Does Multiple Intelligences Based Instruction Have an Effect on Students' Attitudes & Achievement?

Chapter I
Introduction

Statement of the Problem

American schools have traditionally favored those students who excel in the linguistic and analytical arenas because these skills are highly valued in our culture. Unfortunately, this traditional approach leaves certain students behind to stumble blindly through an educational system which ignores their unique abilities. This is not to say that the development of linguistic and analytical skills should be abandoned in favor of nontraditional approaches to education. Rather, traditional and nontraditional approaches should be combined to formulate a method of education that is best suited to the students who populate our classrooms. Smagorinsky (1991) says: "I don't suggest that we replace instruction in linguistic expression with the construction of meaning through other intelligences. Rather, I suggest that it serve as a complimentary means of expression" (p. 5).

The theory of multiple intelligences, developed by psychologist Howard Gardner (1983, 1995a, 1995b), offers a balance which teaches students what they need to know in order to be successful in our society in a way that compliments the unique abilities that each individual possesses. This study seeks to show that when the theory of multiple intelligences is applied effectively in the classroom, it can improve students' attitudes toward learning and students' academic achievement.

The Theory of Multiple Intelligences

The theory of multiple intelligences (MI) is based on the premise that each individual's intelligence is composed of multiple "intelligences" (Blythe & Gardner, 1990), each of which has its own independent operating system within the brain (Gardner, 1983). These intelligences include: verbal-linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal (Gardner, 1983), and naturalist (Checkley, 1997; Meyer, 1997). The verbal-linguistic intelligence is the use of both written and spoken language for the purpose of communication (Torff, 1996). The logical-mathematical intelligence is the use of abstract relationships, presented in terms of either numbers or symbols (Torff). It also includes the use of logic and analysis in the sense of logically organizing an essay or analyzing poetry (Torff). The spatial intelligence is the manipulation of objects within a given space, whether that space is the size of a piece of paper, a room, a building, or a town (Torff). The bodily-kinesthetic intelligence is the ability to use the body effectively to solve problems (Smagorinsky, 1995b). It has also been referred to as "the ability to unite body and mind in the refinement of physical performance" (Campbell, Campbell, & Dickinson, 1992, p. 8). The musical intelligence is the ability to make use of the relationship between pitch, rhythm, and timbre (Torff). The interpersonal intelligence is the ability to understand the thoughts, beliefs, and intents of others (Torff) and to respond appropriately (Gardner & Hatch, 1990). The intrapersonal intelligence is a sense of self-awareness (Torff) used to guide individual behavior (Gardner & Hatch). The naturalist intelligence is an understanding of the natural world and the ability to use that understanding productively (Meyer; Torff). (See Figure 1 for a detailed description of those who possess each of the intelligences.)

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The exact combination of intelligences varies from person to person (Gardner, 1983). For example, one person might be strong in the verbal-linguistic and interpersonal intelligences with secondary strengths in the intrapersonal, spatial, and musical intelligences and weaknesses in the logical-mathematical, bodily-kinesthetic, and naturalist intelligences. Another person could have an entirely different combination of intelligences. Each person's makeup of intelligences is very similar to DNA; no one has exactly the same combination of intelligences.

Gardner's (1983) criteria for selecting these particular abilities as intelligences include: independence from other intelligences (within the brain); having a central set of information-processing operations; having a distinct developmental history; having roots in evolutionary history; and having a cultural basis. When he says that intelligences are independent, he is referring to separate sections of the brain which control each intelligence and have distinct methods of processing information (Gardner). According to Blythe and Gardner (1990), each intelligence has its own "distinct mode of thinking" (p. 33). Gardner's research with brain-injured adults and with autistic children has indicated that the human brain has separate areas that control separate functions. For example, Gardner described a woman who suffered a brain injury and lost the ability to speak, yet she maintained her ability to sing. This example shows that the verbal-linguistic intelligence functions separately from the musical intelligence.

