

## ABSTRACT

In her AMI research project, Martha Jean's challenge is to develop an approach that accounts for the rich diversity of intelligences and possible approaches represented in MI theory, while addressing the quite narrowly defined context of GED preparation. Martha has a particular interest in students who have been diagnosed or demonstrate ADD or LD characteristics. These students tend to have poor attendance and make little progress. Martha's research question is, "Can MI informed lessons help the progress and attendance of LD and ADD students preparing for a GED?"

Martha addresses her question by developing four types of MI-based experiences that respond to the different needs that GED preparation engenders: (1) activities to introduce students to MI theory; (2) "warm up" activities; (3) topic-based whole group activities; and (4) Choose 3 activities. Martha uses the introductory activities as a rationale for the practices in her classroom and to ensure that students understand they each have a unique profile of intelligences into which they can tap to prepare for the GED. "Warm up" activities are fun experiences, such as a "Koosh shoot," that help warm students to doing the more tedious tasks of GED preparation, such as workbook problems and practice tests. Whole group activities are meant to teach specific skills or topics, for example map reading, and help Martha gauge her students' understanding of that skill or topic.

The heart of Martha's approach is "Choose 3" activities. Based on her own observations and on student requests, Martha chooses a GED topic, such as measurement, or planets, or editorial cartoons, and develops about nine activities, among which students choose three to complete. The Choose 3 activities engage students in the material in ways that feel comfortable to them and are most likely to lead to understanding.

Martha's findings bear out the value of an MI-informed approach to GED preparation, particularly for ADD or LD students. These students respond overwhelmingly favorably to the MI-informed activities. In fact, their attendance proves to be significantly better than of the students in Martha's non-MI-informed classes. Martha's data also demonstrates greater progress toward GED preparation for ADD or LD students in the MI-informed classroom.

While Martha's findings strongly suggest the benefits of an MI-informed approach, they must be tempered with the realities of the context. Martha's fourth finding is that whether or how MI theory is applied depends on where students are in the GED preparation process. Namely, as students approach GED-readiness, their studies need to narrow to specific GED content and to discrete test-taking skills, and away from the broad themes of Choose 3 activities.

## RESEARCH CONTEXT

I conducted my research project at two sites that are under the auspices of Community Action, Inc.. The Pettengill site is in Salisbury, and the ELMS site is in Amesbury, Massachusetts. Salisbury is the northern-most town on the ocean in Massachusetts. It is a mostly white, high poverty town, with no public transportation, and a homeless population in Massachusetts second only to Boston. Pettengill is a large old house used for most of the city's social services, including teen programs, drug/alcohol and AIDS counseling, and a food bank.

At Pettengill, class sizes range from four to seven students. It is an open entry/open exit program that serves students mostly between the ages of 18 to 25 years old. Tuesday and Thursday evening classes at Pettengill are from 6-9pm. They are for any adult at the Pre-GED or GED reading level as measured by the ABLE Test. Adult Homeless Education classes take place on Tuesday and Thursday from 9 am-noon at the Pettengill site. To enroll students have to be homeless or potentially homeless (very low/no income, move a lot, live in a motel, etc.). Students can be at any level of reading to attend. All students participating in this study were preparing for their GED tests and were reading at GED level.

When I first started the project, I decided I would make changes in one class only, my evening GED class, then I could focus my attention on that group. Another Homeless Education class in Amesbury, became, in effect, a comparison group. Amesbury is next door to Salisbury. It is a blue-collar and low-income town, with a mostly white population. In that class I continued to have students work daily almost exclusively in workbooks and complete writing exercises every other week. While I focused on one MI-informed class (Pettengill) and one non-MI-informed class (ELMS) in the first year, in the second year of the study, I conducted my research in two MI-informed classes, both at the Pettengill site.

*Can MI informed lessons*

*help the progress and*

*attendance of LD and*

*ADD students*

*preparing*

*for a GED*



## RESEARCH QUESTION

Can MI informed lessons help the progress and attendance of LD and ADD students preparing for a GED?

I started the AMI Project in 1996 with a much broader question about the application of MI theory in my teaching to all my GED preparation students. I narrowed but maintained my central focus on GED preparation because I was interested in helping adult learners reach their GED goal. I narrowed my focus knowing that goal to be especially difficult for adults with learning disabilities and/or attention deficit disorders.

My classroom experience in both Amesbury and Salisbury in the years before the AMI Project led me to my question. I was bothered by the number of learners who quickly dropped out or struggled long and hard with workbooks only to make small advances. I was also aware that many of my students' abilities had not been acknowledged or strengthened in either the school system or in the classes I was teaching.

I had had some success using pictures, photographs, and other visual material to inspire students' writing process and increase their writing practice for the GED essay. When I reviewed some MI materials (Lazear, 1991a, 1991b), the ideas resonated with my conception of trying to reach learners in many different ways. The AMI project sounded like a vehicle through which to explore how to integrate diverse, in this case MI-based, approaches that might connect with those students who typically left the program quickly or failed the GED.

My question emphasizes student attendance and progress. Only regular attendance provides enough opportunities to learn and practice what is learned to be able to make progress. By progress I refer to students' learning and retaining GED topic information and/or methods of test-taking which will help them pass the GED.

## EVOLUTION OF MY WORK AND THINKING

I'm a "grab-an-idea-and-run-with-it" learner. I like to try something new and change it as I go. Before the AMI Project I had some thoughts that related to MI. As a K-12 substitute teacher, I had often wondered why they dropped all the "fun" stuff children did in kindergarten and first grade, as if those approaches didn't work anymore. As an adult educator, I had observed how successful ESOL classes were those that seemed to entertain every possible way to help a person learn English. I had read some articles about MI and was interested in finding out more about how the theory translated into classroom practice. Those original articles started me on a quest.

Skimming some MI resources (Armstrong, 1993, Campbell, 1994, Lazear, 1991a&b), I wondered whether I might "get away with" trying out some of these ideas in my own class. It was then that the AMI Project serendipitously materialized and gave me a chance to try out these ideas in a structured and supported way. I immediately read those MI resources more thoroughly and was ready to try out some ideas I had about ways to learn the GED material. I also read Gardner's (1993) Frames of

Mind, which gave me an appreciation for the science of the theory. I wanted to design lessons that connected students to the GED topics, helped them learn or practice information for specific GED topics, and helped motivate and lead them to complete the GED workbook test practice activities.

Throughout the project it turned out to be other teachers' experiences using MI theory that inspired me the most (from the AMI project, Project Zero Summer Institute, and conference presentations). I integrated many ideas into my GED lessons from the work and successes of my AMI colleagues. For example, "Activities for Unit on Drug Abuse" (Costanzo, cross ref) was a valuable resource for my MI-informed lesson planning.

