Gardner’s Multiple Intelligence Theory: Testing It Using Language Minority Students
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Submitted June 2000

Introduction
Sharon Carlton and Kimberly Thomas' study evolved from innovative educational curriculum encouraging the use of Multiple Intelligence activities in the classroom in order to educate students with different learning abilities. The opportunity to apply these ideas in the classroom through a research study under professionals in the Multiple Intelligence field presented itself while Sharon Carlton and Kimberly Thomas were actively participating in George Mason’s Language Minority Teacher Induction Program (LMTIP). With prior experience and this opportunity, they combined the research study and LMTIP presentation in order to become proficient in the Multiple Intelligence strategy of teaching children.

The Study
With the assistance of Dr. Howard Gardner, Multiple Intelligence Theorist, Dr. Marjorie Haley, Professor at George Mason University, Sharon and Kimberly conducted a research study on the effects of using Multiple Intelligences in the classroom. The study focused on the impact of Howard Gardner’s Multiple Intelligence Theory as it relates to curricula, instructional strategies and assessment. Dr. Haley’s purpose of conducting this study was to “support teachers in developing innovative instructional strategies, curriculum, and assessment for foreign/second language learners, grades 6-12” (Haley, 2000).

Dr. Haley directed each of the teachers to select two similar classes, both consisting of second language students. One class should continue in curricula, instructional strategies, and assessment without any changes. They would be the control group. The second group, the experiment group, should utilize Multiple Intelligence activities and assessment.

Teachers were instructed to keep a log to include feedback on MI activities and reflections. Quantitative and qualitative data needed to be collected on both groups. At the end of the grading period each teacher was to compare the two groups.

Accepting the invitation, Sharon Carlton and Kimberly Thomas knew that their English as a Second Language classes would continue to grow. Thomas Armstrong believes that the “Multiple Intelligence theory provides a model that is culturally sensitive to such differences” (Armstrong, 1994). What better way to adapt to the changes in the county student population than to prepare oneself for teaching such a diverse student body.
Multiple Intelligences

The Multiple Intelligence Theory was originated when Dr. Howard Gardner, a Harvard University researcher of cognitive development, was asked to investigate human potential. During his explorations, he developed the Harvard Project Zero. Since the 1970s, Gardner has explored the concept of “many kinds of minds” which, in combination with the opportunity to research Harvard Project Zero, he began to develop in his theory of Multiple Intelligences (Gardner 1989, p. 96). Using extensive brain research, Howard Gardner believes that there are at least eight ways in which students can learn. They are: Musical/Rhythmical, Naturalist, Intrapersonal, Bodily/Kinesthetic, Verbal/Linguistic, Logical/Mathematical, Interpersonal and Visual/Spatial.

The Musical Intelligence encompasses the ability to perceive, discriminate, transform, and express oneself in musical forms. This intelligence includes the ability to identify rhythm, pitch or melody, and tone color of a musical piece (Armstrong, 1994). Some activities that use this intelligence include writing commercial jingles, songs, playing instruments, and linking old tunes to concepts. To remember vocabulary, jazz chants or raps can be used. Musical closing activities can conclude teaching sessions and target the Musical/Rhythmical Intelligence. Creating music for skits and plays stimulates creativity and review of script theme(s). Comparing and contrasting music of specific cultures is contextual and can be used for review. Music in general can be used, and is highly encouraged, as a creativity stimulator. The instructional strategy used for the Musical Intelligence includes singing it, rapping it or listening to the information presented to the listener (Haley, 2000).

The Naturalist Intelligence represents the holistic thinker through categories and patterns of life. Activities using the Naturalist Intelligence include drawing, photography or any representation, or explanation of an existing environmental setting. This type of learner likes plants, animals and nature. One can describe changes in the environment to show relationship between oneself and nature (Haley, 2000).

The Intrapersonal Intelligence focuses on self-knowledge and the ability to act upon that knowledge. One’s awareness of moods, intentions, motivations, temperaments, desires and the capabilities between strengths and weaknesses encompass the Intrapersonal Intelligence. (Armstrong, 1994) Activities focusing on the Intrapersonal Intelligence include expressing how one prefers to spend their free time, creating a personal fantasy world, keeping a journal, interest centers, options for homework, self-esteem activities, exposing interests, or independent study (Haley, 2000).