Gardner (1983) makes a distinction between the isolation of each intelligence within the structure of the human brain and the isolation of the intelligences when called upon to complete real-world operations. Intelligences do not work independently of one another in a real-world setting. According to the theory, most tasks require the simultaneous use of several intelligences in order to be completed successfully (Gray & Viens, 1994). Torff (1996) offers the example of a chess player who must use logic and spatial skills to plan ahead and figure out moves and must also use interpersonal skills to figure out the opponent's defense and plan of action. The intelligences are separate entities which operate in conjunction with each other to create the whole of each individual's ability.

In addition to the biological basis for the intelligences, Gardner (1983) places great emphasis on cultural influences on the development of each intelligence. He says: "It is the culture that defines the stages and fixes the limits of individual achievement" (Gardner, p. 27). Culture determines what parents and schools will teach their children based on the needs of the community. For example, educators have found that the Mexican American culture places a strong emphasis on community and on family (Vasquez, 1990); therefore, many members of this community have well-developed interpersonal intelligences.

The influence culture has on the development of the intelligences points to one of the most important components of the theory—the makeup of intelligences changes over time with age and with experience (Gardner, 1983). Thomas Hatch (1997b) profiled the intelligences of several children when they were in kindergarten and again when they were in the sixth grade. He discovered that their intelligence profiles had changed over time. He says: "Just because young children display particular capacities does not necessarily mean that they will grow up to excel in activities involving those capacities. Children's intelligences, the manner in which they display them, and how successful they are, shift, grow, and vary over time" (Hatch, p. 3). In other words, if intelligences change with time and experience, they can be learned. If they can be learned, they can be taught. As a result, students who are not strong in one intelligence can be taught to develop that intelligence. According to Torff (1996): "The intelligences

develop—they grow and change over time, which allows strengths to be exploited and weaker areas remedied. ...If you provide the right kinds of support for students, they build the kinds of intellectual structures that enable them to do things" (p. 37). Lazear (1994) says that teachers should watch for "ways to help students stretch into new intellectual areas—maybe areas in which they are uncomfortable or weak" (p. 19). Not only are weaker areas strengthened, but students develop a better self-image because they use a well developed intelligence to improve a weaker one. In an interview with Checkley (1997), Gardner says: "Teachers have to help students use their combination of intelligences to be successful in school, to help them learn whatever it is they want to learn, as well as what the teachers and society believe they have to learn" (p. 5). In other words, Gardner believes that teachers need to find ways to incorporate instruction into their classrooms that encourages students to develop weaker intelligences by drawing on their strengths. This in turn improves both attitude toward learning and academic achievement.

Research on the Multiple Intelligences

Several researchers have devised methods for measuring students' profiles of intelligence (Teele, 1996; Moll, n.d.). Since Gardner (1983) has expressed caution when "labeling" students, it is advisable to consider one's reasons for employing a profile. Teele argues that "learning must become personalized for all students" (p. 75). One method of personalizing learning is to allow students an opportunity to understand how they think. Teele has developed a profile called the Teele Inventory of Multiple Intelligence (TIMI) which is a forced choice pictorial inventory containing 56 numbered panda bears representing each of the original seven intelligences. Students are provided with 28 opportunities to make their selections between two choices (Teele). After analyzing more than 6000 answer sheets, Teele discovered that the intelligences fluctuate with age. For example, students at the primary level demonstrated a much higher preference for the verbal-linguistic and logical-mathematical intelligences than middle and high school students who demonstrated strengths in the interpersonal, bodily-kinesthetic, spatial, and musical intelligences. MI profiles help students become aware of their intelligences—both the strengths and the weaknesses—so that their learning becomes personal. According to Teele: "Intrinsic motivation, positive self-image, and a sense of responsibility develop within students as they become stakeholders in the educational process and accept responsibility for their own actions" (p. 72). Students who realize that they have intelligences in which they excel—even if they are not the traditional intelligences—will develop a more positive attitude toward school.

Many educators have argued that MI improves students' attitudes (Campbell, 1997; Campbell, Campbell, & Dickinson, 1992; Smagorinsky, 1991, 1995a, 1995b, & 1996), but they have not supported their arguments with research. For example, Campbell et al. say that some of the by-products of MI include better attitudes, fewer behavior problems, improved self-concept, development of cooperation and leadership skills, and development of a love of learning. According to these educators, MI has an impact on the whole person (Campbell et al.). If the whole student is considered, other areas, including attitude and academics, also improve (Campbell et al.). According to Smerechansky-Metzger (1995), MI

ultimately becomes a motivational tool which supplies the self confidence required to achieve academic success.

