered manner will lead to more satisfaction and higher achievement in the long run. The Multiple Intelligence

approach to instruction should continue to be studied, perhaps longitudinally, in order to determine if instruction in this manner results in better understanding and satisfaction over time.

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APPENDIX A

LETTER TO PARENTS

April 6, 2004

Dear Parents:

I would like to take this chance to reintroduce myself to you and let you know what we are doing in your child's class right now. My name is Mr. Matthew Whitaker and I am in the Master of Science in Teaching program at Rowan University. I am completing my student teaching requirements in your child's classroom. We are currently studying energy in science and will be conducting a number of simple yet exciting experiments. We have just finished learning about multiplication of two and three digit numbers in mathematics. We will be beginning a unit on San Francisco and the Gold Rush next week in social studies. I would like to take this chance to let you know that I will be collecting data for my Master's Project while I teach this unit. I will be conducting a pretest and a posttest of the material being covered and looking at the effectiveness of differing instructional techniques. I would like to use the test scores of the class as a part of my research. Each student will be assured complete anonymity and none of them are required to allow the use of their test scores with my data collection. Please contact me through the school office if you have any questions regarding the use of your child's scores.

I want to thank all of you for an enjoyable stay at Good Intent Elementary School. I wish you and your children the best of wishes as they move on to the fourth grade.

Sincerely,

Mathew W. Whitaker

cc: Mrs. Sylvia Dawson
Mr. Daniel Nardiello

APPENDIX B

COPY OF THE PRETEST/POSTTEST

Name_____ Date _____

Fill in the circle before the correct answer.

1. Land that is located next to an ocean is called a _____ .
   ① harbor ② coast ③ hill

2. People who came to California looking for gold were called _____ .
   ① Pilgrims ② pirates ③ Forty-Niners

3. A person who comes to live in a new country is _____ .
   ① a commuter ② an immigrant ③ a tourist

4. Nairobi became an important trading center with the help of good _____ systems.
   ① transportation ② computer ③ assembly line

5. San Francisco has mild weather because it is ____ .
   ① on a peninsula ② on a hill ③ near the ocean

6. Both San Francisco and Plymouth _____ .
   ① are near bays ② are flat ③ have hills

7. Nairobi National Park is important to Nairobi's _____ industry.
   ① farming ② tourist ③ food

8. Kenya is located on the east coast of _____ .
   ① Africa ② Mexico ③ China

9. In 1849 new businesses in San Francisco ____ for the miners.
   ① provided jobs ② found gold ③ met basic needs

10. Chinese immigrants helped the United States grow by _____ .
    ① building the Golden Gate Bridge
    ② helping build the first railroad across America
    ③ moving to San Francisco's Mission District

Name_____ Date _____

11. Bridges are important in San Francisco because the city is _____ .
① on a peninsula ② a foggy city ③ a large city

12. San Francisco's port is called the _____ .
① Mission District ② Embarcadero ③ North Beach

13. What made traveling in San Francisco easier?
① cable cars ② bridges ③ tunnels

14. Kenya was a colony when it _____ .
① was ruled by England
② had a capital city
③ was a busy trading center

15. In 1849 what was San Francisco's most important natural resource?
① trees ② gold ③ fish

16. On which type of landform was San Francisco built?
① mountain ② island ③ peninsula

17. What is an important industry in Nairobi today?
① clothing ② farming ③ papermaking

18. On the coast of which ocean is Kenya located?
① Indian ② Atlantic ③ Pacific

19. In 1849 how did the discovery of gold change San Francisco?
① People deserted the town to look for gold.
② The town grew rapidly into a city.
③ Railroads were built to carry the gold.

20. Why is San Francisco an important port?
① There is still gold in the area.
② It has a large car-making industry.
③ It has an excellent natural harbor.

Name_____ Date _____

Fill in the circle before the correct answer. Read the story to answer questions 1 through 3.

Jerry's mother planted seeds in her garden. But soon birds began to eat the seeds. Nothing seemed to keep the birds away. Then Jerry had an idea. He tied empty cans to a metal pie plate and put it in the garden. Whenever the wind blew, the cans banged on the plate, scaring the birds away. Jerry's mother told her friend Sarah about the plate. Jerry said he would make one for Sarah's garden, too.

