

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

Chapter II Method

Subjects

The experimental group consisted of 34 sophomores and two juniors who independently registered for either a first or fourth period college preparatory (regular level) American Literature course at a high school in a northwestern suburb of Chicago, Illinois. Permission was obtained before conducting the study, and an opportunity to review the results was offered to administrators, teachers, and students.

Multiple Intelligences Based Instruction

During the six week unit, the researcher employed the following multiple intelligences activities designed to improve students' attitudes and academic achievement. One class period was spent introducing the students to the theory of multiple intelligences. Students were asked to complete a multiple intelligences profile as an informal activity (see Appendix G). All of the results were recorded on the board under numbered headings. Before discussing the results, students were asked to explain what "intelligence" meant to them. Most students identified intelligence as "being smart." Next, they were provided with background information about the theory and how it was developed. They were given the example of the woman who suffered a brain injury and lost her ability to speak, yet did not lose her ability to sing (Gardner, 1983). Students were then asked if they noticed anything about the numbers on the board. Students answered that there was no order, or pattern, to the numbers. Their answers were used to emphasize that each of them had varying combinations of intelligences and that each of them was good at something. Finally, each of the intelligences was discussed and the names of each intelligence were written on the board above the correct numbered heading.

The emphasis of this MI lesson was on the fluidity of each individual's makeup of intelligences. Students were reminded that their own intelligences had changed drastically from early childhood throughout their school years, and it was emphasized that their intelligences makeup would continue to change with age and with experience. It was impressed upon students that they were not locked into one or two intelligences and that they should never label themselves (or their peers) as being one intelligence or another.

During the course of the study, students were taught using lessons, activities, and projects based on the multiple intelligences. (See Figure 2 for a schedule of instruction.) Early in the study, the Realism unit was introduced using a scenario called "The Soldier's Dilemma" (Johannessen, 1997) (see Appendix H). The scenario was read out loud to the students, then they were asked to work in groups to answer questions about the scenario. (See Appendix H for the questions to which each group responded.) Each group was asked to come to a consensus about their opinions. Once they had sufficient time to debate the issue, they were asked to return to their seats for a whole class discussion. (See Appendix I for the whole class discussion questions.) Students were required to use their interpersonal skills to defend their positions, first with their group members, then with the entire class. Students also needed to use their intrapersonal intelligences because the emotional level of this discussion required a sense of self-

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awareness and self-understanding. Students also needed to use their logical-mathematical and verbal-linguistic intelligences for analysis and their verbal-linguistic intelligence for communication.

The class then read and discussed "To Build a Fire" by Jack London, after which they were assigned to write an essay which required them to use their intrapersonal intelligence. Before reading the short story, students were asked to complete a Wilderness Survival Opinionnaire (Johannessen, 1994) (see Appendix J). After reading and discussing the story, students were asked to complete the same opinionnaire for a second time. The essay assignment asked them to identify three statements from the opinionnaire for which their answers changed as a result of reading and discussing the story (Johannessen, 1994) (see Appendix K). Students needed to consider the reasons for their answers on the first opinionnaire and then were required to consider what about the story and the class discussions made them change their opinions when completing the second opinionnaire. There was also an alternative assignment for those students whose answers had not changed on the second opinionnaire; however, the same introspective thought process was still required. Students were also required to use textual evidence in support of their reasoning. As a result, students used their logical-mathematical and verbal-linguistic intelligences for analysis of the literature and for organization of their essays, in addition to the verbal-linguistic intelligence for reading and writing and the intrapersonal intelligence for the introspective thought process.

As an introduction to *The Great Gatsby* by F. Scott Fitzgerald, students were assigned a 1920s mini-research project (see Appendix L). They were given the opportunity to work alone, in pairs, or in groups of three or four. Each student was required to select his or her own topic to research. If students chose to work with classmates, their individual research was to be integrated into one presentation. As preparation for their projects, students brainstormed methods for demonstrating knowledge. The form of the final product was left to the students' discretion. As a result, students could use the combinations of intelligences with which they were most comfortable.