When I began the project, I thought it was important not only to introduce MI-informed activities but to present and explain the theory and have students learn about it in depth. This, I soon realized, was not getting them any closer to their GED goals. I found that an introduction to MI was sufficient to help students understand the two things I wanted them to understand about MI: that it described the different ways they were intelligent, and it explained my classroom design and instructional approach.

I also realized that making all students do all the MI-based activities I designed was only somewhat better than making them do only workbook activities. I thought they benefited from the opportunities to learn through their areas of strength, but I was still requiring them to use methods that had rarely worked for them in the past. So I integrated a "choice" approach in my classroom: I gave students choices among activities so that they could engage with the material through intelligences to which they were drawn. The activities followed GED topic-based lessons and gave students approximately nine activity options to help them learn or practice facts, ideas, and concepts related to specific GED topics or tests (See Appendix I for examples). Learners were asked to complete three of the activities. They could work alone, with a partner, or in a group. I liked this "Choose 3" approach and continued it into my second year of research.

## **IMPLEMENTING MI**

I integrated MI theory into several aspects of my instruction. First, I introduced MI theory explicitly to students so that they would understand and buy into the idea of learning GED material in unfamiliar and diverse ways (Cross ref See Jean & Fortini chapter). Those lessons, in which all students participated, were *informed* by MI as well, that is, I tried to teach MI theory through MI theory. For example, I might have students piece together an MI graphic, such as a wheel with intelligences and their definitions, in order to utilize students' spatial abilities while they learned about MI theory. Other activities lent themselves to other intelligences, such as using their linguistic and intrapersonal strengths to write about the types of work they enjoyed and which intelligences they used in work.

I also used MI theory to develop warm up activities. That is, rather than focus on the content of material to be learned and devising related MI-based activities, warm up activities were enjoyable activities loosely based on the eight intelligences. They were meant to help students relax and motivate them to participate in the more tedious business of GED workbook activities.

For example, I invented the “Koosh Shoot.” The Koosh Shoot is a GED workbook practice activity. Students are given a couple GED workbook pages to read and complete. Large print numbers “1” through “5” are strung individually across the classroom. Each learner who volunteers to answer a question gets to shoot the Koosh with a Koosh Ball Sling, taking aim at the number which corresponds to the correct answer in the booklet after the group has discussed and checked the correct answer. Although this may utilize bodily-kinesthetic intelligence, the main point is to provide a range of fun activities to get students engaged in the not so motivating GED materials.

A third way I used MI theory was to develop whole group MI-based activities. That is, I used the eight intelligences as a tool to brainstorm different ways for students to engage in the content of GED material as a group. For example in our study of maps and time zones, I put wide black paper strips on the floor to divide the floor into U.S. time zones. I explained to students that the lines represented the U.S. time zones and that we were standing in Massachusetts on the East Coast. I taped a big paper yellow sun to the window.

I said, “So, here we are in Salisbury and we’re going to make believe that the sun has just come up....it is 5am. If I walk west into the next time zone called Central, has the sun come up yet?” We made our way from one time zone to the other and I occasionally posed questions (e.g., “What if it is 8pm here on the Pacific Coast in the Pacific Time Zone? What time is it in Massachusetts in the Eastern Time Zone?”). Through such questioning and physically “walking through the time zones” students tapped their linguistic, spatial, kinesthetic and logical-mathematical abilities to help them understand the concept of time zones.

The primary means I used to implement MI theory in my classroom was through “Choose 3” (C3) lessons. Choose 3 is a lesson format I designed which provided students with several activities, usually about nine, among which they chose three to complete for the day’s lesson (figure 1, and CROSS REF Lessons pp. x-xx). I designed a C3 lesson to fit the subject area that needed to be taught or reviewed, and that students had requested. Providing a range of “entry points” for students based on Gardner’s eight intelligences, the C3 activities were my attempt to allow students to enter into GED materials through their own strengths. Initially, I relied more heavily on commercially available MI resources to develop C3 activities. Later, lesson ideas from my AMI Project colleagues helped enrich my own C3 activities.

figure 1 Time Zone

ARE YOU IN THE ZONE?  
THE TIME ZONE - CHOOSE 3  
ALONE, WITH A TEAMMATE, OR IN A GROUP. DO THREE.

1. Outline or color in the Eastern, Central, Mountain, and Pacific time zones in the United States.
2. Write in as many states names as you can remember and then use the states map to fill in the rest.
3. Show on a time zone map what time it is in each time zone when you wake up, eat lunch, eat supper, and go to sleep.
4. Write how each time zone is different from the others.

5. Pick one city or town from each time zone and write about the type of music that you think is popular in each one.
6. Using an imaginary floor map, walk down each time line and name the states you go through or border.
7. Look at the GED questions in the packet. On your map write in ( marker or pen )the names of the cities that are mentioned.
8. Rate the four United States time zones from your favorite zone to your least favorite. Write why you feel that way about each one.
9. Do a class survey. Ask each person which is their favorite and least favorite time zone and why. Write or graph the results.

It was my students' requests to review Social Studies that led to our time zone study. In response I designed "Are You in the Zone?" (figure 1) to give my students practice looking at the U.S. map and locating cities and time zones on a map, skills needed for the GED. When I'm designing a Choose 3, I generally look at the GED related material, then start thinking about how each intelligence could be used to learn that information. So, someone who has spatial ability might like tracing or coloring, someone who likes to use their body to learn might like walking through or around the visual information on the topic, and someone who likes numbers might like to graph the new information.

A typical class session began with whole group activities, often MI-informed, related to the GED topic at hand. Whole group activities were followed by Choose 3 activities and student sharing of their C3 work. The session would end with students working from a packet of topic-related Pre-GED/GED questions I had prepared to give them explicit practice with related GED materials. "Warm up" activities might occur during the whole group or workbook activities. Through these activities, particularly the Choose 3 activities, I implemented MI theory in ways that I hoped would engage students, keep them coming to the classes, and ultimately help them make progress in their GED preparation.

## **METHODS**

I designed several tools to gather data relevant to the two aspects of my research question: student progress and student attendance. The 1996-97 "MI informed class" data came from the Salisbury Tue/Thur evening class. 1996-97 data from GED students in a "non-MI informed class" came from the Amesbury class. In the first year of the project I used a Learning Log (figure 2) and a Daily Log (figure 3) to ask students about influences on their learning. In that year students in my non-MI-informed class kept the Daily Log. Students completed the logs after each class session. I also wrote notes during and after class. I did not collect data in 1997-98 on non-MI-informed classes, as both project classrooms, a morning Homeless Education class and an evening GED class, were MI-informed.

figure 2

### LEARNING LOG

Your Name \_\_\_\_\_ Today's Date \_\_\_\_\_

1. Today what did you discover about yourself as a learner?
  2. What helped with that discovery?
  3. Have you learned anything that will help with the GED test? If yes, what?
  4. Have you learned anything that made you think about career goals? If yes, what?
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figure 3

### DAILY LOG

Today's goals:

What I worked on today:

My comments about today:

My goals for the next class:

My teacher/tutor comments:

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The two logs were overwhelming for my students, who ended up writing very brief comments and/or only completing one log. I frequently had to explain what the questions meant on the Learning Log and students often gave only short and simple responses. Question 4 on the Learning Log referred to an original research question and became irrelevant to my study early in the process. Therefore in my second research year (school year 1997-98) I discontinued using the student logs. I found I could gather more and richer data by simply asking my students questions aloud at the end of each session (figure 4) and completing my own daily observation and reflection log (figure 5). Both methods

were designed to help answer my research question as well as to design and plan MI-informed lessons.