1. What will most likely happen next in the story?
   ① Jerry will help Sarah plant a garden.
   ② Jerry will tie cans to a pie plate for Sarah.
   ③ Jerry's mother will give Sarah some seeds.

2. What information in the story helped you predict what would happen next?
   ① Nothing seemed to keep the birds away.
   ② When the wind blew, the cans banged on the plate.
   ③ Jerry said he would make one for Sarah's garden, too.

3. What else can you predict from the story?
   ① Jerry will begin to sell pie plates.
   ② The pie plate will keep birds from Sarah's garden.
   ③ Jerry's mother will plant many more gardens.

4. To predict something, you must understand how _____ .
   ① one thing causes another thing to happen
   ② to make choices about things
   ③ two things can be alike

5. In predicting, reviewing the information you have been given is the _____ step.
   ① first ② second ③ third

Name_____ Date _____

Fill in the circle before the correct answer. Read the stories to answer the questions.

6. Tom Wooten wanted to move to the country. He bought a small dairy farm in Wisconsin. Tom will most likely _____ .
   ① run a dairy farm
   ② move to the city
   ③ start a wheat farm

7. A community of plains Indians were running out of buffalo meat. Then a herd of buffalo stopped near the village. The Indians will most likely _____.
   ① Move to another place
   ② run away from the buffalo
   ③ hunt the buffalo

8. Brett is in the third grade. His school is about ten miles from his home. Brett's parents cannot drive him to school. Brett will most likely _____ .
   ① drive his parent's car to school
   ② ride the bus to school
   ③ walk to school

9. Leslie is excited about her first trip to San Francisco. She loves riding trains and cannot wait to see the cable cars. Leslie will most likely _____ .
   ① count the hills
   ② stay in a hotel
   ③ ride the cable cars

10. Many people in a suburb or Morland drive cars or take buses to work in the city. Now Morland is building a new subway system. When it is finished, commuters will probably _____ .
    ① take the subway to work
    ② walk to work
    ③ move to the city

APPENDIX C

LESSON PLANS USED WITH EXPERIMENTAL GROUP

Social Studies

Unit Pretest

OBJECTIVE: The students will take a 30-question pretest in order to assess their prior knowledge of San Francisco's geography, history, and Culture.

PROCEDURE:

INTRODUCTION:

- Tell the class we will be beginning a new unit in Social Studies today
- Inform the class that you want to see what they already know before we start learning the information in this unit and that you will be giving them a pretest.
- Assure the class that their scores on the pretest will not count against their grades.
- Tell them they cannot use their books or any other reference.

DEVELOPMENTAL ACTIVITIES:

- Have the class clear their desks of everything but a pencil or pen
- Hand out the tests
- Instruct the class to put their name on their test and to begin.

SUMMARY AND CONCLUSION:

- Collect the tests as the students finish
- Encourage them to look over the chapter in their book quietly until everyone is finished
- Tell the class we will be learning about the city of San Francisco, CA over the next two weeks as well Nairobi, Kenya.
- Let them know we will be experiencing lessons that are a little different in some ways from the ones they are used to.

MATERIALS:

Copy of Chapter 10 test supplied by the textbook manufacturer

Social Studies

The Geography of San Francisco

OBJECTIVE: The students will be able to identify the major geographical features of San Francisco and describe how these features have affected the city's growth. This will be assessed through the use of topological maps and photographs.

PROCEDURE:

INTRODUCTION:

- Show the class an overhead of the Golden Gate Bridge.
- Ask if anyone knows where this bridge is located and what its name is.
- Ask the students to comment on what they notice about the bridge (it spans a wide waterway, it's very large, it is symmetrical...answers will vary)
- Tell the class we will be learning about San Francisco's geography today.

DEVELOPMENTAL ACTIVITIES:

- Ask if anyone knows what "geography" means
- Show an overhead of the coastline of Southern California. Point out San Francisco.
- Ask the students to identify some things they notice about San Francisco. Help as little as possible. Put the answers students come up with on the board. Have students get up and point out some of the features they notice.
- Possible features: 1) San Francisco is on the west coast, 2) it is on the Pacific Ocean, it is on a peninsula, 3) There is a harbor, 4) it is in the middle part of California, 5) it is mountainous to the west of San Francisco, 6) there are other cities very close
- Hand out the map of San Francisco and the questions that go along with it
- Have the class break up into five groups and work cooperatively on the five questions.