For example, three students created a video, the first segment of which took the form of a modern day *Miss America Pageant* in which the commentator reported on the first pageant's history. Their second segment was an interview format in which one student portrayed Barbara Walters interviewing a flapper who told viewers about her lifestyle. These students used their verbal-linguistic intelligence for writing and speaking their dialogue, their spatial intelligence for organizing their video tape, and their interpersonal skills to work together successfully. They also used their logical-mathematical intelligence to organize their research into a presentation. Another student wrote and presented a first-person narrative of Amelia Earhart's life. Her presentation was accompanied by a freehand drawing of a world map on which Earhart's fatal flight was charted. This student used her verbal-linguistic intelligence to write and speak her narrative and her spatial intelligence to draw the map. She also used her logical-mathematical intelligence to organize her research into a presentation. Two students wrote a newsletter about sports in the 1920s. They concentrated specifically on Babe Ruth and on the 1919 World Series which was fixed. These boys used their verbal-linguistic intelligence to write their articles, their spatial intelligence to format their newsletter, and their interpersonal intelligence to cooperate. They also used their logical-mathematical intelligence to organize their research into a newsletter. Two other students wrote and presented a 20-minute dialogue between Bonnie and Clyde. They wore costumes for effect. By selecting this method of presentation, they not only presented the historical and biographical

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information about the exploits of Bonnie and Clyde, but also managed to examine Bonnie & Clyde's emotional and psychological state. In order to accomplish this, these students needed to draw on their intrapersonal intelligence. These students used their verbal-linguistic intelligence to write and speak their dialogue, their interpersonal intelligence to collaborate together, and their logical-mathematical intelligence to arrange their research into a coherent dialogue. Three other students found a Benny Goodman radio sketch and acted it out vocally. They also wrote a commercial about fads of the 1920s which was inserted into their sketch. In order to truly communicate the "radio" element of their topic, these students made an audio cassette of their presentation and played it for the class. These girls used their verbal-linguistic intelligence to verbally "act out" their radio sketch, their interpersonal skills to work together, and their logical-mathematical intelligence to organize their research into a presentation. Another student taught the Charleston to the class, using her bodily-kinesthetic intelligence, while yet another student used his musical intelligence to present the Blues. These are just a few of the many fantastic presentations which allowed students to present their research in an interesting and creative manner that also allowed them to use a variety of intelligences with which they were most comfortable.

While reading and discussing *The Great Gatsby* by F. Scott Fitzgerald, groups of three or four students were assigned a chapter from the novel. They were asked to select a passage or a series of passages that they would "act out." (See Appendix M for the assignment.) Students were asked to select passages that they liked and which were important to the development of the chapter and the novel. They were also required to plan and present a rationale in which they explained the reason they selected their passage(s) and the importance of the passage to the novel. They were also asked to consider foreshadowing, symbolism, and characterization when planning their rationales. Students were given time in class to collaborate. Students used their intrapersonal, verbal-linguistic, and logical-mathematical intelligences in scene selection, their interpersonal and logical-mathematical intelligences in planning and organizing their scene, their interpersonal, verbal-linguistic, and bodily-kinesthetic intelligences to act out the scene, and they used their logical-mathematical and verbal-linguistic intelligences to organize and present their rationales at the end of the scene.

Apparatus

Data for the study was collected in three ways. Pre and post attitude surveys were created for the study and were administered to students. The introductory survey consisted of ten statements and a Likert scale for each statement. The statements were designed to determine students' attitudes toward learning in English class. Several statements were also designed to determine students' initial reactions to the concepts involved in the multiple intelligences. The closing survey consisted of the same ten statements as the introductory survey with 11 additional statements. The additional statements were designed to determine students' attitudes toward and understanding of the multiple intelligences in the classroom. A pre and post analytical writing sample, adapted from Kahn, Walter and Johannessen (1984), was also administered to students and was used to determine if students improved in their ability to analyze a work of literature as a result of MI based instruction. Finally, the researcher compared second and third quarter grades as another method of measuring improvement in academic achievement.