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figure 4

#### Questions to Students On This Session

1. What worked for you? (MI Activities)
  2. What didn't work? (MI activities)
  3. Do you want more review on this subject or this specific area?
  4. Would you like to focus on other areas or subjects?
  5. Any other comments?
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figure 5

#### AMI TEACHER DAILY LOG

1. What stood out?
2. Is it working or not?
3. Any changes needed?
4. Anything else?

Other sources of data I used included: Student attendance records, intake information from a program registration form, and student work. I compiled all these data sources and additional reflections into "Monthly Reports" to which I referred to frequently in my analysis.



## FINDINGS

My analysis resulted in four main findings (above). Although all students participated in the activities from which I gathered data, I focused my analysis on GED students who had been diagnosed in school as having ADD/ADHD or LD (Learning Disability) or whose behaviors corresponded with behaviors of those with ADD or LD (see Appendix 2 ADD Diagnostic Criteria and Appendix 3 Learning Disability Characteristics).

Four of my students -Cathy, Ned, Jane and Ted- present good examples of the experiences of all my ADD and LD adult learners who participated in the MI-based activities. These four students attended my 1997-98 morning and evening classes. Cathy and Ted had been diagnosed in public school as ADD/LD, while Jane demonstrated LD characteristics and Ned both LD and ADD characteristics. Because the four represent well the experience of my ADD or LD learners, they have a strong presence in the Findings. Brief profiles of each follow below. I will revisit Cathy, Ned, Jane and Ted at the end of the Findings section.

Cathy enrolled in the morning class on Sept. 16th, 1997. Her record from the previous year showed that she had expressive and receptive learning disabilities (II)

### Key To Data Source Codes

AR = Attendance Records

II = Intake Information

IT = Interview

MR = Monthly Reports

SL = Student MI Log

SW = Student Work/Progress

SDL = Student Daily Logs

TL = Teacher MI Log

She said and her classwork indicated that over the summer she had forgotten all the math she had learned the previous year (MR, Dec. 18). Cathy did not do well when she worked alone or on isolated paper and pencil tasks.

Ned enrolled Oct 21st, 1997. His speech tended to ramble and he didn't easily or quickly come to the point. He frequently had a "far away" look (MR). In November and December these ADD-like symptoms were evident, as I noted, "Ned does a lot of staring off, apparently at nothing, when he's not talking" (TL-NV 4). Ned also had problems following directions (MR-NV 13). On some of the few occasions when he did write in his daily log, Ned wrote, "Can't focus" (SDL NV) or "Want to focus better next class." (SDL DC)

### Findings

- LD and/or ADD students responded positively to MI-informed activities.
- Attendance of LD and/or ADD students in the MI informed classroom was better than in non-MI informed classes.
- Students with LD and/or ADD in an MI informed class made greater progress toward GED readiness than those in my non-MI informed classroom.
- The most appropriate applications of MI differ depending on where students are on the GED preparation "continuum."

Jane enrolled Sept 16th 1997. Jane said it took her a long time to remember information, that she hated to read, and that she didn't understand some or a lot of what she read. (II & MR-ST 16) This was borne out in the class as Jane frequently struggled to understand what she was reading and had poor retention when she returned to the same workbook topic. She said, "I always do the easiest." She frequently worked with her friend Jean, rather than working alone. (SL-ST 18)

Ted enrolled Sept 30th 1997. Ted said he had ADD and learning disabilities. He said he liked math, but he didn't like writing. (II & MR-ST 30) Ted did math in his head, quickly and then watched what other people were doing and joked with Gary. (MR-OCT 2) And from my notes, "It is difficult to get Ted to write anything, and when he does it is often short or incomplete. Ted is only comfortable with math related activities. When he finishes those, he has a hard time doing any other choices. (SW-OCT 7,14,28)

### **Finding 1: LD and/or ADD students responded positively to MI-Informed activities.**

As a teacher students' positive statements are significant to me because the learners are saying that the activity engaged them. To connect students to what they need to learn in a way that they describe as "fun," means that they are going to be more willing to spend time learning what they need to about that subject. From an MI perspective, what they are saying is that when they find a way to learn that taps their strengths, they enjoy the learning experience.

Students in my MI-informed classes repeatedly commented on how much they liked the Choose 3 activities. When I handed out a Choose 3, students were happy to read them, make their choices among activities, and begin to work alone or in groups. Students often engaged in conversations among themselves about how particular choice activities could be approached.

I also observed "engaged" body language: animated faces, bodies leaning forward while students talked or engaged in making a product. Unlike my non-MI-informed classes, these students were more willing to start sessions and to do workbook activities. There were far fewer behaviors I characterize as avoidance: verbal and physical classroom disruptions, requests for cigarette or coffee breaks, or decisions to go home early.

Students' oral and written feedback demonstrated the positive responses the MI-informed classes elicited. Students regularly responded in their Daily Logs with comments like: "I had a really good time," "It was interesting," "It was fun."

Although I believe enjoyment of the activities is a key element to student engagement in the material, students' responses went beyond having fun. For example, Jay said he liked hands-on activities because "I can relate to this," referring to one particular Choose 3 activity. (MR Sept 18) Terry said she liked writing about three graphics --an eagle, a book, and a person-- because, "It told me about myself." She wrote how she was like the animal pictures she chose and said the activity, "helps you learn and get self understanding." (TL Sept 25)

Other reactions included:

- It's "more interesting instead of writing plain old numbers." [C3 Proportions] (TL Oct.2)
- "what worked was that they could visualize" [C3 Proportions] (TL Oct. 2)
- it was "hands-on" [C3 Proportions] (TL Oct. 2)
- it was "clearer than before" [C3 Proportions] (TL Oct. 2)
- "I kind of knew it, but doing it visually helped retain it." [C3 Measurement]
- "This is a stress reliever." (TL Dec 9)
- "Drawing pictures helps and just talking about what they meant [helps]. I find that if you joke around it's easier to learn than when you're really serious." (TL-JN 8)
- [What works is]"Writing the sentences and seeing people's pictures. Visualizing is important." (TL-JN 8)

On November 4 we covered four GED workbook readings and their related questions. In my Teacher Log I noted, "There was a lot of laughter and fun from the Koosh Shoot....In the past, when I have done group work in the books, there has been an immediate negative response. Usually there is moaning or whining and lots of reluctance to begin. Today the students were willing to try it, they stayed cheerfully on task for longer than usual, and they helped each other figure out some tough GED questions. Similarly, in my November 25 Monthly Report I wrote, "I observed that students were laughing, talking, writing, drawing, figuring, and discussing the Choose 3 [Turkey] options."