SUMMARY AND CONCLUSION:

- Pick a different group to report back on each of the questions

MATERIALS:

Overhead of the Golden Gate Bridge, Handout map of San Francisco

Overhead of a map of California, Handout questions

Names_____

San Francisco's Geography

Directions: Answer each of the five questions as a group using only the map of San Francisco on the overhead. Each group will have to answer one of the questions in front of the class... so be sure and work together to come up with the best answers!

1. How many sides is San Francisco surrounded by with water? What type of geographic formation does this make it?

_____

_____

_____

2. Name three bodies of water found on the map of San Francisco. Which is the biggest? Which is the smallest?

_____

_____

_____

3. How many bridges come directly into San Francisco? What directions would you be going in if you left San Francisco on these bridges?

_____

_____

_____

4. Name four islands near San Francisco. Which one is the smallest? Which one is the largest?

_____

_____

_____

5. Name five neighborhoods in San Francisco. Name one on the western side of the city, name one on the southern side of the city, name one on the eastern side of the city, name one on the northern side of the city, and name one near the middle of the city.

_____

_____

_____

Social Studies

The Fog and Hills of San Francisco

OBJECTIVE: The students will be able to explain how fog is created in San Francisco and how the steep hills in San Francisco are an important feature in the city.

PROCEDURE:

INTRODUCTION:

- Prep the room approx 10 minutes prior to the students arriving from lunch or a special
- Put at least to trays with water and dry ice on the floor to create the illusion of fog in the room
- Put in the *Sounds of Nature* CD of the seashore.
- Turn out the lights
- Meet the students in the hallway and tell them we are going on an imaginary trip to San Francisco early in the morning
- Let the students enter the classroom
-

DEVELOPMENTAL ACTIVITIES:

- Have the students open their books to page 207 and look at the picture of fog in San Francisco Bay
- Ask if anyone has ever seen fog in our town.
- Ask if anyone thinks they know how fog is created
- Ask why fog forms (cold ice + warmer water = fog)
- Fog is created in nature when warmer air passes over colder water
- Does the fog rise into the air or go down?
- Pick three or four children to stand in the fog and pretend they are hills

- Ask what it would be like to live someplace with high steep hills (fog would settle in valleys)
- Explain that San Francisco's average temp in the winter is 50° F and is 59° F in the summer. This mild cool air passes over the water in San Francisco Bay and forms fog.
- Explain that the steep hills in San Francisco trap the fog in the parts of the city until late in the morning.

SUMMARY AND CONCLUSION:

- Write "How would high steep hills in our community change the way we do things? Would it affect our weather?" on the board.
- Hand out blank pieces of paper.
- Have the students write an answer to the above question using at least five sentences.
- Have the students illustrate their answer with a picture

MATERIALS:

Textbook

Blank Paper

10 pounds Dry Ice

Water

Pans to hold water (at least 3 inches deep)

CD Player

Sounds of Nature CD

Social Studies

Gold Rush

OBJECTIVE: The students will be able to Identify the main reasons for San Francisco's rapid expansion between 1847 and 1849 and what it may have been like to be a Forty-Niner.

PROCEDURE:

INTRODUCTION:

- Hand out a flyer advertising a ship that will take them to California's Gold District.
- Explain that their family is very poor and living just outside Philadelphia in the year 1849.
- Gold has been discovered in California and you have just enough money saved up to make the trip. Should you go?
- Tell them we are going to find out more about what it may have been like to decide to go to California in 1849 to help them make their decision.

DEVELOPMENTAL ACTIVITIES:

- Play the record "O Susanna' for the class. Encourage them to join in if they know the chorus.
- Have the students open their textbooks to page 210.
- Sing the song on 210 to the tune of 'O Susanna' for the class. Encourage those that are good singers to join along. Repeat if there is interest in doing so.
- Explain that passengers on clipper ships going to San Francisco often took over six months to get there and had to pass the time. But they also got to see the exotic ports in the Carribean and South America. Many passengers made very good friends with other passengers too.

- Show the overhead of the route taken by the ships and leave it up

SUMMARY AND CONCLUSION:

- Tell the class that they are going to write either a letter home to their family or write there own song to the tune of 'O Susanna' about what they think it would be like to be a ship that long.
- Take volunteers to read their letters or sing their songs.