A number of educators argue that MI helps students build positive attitudes toward learning in English class. For example, Emig (1997) says: "Students who are using their areas of strength to learn feel more competent and confident and enjoy the challenge of acquiring new information. They participate more freely and retain more information because they can more easily see connections" (p. 4). Smagorinsky (1995b) maintains that his low achieving students were the most enthusiastic participants and that they became highly engaged in the projects that they worked on. He says: "Students who were loath to turn in simple homework assignments would spend all weekend producing elaborate video productions dramatizing their interpretations of literary relationships" (Smagorinsky, 1995b, p. 19).

Little research has been done linking MI based instruction with students' attitudes toward learning. Eilers et al. (1998) studied the loss of commitment to schoolwork exhibited by middle level students and the effect of a variety of strategies on students' learning and on students' attitudes toward themselves as learners. Eilers et al. used activities based on the multiple intelligences as one of their "intervention" strategies. They found a modest increase in student achievement, as well as increased confidence and self-image, as a result of MI activities and other strategies (Eilers et al.).

Most research linking MI instruction with students' achievement has been done on a small scale with only a few students studied at a time. A study by Smagorinsky and Coppock (1994) analyzed the composing process of students by conducting stimulated recall interviews following one student's creation of an artistic text that represented his interpretation of the relationship between two central characters in a short story. The findings suggested that non-linguistic texts aid in the construction of meaning (Smagorinsky & Coppock).

Smagorinsky (1995b) described another study conducted with Coppock in which they again examined the composing processes involved in non-written literature interpretation. Students were videotaped as they read a short story, decided with whom they would work (or if they would work alone), discussed methods for interpretation, gave meaning to the story, and worked out an interpretive "text." Two of the girls who participated in the above study choreographed a dance in response to the literature (Smagorinsky & Coppock, 1995). Their dance demonstrated the relationship between two characters in the short story they had read. At the end of this process students watched the video tape of themselves composing their texts (Smagorinsky, 1995b). Stimulated recall interviews were conducted in order to collect data (Smagorinsky & Coppock, 1995) about what students were thinking when they read and responded to the story (Smagorinsky, 1995b). The results showed that students used a number of processes which are considered valuable in writing. For example, students drew from their personal experience, added personal meaning, used symbolic representations of understanding, referred to previously read texts, presented historical information for interpretation, and viewed their work as a part of a larger composing process (Smagorinsky, 1995b). Results from the interview with the two girls who choreographed the dance showed that the students empathized with the characters while composing the text and represented the characters' relationship using spatial images and arrangements (Smagorinsky & Coppock). They used dance as a psychological tool to demonstrate and to develop their thoughts about the story (Smagorinsky & Coppock). According to Smagorinsky, many of the students changed their

interpretations as they created their own "texts" because they developed a deeper understanding of the literature as they composed (1995b). Smagorinsky (1995b) said of the results: "Students' thoughts both shaped and were shaped by the texts they composed" (p. 22). In short, the use of MI based instruction enabled these students to make sophisticated interpretations of literature.

Importance of the Study

While many educators argue that MI based instruction should improve students' attitudes toward learning (Campbell, 1997; Campbell, Campbell, & Dickinson, 1992; Emig, 1997; Smagorinsky, 1995), little research has been done on the impact of MI based instruction on students' attitudes toward learning. In a similar manner, only a few studies (Smagorinsky, 1991, 1995a, 1995b, 1996; Smagorinsky & Coppock, 1994, 1995) have attempted to examine the impact of MI based instruction on academic achievement.

This study examines the effects of MI based instruction on students' attitudes toward learning and on students' academic achievement. The intention is to determine if MI based instruction improves students' attitudes toward learning and students' academic achievement in English class.

Hypothesis

According to literature on the multiple intelligences (Campbell, 1997; Campbell, Campbell, & Dickinson, 1992; Smagorinsky, 1991, 1995a, 1995b, & 1996; Smagorinsky & Coppock 1994 & 1995) the four multiple intelligences instructional activities that incorporate the multiple intelligences will improve students' attitudes toward learning and their academic achievement in English.