When asked how an MI-informed activity compared with what she had experienced in other classes, Cathy said, "It's more hands-on here" (TL Nov. 13). When asked, "Which helped you learn better?" she said, "This one." as she pointed at the C3 Planets sheet. When the Choose 3 Planets lesson was over, I asked students what they liked and what helped them learn. One of my target students had chosen to design an alien who could live on one of the planets other than earth. To design the alien, students had to know the gravity and temperature of the planet, among other characteristics. She responded that "making the people" helped her learn the material and "I actually wanted to read for once in my life" (TL Nov. 13).

When I asked students, "Did any particular activity help you learn about the planets?," they replied:

*"Making the aliens from different planets."*

*"Cause I got to see, I had to find out what life was like on the planet to be able to make it."*

*"Being able to do it mathematically." (TL Nov. 13)*

I also asked how this experience compared to other learning or classroom experiences. Students had this to say: (TL Nov. 13)

*"Because if we're in another class they would have just quickly briefed everything. They handed us stuff and say 'Go for it.' They just run through things and say OK you're going to be tested on Friday. Learn it all and be ready."*

*“They give you information to just learn on your own.”*

*“We didn’t get to ask questions.”*

*“It’s never hands-on. It’s easier to learn if it’s hands-on.”*

*“It’s totally different. In school, in the classroom, teachers hand out all papers to all students and then ask you to look over the papers more while they talk and chalk on the chalkboard to explain the different planets without you visually doing it yourself.*

*“And you’re just copying notes is basically what she’s saying, you have no idea ‘cause your just paying attention to copying them down. I’d just copy and not know what the teacher is talking about.”*

*“You’d just copy a bunch of notes and... now you have homework blah, blah, blah. Go over your notes. OK, how do I teach myself?!”*

*“I prefer hands-on because it clarifies everything. If it was all workbook, I wouldn’t do well cause I’d lose my interest. I wouldn’t stay long cause I’d lose my interest. (IT Feb 10)*

*“[Choose 3 activities] clarify your understanding. To know something is one thing. To know something and do it is another.” (IT Feb 10)*

On December 11, 1997 I asked students, “How does [Choose 3 Angles] compare to reading it in the GED book or the way you were taught in school?” One student responded, ““This is a hands-on experience. Visualizing it.” Another added, “You discuss it and talk with others about it. It helps you to understand. There was no communication in school.” (TL Dec. 11)

On May 5th Cathy responded to the same question, “[Choose 3 activities] give you a different way of looking at problems. You go through the problem more this way. In the workbook you just do the problem, that’s it, and [with] this you can work together.... I concentrate more with those (C3). My mind drifts if I just do the workbook.”

## **Finding 2: Attendance LD and/or ADD students in the MI-Informed classroom was better than in Non MI-Informed classes**

If students do not attend and participate in learning activities on a regular basis, then they will experience little to no progress preparing for the GED. In the six years preceding the project, I had seen many LD or ADD students with very erratic and short-lived attendance in the program. And if these students did attend regularly, their actual classroom work usually was minimal. In the first year of the research project I wondered how an MI-informed classroom would help learners use their intelligences as test takers. While considering that and designing MI informed lessons, I noticed that those types of students, who had in the past left after a week or two, or stayed and did very little work, were staying and were working much more intensely in the time they were there.

After several years of seeing these students consistently struggle with workbooks then quickly depart, or attending class but not doing their work, it was an amazing discovery that something

seemed to be motivating them to stay with the class, attend full sessions, and/or complete the work (see figures 6-9, data source = AR) . Monthly and total hours of attendance increased in CLASS B, my MI-informed class (see figures 6-10). Students' monthly average, even when counting enrollment and exit months which frequently begin or end mid-month, were almost all higher in Class B than CLASS A, the non-MI informed class (Class Averages: Class A = 5.8, Class B = 9, Class C = 13.5, Class D = 11.85). The only thing I had changed was the once-weekly addition of an MI informed lesson.

What these numbers don't show is the actual work done during the hours that these students were marked as attending. Not only did students spend increased time in the classroom, they spent those hours engaged in reading, writing, discussing, building, manipulating, creating, and producing information and materials that were related to the GED tests they were preparing to take. Ansel of CLASS A spent most of his time getting up, walking around, taking cigarette breaks, and rarely sitting for more than 5 minutes. ADD/LD students in CLASS A took longer and more frequent breaks and generally completed less work than students in CLASS B. Teresa from CLASS B who, like Arthur, was easily bored and had other ADD behaviors like extreme distractibility, impatience, and disorganization, spent at least half of the class hours actively participating in activities and some workbook exercises. The other ADD/LD students in CLASS B sat and worked at both the MI-informed and GED workbook activities longer than students spent on their classroom work in CLASS A.

The MI-informed lessons sometimes led learners to the information, sometimes taught the facts, and often helped students transition into GED workbook/test practice activities. For reasons best explained in students' own words (see Finding One above), they wanted to attend the MI-informed classes, which meant they had excellent attendance hours. No one who enrolled in these two classes and attended class with an MI-informed lesson dropped out of class suddenly or for no good reason. In fact Jean, who has child care problems, and Frank, who left for a jail term, both came back in June to attend a summer session.

#### Key to Figures 6 through 9

\* = month enrolled

% = total hours attended that month / possible attendance hours for that month

(Generally students enrolled and exited in the middle of the month so I did not include the % on those months.)

{ } = total hours in program

figure 6 Attendance by hours of LD and/or ADD students in '96-97 non MI-informed class

**CLASS A (Non MI-Informed)  
1996-1997**

	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Possible		21	18	18	24	18	24	21	24	
Arthur (8)		*6	12 67%	6 33%	12 50%	9 50%	3			{48}
Brett (6)		*6	12 67%	3 16%	6					{27}
Jim (3)		*3	6 33%	3 16%	0	3				{15}
Fanny (6)					*9	6 33%	3			{18}
Seth (6)			*6 33%							{6}

figure 7 Attendance by hours of LD and/or ADD students in '96-97 MI-informed class

**CLASS B (MI-Informed)  
1996-1997**

	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Possible		21	18	18	24	18	24	21	24	
Kate (10)			*9	12 67%	12 50%	6 33%	12 50%	12 57%	9	{76}
Janey (9)					*12 50%	9 50%	6 25%	12 57%	9	{48}
Carol (8)					*12	6 33%	6	got GED		{24}

figure 8 Attendance by hours of LD and/or ADD morning students in my 97-98 MI informed classroom.