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Procedure

An introductory survey (see Appendix A) consisting of ten statements was administered at the beginning of the literature unit. Statement numbers three, five, six, seven, eight, and ten were designed to determine students' attitudes toward school and toward English class. Statement numbers one, two, and nine were designed to identify preliminary attitudes toward the concepts involved in the multiple intelligences. For each statement students were asked to circle the word or words on the Leikert scale that best described how they felt about the statement. Their choices were: strongly agree, agree, not sure, disagree, or strongly disagree. Students were given approximately five minutes in which to complete the survey and were assured verbally and in writing that their answers would remain anonymous.

At the beginning of the study, students were also asked to write in-class compositions about a poem called "In the Metro" by Mikhail Kvlividze (see Appendix C). These compositions served as analytical writing samples. The directions asked students to explain the comment the poem was making about love, marriage, or relationships and to explain the reasons for their interpretations using textual evidence (Kahn, Walter, & Johannessen, 1984). These compositions were written without any preparation of students and were therefore based completely on students' previously learned knowledge. Students were given 25 minutes in which to write their compositions. They were informed that this assignment was something that they had never been taught before and were asked to do their best.

After the pre-tests were administered, one class period was spent learning about the multiple intelligences.

Four different activities, projects, and assignments based on the multiple intelligences were taught during the course of the study. "The Soldier's Dilemma" scenario (Johannessen, 1997) (see Appendix H) was taught early in the second week of the study as an introduction to the literary movement Realism. The Wilderness Survival Opinionnaire activity (Johannessen, 1994) (see Appendix J) was used for several days at the end of the second week of the study. It then served as the basis for an essay assignment which was due the following week (see Appendix K). The 1920s mini-research project (see Appendix L) was assigned in the third week of the study. One day was spent discussing the assignment, brainstorming ideas, and listening to a brief presentation by the librarian about resources. A second day was spent in the library and a third day was spent working in class on the projects. The presentations took place in the fourth week of the study and took approximately three days to complete. Acting out chapters from *The Great Gatsby* (see Appendix M) took place in the fifth and sixth weeks of the study. Groups who were assigned chapters one through five presented in week five and groups who were assigned chapters six through nine presented in week six of the study. These activities were designed to improve students' attitudes toward learning by allowing them to use the intelligences with which they were most comfortable and to improve academic achievement by asking them to do activities that would strengthen their weaker intelligences. (See Figure 2 for a complete schedule of instruction.)

At the end of the study a closing survey (see Appendix B) was administered. It consisted of eleven new statements in addition to the same ten statements that were included on the introductory survey. Statement numbers 11 through 20 followed the same format as statement numbers one through ten. For each statement, students were again asked to circle the word or words that best described how they felt about the statement. As before, their choices on the Leikert scale were: strongly agree, agree, not sure,

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disagree, or strongly disagree. Statement numbers 12, 13, 14, 15, 16, and 17 were designed to determine if students believed that the multiple intelligences had helped them learn. Statement numbers 18 and 19 were designed to insure that students understood that the intelligences are not static and that they are not intended to "label" students. The format of statement number 21 was different from the others. Students were given a list of intelligences and were asked to check all of the intelligences in which they would like to improve. This question was designed to reveal how well students understood their own intelligences and if they were aware of the intelligences in which they were both stronger and weaker. Students were given approximately five minutes in which to complete the survey and were assured verbally and in writing that their answers would remain anonymous.

At the end of the study, students were also given the same in-class writing assignment (see Appendix C) that they were given at the beginning of the study. They were once again allowed 25 minutes in which to complete their compositions. They were given no assistance while writing their compositions; therefore, the results were based entirely on what students had learned during the course of the study.

Finally a comparison of second and third quarter grades was used as an additional way to determine if students in the two American Literature classes improved in academic achievement.

Several students were removed from the study either because they introduced uncontrollable variables or because they were absent when one of the analytical writing samples was administered. Three students had been previously identified as having learning disabilities. Three students had been previously diagnosed with attention deficit disorder (one of these three also had a learning disability and a behavior disorder). Two other students had been previously identified as having behavior disorders, and one student was removed from the study because she missed three weeks of school due to a serious injury. One student was removed from the study because she was absent on the day that the first analytical writing sample was administered and two other students were removed from the study because they were absent on the day that the final analytical writing sample was administered. A total of 12 students were removed from the study.