Alternative Hypothesis

The four multiple intelligences instructional activities that incorporate the multiple intelligences will have no effect on students' attitudes toward learning and their academic achievement in English .

Operational Definition of Terms

Students' attitudes toward learning refers to either a positive or a negative opinion of school and specifically of English class.

Interpretation of literature refers to the degree of inferential analysis employed by students while analyzing literature and to the quality of textual evidence used to support and to explain the interpretation. This helped determine if MI based instruction had an impact on academic achievement.

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Second quarter grades refers to grades earned by students between October 26, 1998 and January 16, 1999. Grading was done by the regular classroom teacher. A grade of "A" ranges from 90% to 100%, a grade of "B" ranges from 80% to 89%, a grade of "C" ranges from 70% to 79%, a grade of "D" ranges from 60% to 69%, and a grade of "F" ranges from 0% to 59%. These grades were not weighted.

Third quarter grades refers to grades earned by students between January 19, 1999 and March 19, 1999. Grading was done by the researcher. A grade of "A" ranges from 90% to 100%, a grade of "B" ranges from 80% to 89%, a grade of "C" ranges from 70% to 79%, a grade of "D" ranges from 60% to 69%, and a grade of "F" ranges from 0% to 59%. These grades were not weighted. A comparison of second and third quarter grades helped to further determine if MI based instruction had an impact on academic achievement.

MI based instruction refers to the development and teaching of lesson plans which consider students' unique abilities by incorporating the multiple intelligences into activities, projects, and assignments.

MI activities refers to classroom activities which incorporate one or more of the multiple intelligences. The activities that were used in this study include a multiple intelligences self profile (Moll, n.d.), "The Soldier's Dilemma" scenario (Johannessen, 1997), the Wilderness Survival Opinionnaire (Johannessen, 1994), and acting out chapters from a novel.

MI projects and assignments refers to work done mostly outside of the classroom which incorporate one or more of the multiple intelligences. The projects and assignments that were used in this study include the "To Build a Fire" essay which was based on the Wilderness Survival Opinionnaire (Johannessen, 1994) and the 1920s mini-research project.

Delimitations

This study is limited to students in the tenth grade (with two eleventh grade repeaters) who live in the northwestern suburbs of Chicago, Illinois. The socioeconomic status of these students is middle to upper-middle class.

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Figure 1
The Multiple Intelligences

Verbal-Linguistic—the intelligence of words

Those possessing the verbal-linguistic intelligence are sensitive to the meanings, sounds, and rhythms of words. They love reading, poetry, tongue twisters, puns, humor, puzzles, and riddles.

Logical-Mathematical—the intelligence of numbers and reasoning

Those possessing the logical-mathematical intelligence enjoy number games, problem solving, pattern games, and experimenting. They also do well with writing that involves exposition, argumentation, definition, classification, and analysis.

Spatial—the intelligence of pictures and images

Those possessing the spatial intelligence respond to visual cues and they like to invent and design.

Bodily-Kinesthetic—the intelligence of the whole body and the hands

Those possessing the bodily-kinesthetic intelligence enjoy dramatics, role-playing, dancing, and physical expression.

Musical—the intelligence of tone, rhythm, and timbre

Those possessing the musical intelligence enjoy playing instruments, singing, and drumming, and they like the sounds of the human voice, environmental sounds, and instrumental sounds. It has been described as hearing patterns.

Interpersonal—the intelligence of social understanding

Those possessing the interpersonal intelligence are social and are in tune with the feelings of others. They make excellent leaders, can help their peers, and work cooperatively with others.

Intrapersonal—the intelligence of self-knowledge

Those possessing the intrapersonal intelligence like to work independently. They are self-motivated and self-aware.

Naturalist—the intelligence of the natural world

Those possessing the naturalist intelligence can recognize and classify elements from the natural world and can use that ability productively (e.g. farming or biological science).

Adapted from: Armstrong, 1994; Meyer, 1997; Reiff, 1996; and Smagorinsky,1991.