**CLASS C MI-Informed  
1997-1998**

	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Possible	15	21	18	18	24	18	24	21	24	{171}
Cathy (15)	*9	21 100%	18 100%	15 83%	21 88%	12 67%	18 75%	9 passed math GED		{123}
Jay (16)	*15	21 100%	18 100%	16 88%	12 got a job					{64}
Ned (9.5)	*6	15 71%	15 83%	12 67%	6 25%	3 got a job				{57}

figure 9 Attendance by hours of LD and/or ADD evening students in '97-98 MI-informed classroom.

**CLASS D MI-Informed  
1997-1998**

	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Possible	15	21	18	18	24	18	24	21	24	{171}
Terry (15)	15 100%	21 100%	9 moved							{45}
Jane (15.75)	*15 100%	21 100%	12 67%	6 33%	15 63%	15 83%	24 100%	18 86%	math, writing test ready	{117}
Gary (8.4)	*6	15 71%	6 33%	9 50%	6 all tests ready					{34}
Ted (12.75)	*3	21 100%	15 83%	12	moved, math test ready					{51}
Ron (7.5)		*12 57%	3 moved							{15}
Eli (10)		*3	12 67%	18 100%	jail					{33}
Vic (13.5)					*21 88%	6 left, drug problem				

### **Finding 3: Students with LD and/or ADD in an MI-Informed class made greater progress toward GED readiness than those in my Non MI-Informed classroom.**

For this report, I define progress as a student's incremental advances in learning and understanding material that will help him or her with the math and comprehension questions on the GED tests, and/or developing writing skills needed for the GED essay. If a student does a GED-based activity and learns something s/he didn't know before, or learns it more completely, then they have made progress. Students need to move from being reluctant to willing, and from being willing to actual practice, for progress to occur.

Students enrolling in GED classes need to be test-ready before taking each test. "Test-ready" means that the work that they are completing in the GED workbooks and/or the results of a practice test show that they can score enough points to pass that test. To make progress toward those goals, my past class practice was to have students use the workbooks almost exclusively. Only in writing did I have frequent "creative" activities to inspire a variety of practices that would improve the students' essays.

In my past teaching experiences, some of the difficulties interfering with student progress were very poor attendance, distractibility, reluctance, inattention, boredom, memory deficits, and student dissatisfaction. My application of MI theory in three different ways - "warm up" activities, MI-informed whole group lessons, and Choose 3 activities, seemed to change the extent to which these problems were present. That is, students attended class more regularly, voiced more satisfaction with classroom offerings, participated willingly, spent more time interacting with the topic subject, and retained information that they subsequently used in workbook and test practice.

Depending on the topic demands and student needs, one MI approach might be more effective than another. For example for essay writing, I used MI simply to get students writing, so I could rely more on "fun" activities. But with the math GED, which emphasizes knowledge of math concepts and discrete math skills, I used math content- and skill-specific Choose 3 activities. In other subject areas on the GED, reading comprehension is emphasized. Therefore in subject areas, such as social studies, I included Choose 3s that involved students in reading about the topic at hand while engaged in a range of MI-informed activities. Examples of student progress below relate to their involvement, learning, and understanding of GED topics.

#### **Writing for the Essay**

Almost all GED students with LD or ADD are extremely reluctant to write because it is often where their disabilities cause many problems. They can have difficulty expressing thoughts, spelling, sequencing, and/or organizing. However, if they write, they will improve. Choose 3 and other MI-informed activities gave them opportunities to write from their strength areas. With Choose 3 activities there always seemed to be a choice that the learner felt comfortable trying either alone or with a partner. Students who disliked or even hated writing were willing to write. Even someone like Ted, who didn't like any English-based workbook activity, participated enthusiastically in reading the Punctuation Play and designing symbols to represent punctuation marks. Generally the MI-informed activities inspired my students to write. They wrote willingly and often more than they ever had in the past.

On September 18, Jay, a typically reluctant writer, chose to write using a photo of a wolf as a prompt



(TL/SW Sept. 18). He noted that one passage suggested his similarities to the wolf. He read aloud, “A wolf is timid, misunderstood, loyal, familiar with surroundings, and passive unless provoked.” Jay added, “I don’t like confronting, but I defend. I was misunderstood in school.” In the same activity, Terry uncharacteristically read all that she had written for her Choose 3 activity, a page-long list of how she was like the several animals she had chosen.

On October 14 students participated in a “Frame pictures” activity. In this activity, students wrote about a picture, I corrected their grammar, and then they re-wrote their piece in a picture frame. Ted, who hated to write, chose a frame of a man painting. He described the painting process after I suggested that he do a step-by-step explanation. Jane wrote a nicely composed piece by explaining three reasons she loves to read. Her writing reminded me that it’s reading the “boring school stuff” that students like Jane find difficult and dislike. (MR/TL/SW Oct 14)

When Ned and Jay tried to work in the workbooks, one page was about their limit if they were working alone. Ned wrote very short ( 5 - 10 sentence) essays. Jay increased his writing capacity and focus somewhat. In the past he would write about 10 sentences. Now he writes between 20 and 30 sentences. “[T]he activity did keep them all writing. Jay was very tired, but he still wrote. (MR/TL Dec 9)

On February 27 I noted, “Jane’s writings are getting better each time she writes. She has her feelings in the writing, but needs a little more work on sequencing. Jane made the paper airplane after a lot of work. It flew, too. Mary made a very complicated design and it also flew. I then asked them to write their essay. Students wrote interesting essays comparing the problems and/or benefits of each activity each time they write. (TL-FB 27)

Cathy said, “Reading the [punctuation] play pointed things out. It made me understand where stuff goes.” Ned showed his punctuation picture and his sentences. I made some corrections in his sentences later. Ned said, “Drawing the punctuation marks identifies them. In the process of doing it ...I learned something new about something I needed.” (TL-JN 8)

“Tonight I handed out Paint by Numbers Choose 3, a pre-writing activity. The paper, paint, brushes, and water cups were on the table. Jane, Gary, and Vic looked over the Choose 3 as I read and they started right away. There was a lot of quiet concentration. Jane and Gary picked the choices that asked for shapes or colors. Vic picked choices about feelings and rhythm. When they were done with the Choose 3, I said they could pick out a painting they liked and write a least 5 things they liked about it. ...Jane and Carl chose pictures and each wrote five sentences about what they liked about their paintings. (TL-JN 22)

## **Math**

For math I used Choose 3 activities to give students other ways to understand the concepts before moving to the paper and pencil approach of the workbook practice book.

On October 2 Cathy chose to do #2 among the Choose 3 Proportions activities (see CROSS REF lesson ). After Cathy set up the problem we discussed it:

C: "So what they have to be is...?"  
 M: "A relationship between these," pointing at 4,8,and 5. (Cathy needs to identify the number that is proportional to 5 in the same way that 8 is proportional to 4).  
 C: "Well, this (8) is double that (4).  
 M: "Yes."  
 C: "Then this is 10."  
 M: "Why?"  
 C: "Cause it's double, like that (she pointed at the 4 and 8).