MATERIALS:

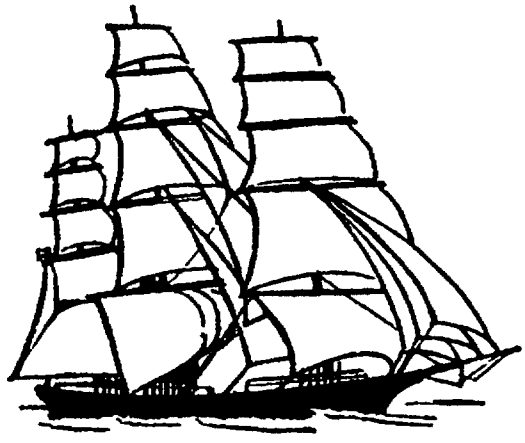
Flyer handout

Record player

'O Susanna' record

Attention

To all adventurous men and women!



Find your fortune in the gold-filled California mountains!

Leaving April 20, 1849
from the
Philadelphia Port

Make your dreams come true!

Social Studies

A Growing City

OBJECTIVE: The students will be able to identify reasons why San Francisco grew into a large city. This will be demonstrated by the successful completion of worksheet SF05.

PROCEDURE:

INTRODUCTION:

- Ask what you would have done if you had gone to California looking for gold but not gotten rich?
- Would you have returned home to the Philadelphia area?
- What if you were in a paradise?

DEVELOPMENTAL ACTIVITIES:

- Have the students open their books to page 208.
- Have volunteers read the paragraphs out loud.
- Why did people come to San Francisco in 1849?
- Why was San Francisco the last stop on the ocean voyage to the gold fields?
- Why did many of the forty-niners stay?
- What other people came to San Francisco?
- What made it hard to get around in San Francisco?
- What did the city do to help with this problem?

SUMMARY AND CONCLUSION:

- Hand out worksheet SF05
- Assist as needed

MATERIALS:

Textbook

Worksheet SF05

Name_____

The California Gold Rush

Directions: Answer the following multiple choice questions about San Francisco and the gold rush.

1. In 1847 San Francisco was a small town with only _____ people living in it.
    a. 90
    b. 900
    c. 9000
    d. 90,000
2. By 1850 San Francisco had over _____ people living in it.
    a. 250
    b. 2500
    c. 25,000
    d. 250,000
3. People discovered _____ in California in 1848.
    a. silver
    b. nickel
    c. gold
    d. copper
4. The people that rushed to California in search of gold were called _____.
    a. golders
    b. forty-niners
    c. 1849 men
    d. crazy
5. Most of these people traveled by _____ to California.
    a. ship
    b. train
    c. horse
    d. walking

Name_____

6. The trip to California took about _____ from the east coast of the United States.

a. 6 weeks

b. 6 months

c. 1 year

d. 1 month

7. Most of the people looking for gold _____.

a. got rich

b. found silver instead

c. never found any

d. were killed by bandits

8. When people looking for gold reached San Francisco, they had to buy_____.

a. toothpaste, clothes, and tools

b. food, clothes, and tools

c. games, clothes, and tools

d. food, clothes, and fuel

9. Many miners who did not find gold decided to _____ San Francisco.

a. leave

b. hate

c. stay in

d. destroy

10. San Francisco's climate is very _____.

a. mild

b. stormy

c. dry

c. cold

11. San Francisco has many _____.

a. canyons

b. fields of coquina

c. large rivers

d. steep hills

Name_____

12. In 1873 San Francisco built _____ to help people get around.

a. trains

b. cable cars

c. wagons

d. sidewalks

13. The people traveling to California in 1849 had to sail around _____.

a. Cape Horn

b. Big Horn

c. South Horn

d. Bull Horn

14. How do you think being the closest port to the gold fields helped San Francisco grow?

_____

_____

_____

_____

_____

_____

_____

_____

_____

15. Would you have stayed in California if you had gone looking for gold and not found any? Why or why not?

_____

_____

_____

_____

_____

_____

Name_____

16. Pretend that someone found gold in Deptford in 2004. How do you think it would change our community of 29,000 people? How would people looking for gold probably get here? Would you like the changes or wish things could go back to the way it was before anyone found gold? Do you think there were people living in San Francisco in 1847 when it was still a very small town that felt the same way?