The Bodily/Kinesthetic Intelligence uses one’s whole body to express ideas and feelings. One facilitates the body to produce or revolutionize physical expression. This intelligence uses skills such as coordination, balance, dexterity, strength, flexibility, and speed to name a few (Armstrong, 1994). Role playing, sports, dancing, physical response exercises, hands on activities, manipulative (flash cards) use the Bodily/Kinesthetic Intelligence as well as multi-media games or activities, building a 3-D project or model. The instructional strategy used in this intelligence would require the learner to build it, act it out, touch it, dance to it
Verbal/Linguistic Intelligences utilize both oral and written expression. This intelligence uses the skills such as the ability to manipulate syntax or the structure of language, the phonetic sounds of language, the meanings of language, and practical uses of language (Armstrong, 1994). The Verbal/Linguistic Intelligence activities include vocabulary activities, oral presentations, group discussions, debates, story telling, manuals, talking books and cassettes, worksheets, lectures, word processing, and word games. The instructional strategies used for Linguistic Intelligences are employed when the learner reads about it, writes about it, talks about it and listens to the information presented for learning (Armstrong, 1994; Haley, 2000).

The Logical/Mathematical Intelligence uses two methods which are the capacity to use numbers effectively and reasoning. The skills used in this intelligence include categorization, classification, inference, generalization, calculation, and hypothesis experimentation (Armstrong, 1994. p. 2). Word order activities, pattern games, number activities, sequencing, classifying and categorizing information and Venn-diagrams are examples of activities that envelop the Logical/Mathematical Intelligence. The instructional strategy used would require the learner to quantify it, think critically about it, and conceptualize the information presented for learning ((Armstrong, 1994; Haley, 2000).

Interpersonal Intelligence focuses on the moods, intentions, motivations and feelings of others. Utilizing this intelligence would require one to understand another person’s facial expressions, voice, gestures, and the ability to read someone’s intrapersonal cues as well as respond to these cues (Armstrong, 1994). Activities that use this intelligence include cooperative teams and paired activities, peer teaching, board games, simulations, community involvement, interactive software, apprenticeships, social gatherings, clubs, group brainstorming, surveys and polls use the Interpersonal Intelligence (Haley, 2000).

The Visual/Spatial Intelligence is based upon the perception on the visual world (and its accuracy). This intelligence uses skills that are sensitive to color, line, shape, form, space, and the relationship between those areas (Armstrong, 1994). Activities that use this intelligence include graphs and diagram activities, video exercises, LEGO sets, optical illusions, picture library, cameras, power point, mind mapping, and graphic organizers. The instructional strategies used for Spatial Intelligences would require the learner to see it, draw it, visualize it, color it, and mind-map the information presented for learning (Haley, 2000).

In order to apply the concepts of Multiple Intelligences, first one has to accept the idea that everyone learns differently, everyone has multiple intelligences and one specific method of teaching cannot be applied to all learners. The Multiple Intelligence Theory provides opportunities to a variety of teaching and assessment strategies (Haley, 2000).

A variety of assessment tools can be used for Multiple Intelligence activities. Some examples are anecdotal records (journal entry for each student), work samples and portfolios (keep originals and photo copies), audio cassettes (record samples or reading, works, and other samples of oral language),
videotapes (record presentations or physical activities), photography (records things that cannot be preserved), student journal (students can keep record of ongoing experiences), student-kept charts (record academic progress), sociograms (record student interactions in class), and informal tests (student gives qualitative understanding of material). Other include standardized tests (find out what the student really knows and the adaptability to the world's idea of assessment), student interviews (discuss progress with student), criterion-referenced assessment (focus on specific skills and not the overall picture), checklists (take information from criterion-referenced assessment and make a list of completed tasks and abilities), classroom maps (chart patterns of movement for activities), and calendar records (students keep track of daily activities) (Armstrong).