Then Cathy made two "proportion people" out of playdough {#3, Proportion Choose 3}. I noted, "This face looks twice as big. What about the eyes?" Cathy picked up the eyes and compared them, saying, "They're too big," and proceeded to makes them smaller.

On October 14 I offered my students the Choose 3 on measurement. My reflections included:

*There was a lot of activity in Choose 3 Measurement tonight. Even Gary did two with Jane. They did {#2} with Playdoh. Jane figured the measurements by looking and Gary figured them by "mooshing" the 3 teaspoon measurements together to make a tablespoon. They poured water for qts. gal. pnt. cp. He did {#6} alone by drawing an ant and the Eiffel Tower. Ted did {#8} and said, " I know for a fact that four quarter notes equals a whole - the same as four quarters equal a dollar." He made a graph {#6} of everyone's height. He did {#9} with his partner. Terry wrote {#7} and measured her body {4}. (TL/ SW/DL Oct 14)*

On November 4 students participated in the Choose 3 Perimeter, Area, Volume. I wrote:

*Cathy and Lynn are learning a lot in the Choose 3s that are math-related. They both needed a review on area and volume of circles and cylinders. They used Playdoh to create a visual representation. Then they did a lot of explaining to each other when they had different answers on the workbook pages. [Inter] (MR/TL Nov 4)*

*Through the Choose 3 Angles, Cathy and Lynn got to review something they had just started learning in the workbook. Ned focused on one topic and appeared to understand the math concept involved. (MR/TL Dec 11)*

Like writing the essay, doing the math for the GED has an equally fear-inspiring quality for most adult education students. To make progress, a learner has to first be willing to try to understand some math. In the past, that meant a teacher, like myself, would write out or sometimes draw information on a piece of paper or the board. Then, the student would practice in a workbook. This method works best for students who have strong linguistic and mathematical skills. For students with LD, the usual words-only explanations are difficult. For ADD students, repetitive paper and pencil drills are not productive methods. Students like Cathy and Gary were highly distractible, which meant that they had difficulty focusing. Giving hands-on choices allowed them to use their bodily-kinesthetic energy

to understand or practice mathematical ideas. Working on a team or in a group often meant their interpersonal skills kept them focused on the task.

Someone like Ted who had good mathematical skills still needed to practice those skills to do better on the test. The Choose 3 activities allowed him to use his other strengths, like his understanding of musical notes and graphing, to remember new ideas like proportion. All three of those students were math test-ready by the time they left the program.

### **Other GED Subjects: Arts & Literature, Science, Social Studies**

GED topics arts & literature, science, and social studies are tested through reading comprehension problems. Theoretically, little previous knowledge or understanding of the topic is required to come up with the correct answers, which are always embedded in the text. However, working in those topic areas helps students become familiar with the related terminology and comfortable with the subject area. It is also important that students practice the testing format, that is, reading passages and filling in answer “bubbles.” Therefore, a combination of reading and understanding the subject area along with test-taking practice is the best preparation for each GED test.

For my November 4, 1997 session I made a packet of poetry readings from the Arts & Literature section of the GED workbook, including related GED questions. I knew from past complaints that the workbook readings would not be greeted enthusiastically, quite the contrary. So I got out the Koosh Ball Slings and 1-5 targets. Although I favor “choice” activities to review or learn about a particular topic, my students needed to practice answering multiple choice questions. It is for that purpose that I developed the Koosh Sling Activity.

Given the high energy and distractibility of many of my learners, a multiple choice practice activity that required individual reading, group discussion, and a physical tension breaker would work better than trying to get individuals to just read and check their answers alone. Yes, it absolutely was a reward for doing the hated test practice. What I think made it palatable was that students were not punished for trying to answer, that they had the camaraderie of the practice time, and that there was a physical activity that was humorous and released any tension caused from making mistakes.

Because this class was a pretty social, talkative group I thought they might like reading together and having a little competition to shoot the Koosh. There was a lot of laughter during the Koosh Shoot. We completed four readings and related questions. By the end of the second question Jane was not liking the reading part, but she did continue, albeit reluctantly. Terry had a hard time getting most of the answers, but she seemed more willing to keep going. The rest of the group continued on. (MR/TL/SW Nov. 4)

On November 13 students participated in the Choose 3 Planets activities. In this case I wanted to focus on giving students experience in the language and content of this topic. In both the morning and evening sessions, students chose a range of activities, including: figuring out distances between planets, drawing planets’ comparative sizes, making aliens that could survive on particular planets, and reading different books and writing down basic information about the planets. In response to my asking what had helped students with the material, they replied:

- looking at the charts that showed the positions of the planets
- it was all interesting.
- planets poster
- information I shared about the planets

Through their actions and words, my students repeatedly demonstrated that they wanted to use their intelligence strengths to understand and review what they needed to learn. After each Choose 3, the class would do GED workbook related material. I noticed that students began to use fewer delay tactics and needed fewer explanations when I handed out workbooks and related assignments. In the past, I sometimes felt like I had to give a lecture on the topic before anyone could begin, and even then it didn't help many students. Now, because each student had studied the idea from their own strength area(s), had seen and heard what everyone else had done, and had gotten some verbal and/or written information from me, they had a broader base to help them do the workbook exercises.

Because students needed practice with maps as preparation for the GED Social Studies test, I created the Lost Island Map Activity.(MR/TL/DL/SW Dec 2) I started the morning class with a discussion about why we need maps. Our conversation then moved to "things on the map that tell you information." After this review discussion, I handed out the Lost Island sheet which everyone read and I elaborated with oral instructions.

figure 10 Lost Island Activity

### **LOST ISLAND MAP**

You've been shipwrecked on an island for months. It is a big island. It has a hut you built, a garden you planted, and no other people. You realize that if someone lands on the island, they may not realize you are there, so you make some maps to place around the island.

### **DRAW THE MAP BELOW:**

After students drew the maps I asked that they explain why they had drawn it the way they did. As we went from student to student I asked them to describe their maps and which items on the map would help searchers rescue him/her. This discussion helped students key into the nature and purpose of map items.

After drawing the maps, we looked at commercial maps to learn more. I handed out a map for each person. I asked, "What on the map tells you how to understand it?"

*Mary: "The route numbers."*

*Jean: "The Key."*

*I asked, "What else tells you information?"*

*Ted: "Scale. Gray. The letters and numbers pinpoint where you're going."*

*Jane: "Longitude and latitude."*

*I say, "That is on national and world maps; what are these lines called?"*

*Ted: "Grid."*

*I ask, "What does a grid do?"*

*Ted: "You pinpoint things."*

Then we practiced using the grid to find streets.