Social Studies

Immigration

OBJECTIVE: The students will be able to identify the meaning of immigration and demonstrate an understanding of how Chinese immigrants experienced America by writing an entry in an imaginary journal of a Chinese railroad laborer.

PROCEDURE:

INTRODUCTION:

- Show the overhead of Chinatown in San Francisco.
- Ask the students to guess where the picture was taken.
- Tell them it was taken in San Francisco and that today we will learn about some of the groups of people that came to San Francisco from other countries.

DEVELOPMENTAL ACTIVITIES:

- Have the students open their textbooks to page 212
- Have the class participate in shared reading of pages 212 – 214
- Have the class identify three immigrant groups that settled in San Francisco (Chinese, Italians, Spanish)
- Ask if anyone in the class can tell you want immigration is
- Ask if anyone in class is an immigrant
- Ask the class to imagine going home today and their parents telling them that they were going to be leaving that night to go to foreign country to live and would never come back to Deptford.

SUMMARY AND CONCLUSION:

- Hand out the diary entry of the Chinese railroad laborer
- Have a volunteer read it aloud
- Hand out the writing prompt and give the children time to create their own fictitious diary entry on the back of the other diary entry.

- Have volunteers read their diary entry to the class

MATERIALS:

Textbook

Diary Entry

Writing Prompt Handout

Overhead of Chinatown

April 22, 1854

Today we finally got to America from China. The journey took 2 1/2 months. I miss my friends from school a lot. I can't believe I will never see any of them ever again. My dad is a doctor and is really hopeful about finding work soon. My little sister is a little sick from the long boat ride, but I think she'll get better now that we will have a house and food again. I wonder what school will be like here in America? I wonder what the kids are like and if they play the same games I do? I guess I'll find out soon enough, won't I? Ooops...there's the captain coming to tell us where we need to go. I'll be sure and try to keep up with my diary. I'm so nervous and excited. Here we go!

You have been in San Francisco a month now. Nobody would hire your father as a doctor. The only work he was able to get was working on for the railroad company helping lay tracks. They hardly pay him anything so you have had to go to work also to help feed the family. You work seven days a week for 10 hours a day carrying 50 pound pails of railroad spikes down the tracks to the men hammering them in. You don't think you will ever get to go to school again and that you may spend many years doing this job. How do you think you would feel about this? You are going to add another diary entry below talking about how things are going and if you are happy or not. What do you think will happen next in your life? You must write at least seven sentences. Take time to think about how you would feel before writing anything.

May 22, 1854

Social Studies

Pinatas

OBJECTIVE: The students will be able to identify customs in their families and communities that they have with birthday celebrations. The students will demonstrate this knowledge by designing a pinata of their own on paper and participating in a discussion of similarities and differences between the way they celebrate their birthdays and the way Mexican immigrants in San Francisco celebrate birthdays.

PROCEDURE:

INTRODUCTION:

- Pull out a pinata and ask if anyone knows what it is called.
- Ask if anyone knows what it is used for or how it is made.
- Tell the class we will be learning about pinatas today and how they are used in the Mexican immigrant community in San Francisco.

DEVELOPMENTAL ACTIVITIES:

- Have the class turn to page 215 in their textbooks
- Have volunteers read pages 215-218 out loud
- Ask reading comprehension questions after each section
- Start a list on the board of ways that Cristina's birthday celebration is the same and different from parties the class has been to.
- Have children write things under each column on the board themselves

SUMMARY AND CONCLUSION:

- Ask the class how they celebrate their own birthday parties. Have any of them ever had a pinata at their party?
- Hand out pages of white paper and tell the class we will be designing our own pinatas.
- Tell them they need to take their time and include color

- On the back of the page they need to write the following information:

    1) What is their pinata? A person, an animal or something else?

    2) What kind of prizes would they put in their pinata?

    3) Would their pinata be better for boys or girls or either?

    4) What would they make their pinata out of? Clay or paper?

- Use the following rubric to grade the assignment:

    - Each of the four questions on the back is worth 2 points each: one point for a complete sentence and one for an answer to the question.

    - The picture on the front is worth 2 points: one for drawing a design and one for using color.

    - The total amount of points available is 10

MATERIALS:

Pinata

White Paper

Crayons/Markers

Name_____

Directions: Answer the following questions using <u>complete sentences</u>.