Activities

Sharon Carlton selected three activities used during the experimentation period. Each activity's purpose seeks to disseminate the Multiple Intelligence germane to that individual, although there were certain intelligences targeted. The three activities were: Parade, Who Wants Some Extra Points?, and Lemonade Stand.

The first activity, Parade, gets its name from the special section of the Washington Post, listing an annual report of over 100 job titles and salaries. Each student is given a copy of the report and asked to choose four jobs of interest. Next the students search the internet for more job specifics as if they are career specialists. The students are required to find the following information: education level desired, opportunities for advancement, security clearance, drug testing and any other essential criteria needed for the four jobs chosen. Once they find all the necessary information, the students write a formal written paper and give a presentation to the class using dialogue, posters, role-playing or musical impressions. The final assessment concludes the entire exercise using Linguistic, Bodily/Kinesthetic and Visual/Spatial Intelligences.

Sharon Carlton learned two things from this exercise: what types of learning styles do my students possess and what careers can these students be prepared to do with my assistance?

The second activity Sharon calls Who Wants Some Extra Points? This activity is a variation of the popular ABC show "Who Wants To Be a Millionaire?" It is an activity that a lot of students can identify with and love to play. In this entertaining exercise, the students volunteer for the roles they wish to play in the game. The roles include the host, lifelines for help with answers (a friend and audience polling), question cardholders, scorekeepers, judge, audience, contestants, and someone to play music. Once each position has been filled the game will challenge the contestants to demonstrate what they know about random subjects. The subjects Ms. Carlton used were music, food, television, History, math, business, English, and Foreign Language. Each point that the contestants accumulate is added as extra credit. In this exercise students use intrapersonal, Linguistic, and Logical/Mathematical Intelligences.
The third activity is called Lemonade Stand. It is a simulation project which uses the Internet as an online business. The interaction between the student and the internet allows for the students to make real life decisions for the welfare of their business. The online software gives scenarios, or activity modules, which include hiring and firing employees, adding new products to your inventory, specific inventory systems and hours of operation. Ms. Carlton can check her student's progress and completion of modules online. To reward success and compare strategies used, the class shares their lemonade in an end of unit celebration. This simulation uses Intrapersonal, Interpersonal and Logical/Spatial Intelligences.

Results
Specifically for the research study of Multiple Intelligences, Sharon Carlton used a portfolio as her final assessment. The portfolio had to contain a two page typed report on any enjoyable activity done during the study, a career poster, a written dialogue and a recorded component.

Ms. Carlton was astonished at the differences between her control and experimental class. The portfolio grades for the experimental group were 20 points higher than the control group's average. Carlton also noticed that there was a rising level of competitiveness between the two classes.

Sharon Carlton believes that the final grades speak for themselves in the effectiveness of using Multiple Intelligence activities in the classroom. Sharon thinks that the MI approach is worth consideration and most of all very practical for use in any level class. Carlton found that students who are overachievers needed to make adjustments to the MI methodology. By making those changes, overachievers became more confident in their hidden talents and even more outgoing in their extracurricular activities.

Activities
Kimberly Thomas' two selected classes contained English as a Second Language students living in the United States for over nine months. However, both classes were inclusive of ESL students grades 9-11. Ms. Thomas used many MI activities with her experimental class. The three activities that utilized more than one Multiple Intelligence per activity and seemed most effective were transparency map, small group reading, and vocabulary worksheet.

To begin using transparency maps in the classroom, the students are asked to first draw a map of a specific area on a piece of white paper. This map is used for reference and studying outside of the classroom. Drawing the map utilizes both the spatial and visual intelligences. Students are given a choice of coloring the map but are only required to label the map. Some students like to label the map directly and others like to use numbers, along with a map key, in order to test themselves.

If the teacher does not have a transparency map, one can be traced easily using a simple book map and clear transparency. The traced map is placed in a sheet protector in order to write the countries or states on it and easily clean it off.
for reuse. It is very important that the teacher’s map not be labeled for this exercise.