Although the GED is a test of reading comprehension as opposed to mastery of a subject area, there are general areas of information that, if known, will help the reader figure out the answer. In the Social Studies Test, there are questions that require map reading skills. By making a map, looking at other students' maps, and finding the significant parts of a published map, learners practiced reading and understanding the map information they would need for the test. Students also got to share knowledge through their strengths. This gave everyone a chance to see and perhaps understand the information in several ways. In effect, students benefited from everyone's strengths as they prepare for testing.

**Finding 4: The most appropriate applications of MI differ depending on where students are on the GED preparation "continuum."**

As should be clear at this point, I learned that in a GED preparation context, there is a benefit to MI-informed curriculum, to using a range of ways into content, and to giving students opportunities to approach content through areas of strength. However, over the course of the study I learned that there is also a balance that needs to be maintained between using a range of MI-based entry points across a theme like "Angles" or "Measurement," and honing in on students' particular test-preparation goals. An understanding that students will need different types of activities at different times is already embedded into my approach, by way of "warm up," "whole class," and "Choose 3" activities. But I also learned that individual students' needs change as they prepare for the GED.

GED preparation can be seen as a continuum. Early in the continuum, students -specifically ADD or LD students- are best served by giving them opportunities to learn material in many ways, especially ways that make the most sense to them. But when students are approaching that time when they are "test ready," they need to focus their attention on specific content areas and on test-taking skills.

Over the course of my study I gained (and continue to gain) insight regarding when and how to use MI-based, specifically Choose 3, activities in relation to this GED preparation continuum. My realization that there was a time to quiet the MI tone of the class, and modifications I made to my approach in response, represent the beginning of a probe into when, where, and how one uses MI to help students prepare for the GED. For example, I recognized that when I designed a Choose 3 that covered a broad general area, I could be less sure of everyone learning the specific area they needed to learn. And as students honed in on specific test areas, I was even less sure that the Choose 3s I offered covered the specific areas students needed to cover *enough*.

For example, early in October, Terry participated in the Choose 3 Measurement activities by writing and measuring her body. Later Terry reported that she had not learned about feet and inches. Although I reminded everyone that it was important to choose activities that related most to what we needed, I wondered if I had included too many different measurement ideas on one Choose 3 sheet (MR/TL Oct 9).

In November students responded to the Planets Choose 3 as including too much information and made comments like, “It would be easier to look at one planet at a time.” In my own Teacher Log I wrote, “I also observed that this was a lot of information to cover in one sitting. Students only had time to give the quickest look to the materials. Unlike the morning class, the evening class did not say anything about that fact; however, I could see that the books and packets were not read in a thorough way.” (MR/TL Nov 13)

Some observations affirmed the value of narrowing the content of my MI-informed activities and honing it in even more to students’ specific needs and goals. The Lost Island Map was such an example. I reflected,

*I liked that this class was not rushed or overwhelming. Everyone could finish the assignment. Each person applied some different map skills to their drawing. Ned had a Key, Jay had a scale, Lynn had arrows to follow, and Cathy had X’s to follow and a clear pictorial map. (MR Dec. 2).*

*I liked that everyone could complete tonight’s activity and learn the basics on maps. It was just an introduction, but that was better than too much information and no certainty about what anyone learned. (MR/TL Dec. 11)*

This rich, hands-on activities offered several entry points but focused on relatively specific learning goal about using maps. I also narrowed the content for the Choose 3 Angles activities. Students felt that the activities had helped them learn or review material they needed for the GED. After the Choose 3, they all went into the Math GED book to do some of the practice on angle problems[Math]. Everyone seemed to do that easily. I got asked a few clarifying questions, but for the short time left, the class focused on the workbook problems. (MR/TL Dec. 11)

My reflections on this activity included:

*I think that working on one smaller area of math made this lesson less overwhelming. Everyone could complete it and learn about that one math concept. (180 degrees is a straight line that can be divided into two angles that equal 180 degrees.) Cathy and Lynn got to review something they had just started learning in the workbook. Ned focused on one topic and did learn the math concept. MR/TL Dec. 11)*

I found that students who were close to being ready for a particular test wanted to spend all their time on that. When students did Choose 3 activities on a topic they knew well, they were bored, and needed to switch to something else. My related reflections included,

*I’ve gotten a clear message from Cathy and Lynn that activities other than math are not useful to them at this time. They are getting close to being ready for a particular test (math) and they don’t want to be distracted from that work. (MR/TL Dec 2, the Lost Island Map)*

*Gary did draw [But] what he really needs is a class to just practice his writing, which is the only GED test he isn't ready to do. Some time in January there will be another class at the same time at this site. Students who are ready for any test will be in the other class for those subjects. That might work for Gary. (MR/TL Dec 9 Lost Island Map)*

*As these "clear messages" came in from students, I continued preparing more focused Choose 3s. For example, when I had asked students what they wanted for Choose 3 themes, they requested math, especially math from the workbook pages they were doing. Cathy and Lynn had been working together and making steady progress by reviewing areas they had previously covered and slowly moving on to new math areas. I put together a Choose 3 on the section they were practicing: perimeter, area, volume. (MR/TL/SW Nov 4)*

My understanding of when and how, and which, MI-informed lessons work best with learners, particularly my ADD and LD students, continues to grow as I continue to use MI practices in my classroom.

### **Reprise: Cathy, Ned, Jane, and Ted**

**Cathy.** During Choose 3 activities, Cathy would frequently choose to use Playdoh or Legos. She seemed to remember better from one class to the next if she had interpersonal and spatial experiences. When practicing math, she always had a partner (SW). Over the subsequent months she made slow but steady progress with mathematical concepts using Spiral Math<sup>5</sup> and participating in all the Choose 3 lessons related to math. In March Cathy passed her GED Math test, began practicing for her other tests, and as of May 1998 was ready for her Literature and Arts and Social Studies Tests.

**Ned.** Looking back at Ned's participation in each of the Choose 3 lessons, I saw that he read and produced more on those days than when he had just writing or workbook activities. My January 22 Teacher Log included the following entry:

*Ned showed me what he had done [for the Choose 3]. I asked him to write about how painting and writing were similar. He sat and sat and didn't write. I suggested a list, but he didn't do it. He talked about other things. So then I asked him to tell me how painting and writing were similar and he said, 'Expression. Freedom of expression. Some people might find it easier to write it out in words rather than say it. If they are in a good mood or depressed they might write or paint it. It's a form of art.' At the moment that we talked about the activity, be it writing, planets, angles, or punctuation, I could tell from Ned's words that he had learned something about the subject. (JN 22-TL)*

Although in Ned's case I was unable to see much progress, his attendance was good compared to former non-MI class students. Compared to Arthur and Brett of the non-MI informed class, he was actually in the classroom longer. (Arthur, who has more attendance hours than Ned, actually never sat longer than five minutes, nor did more than four questions during a whole class). I noticed what he most liked to do was draw or paint. Ned rarely transitioned into the GED workbook activities. His writing did improve slightly.