1. On the other side of this paper draw and color a pinata of your own design.

2. Describe your pinata. Who or what is it supposed to be?_____

_____

_____

_____

3. What kind of prizes are in your pinata?_____

_____

_____

_____

4. Is your pinata that you designed for boys, girls or either? Why?_____

_____

_____

_____

_____

5. What is your pinata made out of? Clay? Paper? Why did you pick this material?

_____

_____

_____

_____

_____

Social Studies

Nairobi, Kenya

OBJECTIVE: The students will be able to identify Nairobi as a city in Kenya which is growing and has different natural resources from San Francisco. This will be demonstrated by the successful completion of Review Sheet 08.

PROCEDURE:

INTRODUCTION:

- Show the overhead of a photo of a city street.
- Ask what city the class thinks they are looking at.
- Tell them it is Nairobi, Kenya and that we will be learning more about it today.

DEVELOPMENTAL ACTIVITIES:

- Show the overhead of maps of Kenya.
- Insure students are able to identify the continent of Africa on the map
- Have students open their textbooks to page 219 and read them the Read Aloud section.
- Discuss the Read for Purpose section with the class prior to continuing.
- Have a volunteer read page 220
- Discuss the map on page 220 with the class
- Have volunteers read the sections on 221
- Discuss Nairobi's industries, history and natural resources.

SUMMARY AND CONCLUSION:

- Hand out the Review Sheet 08 and have students complete

MATERIALS:

Textbook

Review Sheet 08

Name_____

Directions: Multiple Choice. Circle the correct answer.

1. Kenya is on the continent of _____.

    a. Africa

    b. Asia

    c. East Africa

    d. Europe

2. The capital of Kenya is _____.

    a. Mombassa

    b. Nairobi

    c. Tanzania

    d. Namibia

3. Nairobi is a growing _____.

    a. village

    b. town

    c. city

    d. country

4. Kenya is on the _____ part of Africa.

    a. Eastern

    b. Central

    c. Northern

    d. volcanic

5. The _____ Ocean is next to Kenya.

    a. Atlantic

    b. Pacific

    c. Caspian

    d. Indian

6. Nairobi is about _____ years old.

a. 25

b. 100

c. 200

d. 500

7. Kenya was once an English _____.

a. estate

b. country

c. colony

d. muffin

8. The _____ built a railroad across East Africa.

a. Indians

b. Spanish

c. English

d. Chinese

9. The _____ made Nairobi a trading center.

a. automobile

b. colonists

c. airplane

d. railroad

10. Goods came to Nairobi from the coastal city of _____ by train.

a. San Francisco

b. Mombassa

c. Malindi

d. London

11. Nairobi is the main center for _____ in Kenya.

a. hospitals

b. industry

c. farming

d. art

12. An important industry in Nairobi is making _____.

a. paper

b. airplanes

c. dairy products

d. trains

13. Another important industry in Nairobi is making _____.

a. movies

b. cars

c. computers

d. friends

14. Nairobi is a popular place for _____ to visit.

a. tourists

b. fishermen

c. athletes

d. children

15. In Nairobi National Park _____ roam free.

a. children

b. babies

c. soldiers

d. animals

16. You travel through the park in a big _____ with many windows.

a. motorcycle

b. bicycle

c. van

d. grocery cart

17. You can see zebras, leopards, and _____.

a. dolphins

b. horses

c. elephants

d. bald eagles

18. Nairobi, Mexico City, and Washington, D.C. are all _____.

a. capitals

b. cities in Asia

c. imaginary places

d. rural areas

19. A _____ is a place ruled by people from another country.

a. cardigan

b. colony

c. contest

d. collard

Directions: Short Answer. Write the correct answer in the space providd.

20. Name two other colonies we have talked about in Social Studies.

_____

_____

21 Name five countries that border Kenya.

_____ _____ _____

_____ _____

22. What is the name of the Large lake on Kenya's western border with Uganda?

_____

20. Is Kenya's wildlife an important natural resource? Why?

_____

_____

_____

Social Studies

Predicting Skills

OBJECTIVE: The students will be able to develop their predicting skills as demonstrated by successfully making predictions on a review sheet.