Each day, in the beginning of the class period or block, students are asked to write in a country or state on the transparency map, on the overhead, using a wipe off or transparency marker. Spelling does not count and once an answer is filled the marker can be passed on to the next person by the direction of the teacher or students. Students are allowed to look at their map for the first few days as well as help each other. This promotes Bodily/Kinesthetic and Interpersonal Intelligences.

After a few days of fill in the transparency map review, the teacher gives daily quizzes selecting different countries or states each day. A number is placed in those selected areas and the students write down the appropriate corresponding answer for each location. The students fill in the transparency after each quiz to check answers and review for the next quiz. At the end of the geographical unit, a map test, similar to the quiz, is given. The quizzes and test demonstrate Intrapersonal Intelligences and the interaction of filling out the map again uses Bodily-Kinesthetic Intelligences.

Ms. Thomas used Small group reading as a Multiple Intelligence activity. The class was separated into small groups of 3-4 students in each group. One leader was appointed per group. The leader was directed to guide students in reading a specific part of the text and explain any difficult terms the group would encounter. The leader was empowered to keep the group on task and correct any reading errors. This part of the activity uses Interpersonal Intelligences focusing primarily on peer teaching and mentoring within each group.

Each student was asked to reflect on their group experience including personal opinion on their leader’s strengths and weaknesses, the style of learning, the group’s success, and comprehension of the materials read. The students were given an index card to record such information but not asked to give their identity. This part of the exercise used Intrapersonal and Verbal Intelligences.

Kimberly used a vocabulary worksheet as the third activity using multiple intelligences. Students were given a worksheet serving as a shell for the exercise. The following categories needed to be completed on the worksheet: term (teacher assigns words from the lesson), definition (students find meaning from glossary or dictionary), sentence (this verifies if the meaning is understood by the student) and picture (this encourages practice of the meaning of the word, representation or use). This activity uses Visual/Spatial and Interpersonal skills (Abbamont & Brescher, 1990).

Ms. Thomas allowed the students to play music in class whenever they were doing individualized work such as the transparency map or vocabulary worksheet. One student was chosen to “play DJ” for the class period. If the students did not want to be the DJ, Ms. Thomas played music that was not a common choice among the class. The music was used to enhance the mood of the class and used Musical/Rhythmical Intelligences. The desired effect of using mood music was to stimulate creativity.
When Ms. Thomas played music it was usually country or jazz. The students were amazed to hear tunes familiar to their ear but of a different genre. It relaxed the students and they felt in control. Although there was structure, they had freedom. The volume level of the music, the language used in the songs (no music brought in that included explicit lyrics) and only during individualized activities provided the structure. To play any type of music and to bring in and select the songs played gave the students a sense of freedom.

Results

Kimberly Thomas used the three activities along with others in her experimental group of the research study. The control group continued to be taught using storytelling, reading, vocabulary, and more structured activities. At the end of the marking period both classes were given the same exam covering information taught during the entire marking period. The assessment was in the form of a multiple-choice test. Although the students were not graded in this specific manner throughout the experiment, they needed to be able to transform the Multiple Intelligence assessment into a multiple-choice assessment. Multiple-choice assessment is important because the students must take the Virginia Standards of Learning Exam which is a multiple-choice test. Some professionals believe that multiple choice tests are often used inappropriately as the ultimate use of students’ learning and capabilities. Kimberly has now been able to prove to herself and others that the MI activities and assessment can cross the line into higher results in multiple-choice tests (Cole, 1995).

The results of the tests were dramatic. The experimental group scored an average 14 points higher than the control group. As the evidence presents itself, Ms. Thomas believes that the MI activities stimulated the students to learn and recall the information in various ways.

Conclusion

Both Sharon Carlton and Kimberly Thomas learned about Howard Gardner’s theory of using Multiple Intelligences to teach different ability level students while in college. However, never had they dreamed that these ideas would present opportunities to experiment in the classroom and one day Carlton and Thomas could testify on MI success. Carlton and Thomas explained the project to their experimental classes. In both classes the students enjoyed the activities and were grateful that Carlton and Thomas made learning fun.

Carlton and Thomas have shared their experiences with colleagues and friends. Both believe that the MI theory is the key to embracing the future as student populations become more adaptable to learning disabled and language minority students.
References