**Jane.** Although initially very reluctant to do the GED workbook or writing activities, over this class year Jane improved dramatically. However, after Choose 3 lessons like measurement, punctuation, painting/writing, and time zones, Jane did the workbook or writing assignments. Her initial reluctance to write and inability to write a long, sequential, clear piece changed. She became more willing to write and spent more time practicing. Her writing became more complete, logical, complex, and detailed. When Jane began writing, her pieces were only twenty to fifty words in length. By the end of the class year, her writing reached the two hundred word length required for the GED.

Toward the end of the school year, Jane began doing more of the workbook math after we reviewed the theme and did a Choose 3 lesson. At this time, I would refer to Choose 3 math activities she or another student had done (like making proportionate figures) to help her figure out the solution. She stopped making negative comments about her math ability and, instead of taking a lot of breaks at math time, sat at the table for the whole practice period. By May 1998 she was test ready in both writing and math.

**Ted.** When Ted participated in the Punctuation Play activities he drew picture representations of punctuation marks that were humorous and showed he knew their meaning. (MR-NV 13) In January Ted and his partner announced that they would be leaving to go to work. Ted had participated in most of the Choose 3 math activities, done some of the follow-up math workbook activities, and had learned enough of the GED math to take that test. His writing had improved, but he would need much more practice to pass the test. (TL-JN 6)

## CONCLUSION

When I look at this data, one of the things I see is the interrelatedness among students' positive response, attendance, and progress. The relationship between students liking their class and having good attendance in that class was evident in students' words and actions in the MI-informed classrooms. Simply put, they came to class because they were engaged in the learning activities and felt the MI-informed work was helping them progress in GED preparation. Student progress was also connected to the frequency of attendance and participation in the learning activities. From these connections I have come to believe that if students come to class and are engaged in learning activities, then they are more than likely progressing in their studies.



I believe that these findings are a hopeful indication that we can teach GED preparation and engage some hard to reach, ADD/LD, students by tapping into their areas of strength. I found that MI theory was an extremely useful tool to inform GED lessons in a way that was inclusion of a range of possible strengths my students brought to class. MI-informed lessons allowed students many possible ways to understand the material, including their own particular strengths. For students who learn differently because of learning disabilities and/or attention deficit disorder, this type of education is especially valuable.

In my research I found a general relationship between tapping students' diverse strengths and positive student reaction, improved attendance, and progress in GED preparation. Over the course of the project I created activities that made links between specific intelligences and the material to be learned, for example spatial and linguistic means to help students understand Proportion or Angles, bodily-kinesthetic means to learn about time zones, and so forth. My next steps, (or the next steps of someone using this research as a stepping stone to further research and practice) might be to consider what other MI approaches and/or activities could help students with severe ADD/ADHD reach their educational goals. For example, would more intense musical or bodily-kinesthetic activities help an ADD/ADHD learner learn to read or pass a GED? What are the specific strategies, or "bridges" from intelligence to material, that seem to work in keeping ADD/LD students in the classroom, engaged in the material, and making progress on GED preparation? I believe everyone can use their strengths to accomplish their goals.

APPENDIX ONE  
GED TEST INFORMATION

<b>Test Content:</b>	<b>Questions</b>	<b>Time Limit</b>
<u>Writing Skills Part 1 Grammar</u>	55	75 minutes
35% Sentence Structure		
35% Usage		
30% Spelling, Punctuation, Capitalization		
<u>Writing Skills Part 2 Essay</u>	essay	45 minutes
<u>Social Studies</u>	64	85 minutes
25% History		
20% Economics		
20% Political Science		
15% Geography		
20% Behavioral Sciences		
<u>Science</u>	66	95 minutes
50% Life Science		
50% Physical Sciences		
<u>Interpreting Literature and the Arts</u>	45	65 minutes
50% Popular Literature		
25% Classical Literature		
25% Commentary on Literature and Arts		
<u>Mathematics</u>	56	90 minutes
50% Arithmetic		
30% Algebra		
20% Geometry		

APPENDIX TWO  
DIAGNOSTIC CRITERIA FOR ADD IN ADULTS

From Driven To Distraction by Edward M. Hallowell and John J. Ratey

NOTE: Consider a criterion met only if the behavior is considerably more frequent than that of most people of the same mental age.

A. A chronic disturbance in which at least fifteen of the following are present:

1. A sense of underachievement, of not meeting one's goals.
2. Difficulty getting organized.
3. Chronic procrastination or trouble getting started.
4. Many projects going simultaneously; trouble with follow-through.
5. Tendency to say what comes to mind without necessarily considering the timing or appropriateness of the remark.
6. A frequent search for high stimulation.
7. An intolerance to boredom.
8. Easy distractibility, trouble focusing attention, tendency to tune out or drift away in the middle of a page or conversation, often coupled with an ability to hyperfocus at times.
9. Often creative, intuitive, highly intelligent.
10. Trouble in going through established channels, following "proper" procedure.
11. Impatient; low tolerance for frustration.
12. Impulsive, either in word or action, as in impulsive spending of money, changing plans, enacting new schemes or career plans, and the like.
13. Tendency to worry needlessly, endlessly; tendency to scan the horizon looking for something to worry about, alternating with inattention to or disregard for actual dangers.
14. Sense of insecurity.
15. Mood swings, mood liability, especially when disengaged from a person or project.
16. Restlessness.
17. Tendency toward addictive behavior.
18. Chronic problems with self-esteem.
19. Inaccurate self-observation.
20. Family history of ADD or manic depressive illness or depression or substance abuse or other disorders of impulse control or mood.

B. Childhood history of ADD.

C. Situation not explained by other medical or psychiatric condition.

APPENDIX THREE  
LEARNING DISABILITIES CHARACTERISTIC IN ADULTS

1. Significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities.  
  
-- Despite years of school attendance has difficulty or can not read, write, and/or solve logic or math problems.
2. Overall lack of organizational skills.
  - Inability to see relationships
  - Inconsistent and unpredictable application of concepts
  - Difficulty performing a logical series
  - Difficulty prioritizing
3. Poor memory
  - Unpredictable recall performance
  - Difficulty memorizing for a test
  - Can't remember what is heard and/or what is read
  - Can't remember over time
  - Has trouble following multiple instructions
4. Processing problems
  - Visual: reading or copying from board or text
    - poor spelling especially non-phonetic words
  - Difficulty adjusting to change
  - Difficulty following oral or written instructions
  - Coordination/balance: walking, using tools, writing
5. Interpersonal skills
  - Interacts inappropriately with peers and/or teachers
  - Upsets and irritates others
  - Trouble with following rules
  - Not aware of consequences of actions
6. Psychological processes
  - Rigidity: can't change routine
  - Impulsivity: speak or act without thinking
  - Concreteness: difficulty with abstract ideas
  - Perseveration: Stays on task beyond appropriateness
  - Distractibility: Can not maintain focus