PROCEDURE:

INTRODUCTION:

- Ask the students to name some events that they expect to happen in school today.
- Tell them that they are *predicting*.
- Ask a volunteer to try and define predicting (forecasting, guessing, hypothesizing).
- Write these synonyms on the board.

DEVELOPMENTAL ACTIVITIES:

- Have the students turn to page 222 and 223 in their textbooks.
- Have volunteers read the paragraphs on 222.
- Go over the steps to predicting on page 223 together.
- Emphasize that the first step is always to review what we already know.
- Tell the class we will be practicing our predicting skills.

SUMMARY AND CONCLUSION:

- Hand out the predicting review sheet

MATERIALS:

Textbook

Predicting Review Sheet

Name_____

Directions: Answer the following short stories using the predicting skills you learned today in class.

1. Joe decides he doesn't want to stay in the van in Nairobi National Park. He wants to see all the animals up close. Joe sees a lion and decides to get closer. What is likely to happen to Joe?

a. He will discover that lions are nice like house cats

b. He will become prey to a predator

c. The lion will run away terrified

2. Cheryl is at her friend's birthday party. Her friend's father puts a blindfold on her, puts a stick in her hand and spins her around. What is Cheryl probably about to do?

a. Play a game of baseball

b. Eat some cake

c. Hit a pinata

3. Sam's parents tell him they have a surprise for him. He sees a map of Kenya on their bed, some plane tickets, and a tourist brochure about Lake Victoria. What might the surprise be from his parents?

a. They are all going on a trip to Africa

b. they are all going on a trip to China

c. They are going to watch a travel show on TV

4. Bill goes to California looking for gold. He doesn't find any gold once he gets there. He likes the weather and beautiful scenery of San Francisco. What do you think Bill is going to do?

_____

_____

_____

5. Joseph has a really sore knee. When he gets to San Francisco, he sees the big hills he has to climb. What do you think he will do if he has to get to the top of one of them?

_____

_____

_____

6. There are cheetahs in Nairobi National Park. They are an endangered species and almost extinct. Local farmers decide to chase away all the gazelles because they are eating their plants. Cheetahs main prey is gazelles. Predict what you think will happen to the cheetahs.

_____

_____

_____

7. The Changs are living a nice life in China. They have plenty of food and money and very nice house. They just got a letter from their uncle telling them they should move to America where there is a chance they will get rich, What do you think the Changs will do?

_____

_____

_____

8. You are in your back yard and discover nuggets of gold! The Newspapers report that other children are finding gold in their yards too. What do you think will happen? Will Deptford change any if gold is discovered here?

_____

_____

_____

9. Your best friend just told you his /her family is moving to another country. They promise they will write and keep in touch. Last summer when they went to visit their grandmother for 6 weeks they promised they would stay in touch and they didn't. What do you think will happen?

_____

_____

_____

10. A shopkeeper in San Francisco in 1849 notices that forty-niners getting off boats always need shovels and blankets and will pay much too much money for them. He has never stocked these two items in his store before. What do you think he will do?

_____

_____

_____

Social Studies

Unit Posttest

OBJECTIVE: The students will take a 30-question posttest in order to assess their acquired knowledge of San Francisco's geography, history, and Culture. The test will additionally check for predicting skills, a skill emphasized in this unit of the curriculum.

PROCEDURE:

INTRODUCTION:

- Tell the class we will be finishing our unit in Social Studies today
- Tell them they cannot use their books or any other reference.

DEVELOPMENTAL ACTIVITIES:

- Have the class clear their desks of everything but a pencil or pen
- Hand out the tests
- Instruct the class to put their name on their test and to begin.

SUMMARY AND CONCLUSION:

- Collect the tests as the students finish
- Encourage them to look over the chapter in their book quietly until everyone is finished

MATERIALS:

Copy of Chapter 10 test supplied by the textbook manufacturer

VITA

NAME:	Matthew William Whitaker
BIRTHPLACE AND DATE:	Washington, DC February 14, 1968
ELEMENTARY:	Phoebe Hearst Elementary School Washington, DC
JUNIOR HIGH:	Alice Deal Jr. High School Washington, DC
SENIOR HIGH:	Woodrow Wilson Sr. High School Washington, DC
COLLEGE:	Virginia Tech Blacksburg, VA Bachelor of Science in Biology
GRADUATE:	Rowan University Glassboro, NJ Master of Science in Teaching Elementary Education