Since the introductory and closing attitude surveys were anonymous, the surveys completed by the students who were removed from the study could not be distinguished from the others. As a result, both the introductory and closing surveys were administered to all 48 students registered for American Literature. Three surveys were removed from the introductory set of surveys because they were incomplete, leaving 45 surveys. Five surveys were removed from the closing set of surveys because they were incomplete, leaving 43 surveys.

Limitations

This study is limited because analysis of attitude surveys and analytical writing samples involves a degree of subjectivity. In addition, despite the anonymity of the surveys, participants may not have answered all of the questions honestly.

This study is also limited since the participants attended a school in a middle to upper-middle class, predominantly white, suburban community where students have had opportunities to develop their intelligences. Results cannot be generalized to rural, working-class, or urban communities.

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Finally, the researcher had no control over instruction or evaluation during the second quarter; therefore, the grade results are only an indicator and must be viewed carefully.

Data Analysis

Data was analyzed by comparing students' responses to identical statements on pre and post attitude surveys. The post survey also contained 11 additional statements which examined the attitudes students had developed about MI and MI based instruction by the end of the study.

Data was also analyzed by comparing the results of pre and post analytical writing samples to determine if there was a difference in quality which would suggest that students were better able to analyze literature as a result of MI based instruction.

Before evaluating the analytical writing samples, each composition was photocopied and coded to reduce bias. (Several students had a preference for using distinctively colored ink for writing assignments.) In order to reduce bias, a person not involved with the study who was also unfamiliar with the students randomly affixed numbered labels to the analytical writing samples and mixed the pre and post-tests. The first period class was assigned numbers between 101 and 124 (the three students who missed one analytical writing sample were removed after numbers were assigned to the compositions) and the fourth period class was assigned numbers between 201 and 216. The labels were placed over students' names and were reinforced so that the names would not show through. A list of names and corresponding numbers was prepared and placed in an envelope; it was not viewed by the researcher until after the analytical writing samples were read and rated.

The researcher used the following procedure to rate the analytical writing samples. The following criteria were considered when rating the analytical writing samples: the degree of analysis used to interpret the poem (inferential vs. literal analysis), the quality of evidence used to support the interpretation, and the completeness of the explanation of the evidence. The highest rated compositions employed high levels of inferential analysis to interpret the poem. The interpretations were fully supported by evidence from the text and all evidence was fully explained. The middle rated compositions employed an average level of analysis which was mostly inferential, but somewhat literal. The interpretations were supported by textual evidence, but were not completely explained. The lower rated compositions either employed no analysis or employed only literal analysis. The interpretations were either not supported by textual evidence or used textual evidence incorrectly and little or no explanation was presented. (See Appendices D, E, & F for examples of students' compositions rated at each level.)

As an additional method of reducing bias in rating students' compositions, the initial ratings were recorded, then the compositions were remixed. A person not involved with the study who was also unfamiliar with the students (the same person who coded the compositions) read and rated the compositions based on the criteria previously described. The researcher then compared the two sets of category placements. If a composition was assigned to the same category by both raters, then it was placed permanently in that category. All other compositions were reread, reevaluated by both raters based on the placement criteria, and discussed until agreement was reached.

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Finally, second and third quarter grades were compared to determine if grades changed as a result of MI based instruction.

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Figure 2
Multiple Intelligences Instruction Schedule

Week Number	Lesson
Week 1	MI Lesson Regionalism—Mark Twain & Brett Harte
Week 2	Realism—Jack London "The Soldier's Dilemma" Scenario** Wilderness Survival Opinionnaire** "To Build a Fire" Essay (assigned)**
Week 3	The Great Gatsby by F. Scott Fitzgerald 1920s Mini-Research Project** "To Build a Fire" Essay (due)**
Week 4	<i>The Great Gatsby</i> by F. Scott Fitzgerald 1920s Project Presentations**
Week 5	<i>The Great Gatsby</i> by F. Scott Fitzgerald Acting Out The Great Gatsby Chapters 1-5**
Week 6	<i>The Great Gatsby</i> by F. Scott Fitzgerald Acting Out The Great Gatsby Chapters 6-9**

** Denotes MI project or activity.