

High Stakes Testing Meets Multiple Intelligences

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Abstract

High stakes standardized testing is ever present in America's schools today. Students are required by recent legislation to test several times during their academic careers and perform to a certain standard in order to ensure funding for their schools. Though standardized tests can serve as an effective measure for comparison and holding schools and teachers accountable, they can also be detrimental to students because they measure a very narrow set of skills and are highly stressful. They also potentially inhibit the "love of learning" type of atmosphere most teachers are hoping to create for their students.

These tests, even with their downsides, are not likely to leave the educational arena in the near future so it is important for teachers to have strategies for helping students improve on tests, while still obtaining a well rounded education. This program aims to implement the idea of Multiple Intelligences (Gardner 1993) into a curriculum in a 5-phase plan. The goals are for students to become prepared and well rounded learners, critical thinkers, and better test takers.

Issue Assessment

NCLB and High Stakes Testing

Using tests to assess progress is nothing new. As a graduate of the University of California at Berkeley stated, "the way he graduated Cal in the 1950's was the use of the three Rs: read, remember, regurgitate" (Haladyna 2006). This level of processing

“regurgitating” is the lowest level of cognitive processing: recall. This type of test format has two major problems or perils “content irrelevance” or factors that systematically increase or decrease test scores, and “content under representation” or flaws in the design of the test that fail to evaluate it’s full range of content and cognitive behaviors (Haladyna 2006). Students fall victim to these types of problems when taking tests, as they may encounter questions that are difficult to read, but that they actually know the answer to (i.e. English language learners). Also, these tests are long and tedious and students encounter varying levels of motivation and fatigue which may misrepresent a student’s actual knowledge of the material (Haladyna 2006). Even with all the information from research available suggesting this isn’t the most effective way to measure “knowing”, it is still the main idea commonly used one national standardized tests, and especially the tests under the policy of No Child Left Behind.

No Child Left Behind (NCLB) was a legislation introduced January 8, 2002 (whitehouse.gov 2006) with the goal of improving performance in American’s schools. Part of this performance improvement was the implementation of several high stakes standardized tests that were to hold schools accountable for improvement in reading and math. The method of holding schools accountable was the creation of a reward and punishment system. Basically, schools are rewarded for: closing the achievement gap by improving overall student achievement, meets accountability requirements, and/or improving achievement for disadvantaged students. Schools could also be punished, or not receive their full funding, if they fail to meet performance objectives.

The initial idea of NCLB is very commendable in that the goal of testing and holding schools and teachers accountable was in the best interest of students. The

government simply wanted to ensure that all students received an education that could be considered “optimal and promote academic achievement” (Rupp & Lesaux 2006). The problems lie in the way tests are used, how they’re presented in the classroom, and effects they have on individual students.

For example, the achievement gap between districts, already astounding, has been magnified by this policy. Many of the individuals in lower achieving districts are students of color and from low income communities and the problem is that these students continually fail to meet the requirements. This failure to meet requirements, based on NCLB, results in a loss of funding for these districts and schools. Further, the scores are often used to categorize students and in deciding whether to retain students, recommend summer school, or whether or not the student should be able to graduate (Sharkey & Murnane 2006). This, in turn, increases stress into already stressful situations.

A study conducted by Allensworth (2005), tested the effects of high stakes tests on dropout rates for elementary school students in Chicago. Results found that students who were retained on the basis of low test scores were more likely to drop out. The same trend was demonstrated by Carnoy’s 2005 study on high school students showing that instead of decreasing dropout rates, as NCLB intended, the tests are actually raising the number of potential high school students who do not graduate. It should be noted these students are high risk before the testing, but their weakness in testing is changing their outcome when it could be more positively addressed and allow them to graduate (Allensworth, 2005 & Carnoy, 2005).

In order to meet the stringent demands some teachers have resorted to “teaching the test”. This means that many students, often those in low income communities, are receiving a very narrow education revolving just around test taking. This may seem necessary in order to improve test schools and achieve a higher level of funding; however, it detracts from other subjects and doesn’t necessarily allow for as much critical thinking and love of learning for students in the classroom.

Another study, looking at a standards based assessment of reading comprehension (Rupp & Lesaux 2006), demonstrated results against the use of the current high stakes tests. The results showed that performance on component skills of reading and proficiency classification from standards bases assessment is generally weak. Further, the relationship between proficiency classification and norm referenced diagnostic measure of reading comprehension is only moderate. In other words, previous measures of proficiency and reading comprehension, trusted by teachers for a long time, do not match up with the results of high stakes tests, so there must be some doubt as to how accurately they are as a measurement.

Addressing Negative High Stakes Testing: MI in the Classroom

Though it may be amended here and there in the coming years, it is likely that this sort of high stakes standardized testing will continue to exist in our school system.

Teachers and schools must then find a way to work with the system. In other words, they must find a way to create successful test takers, while still providing students with the skills necessary to be critical thinkers and develop a love of learning. If students continue to feel stressed and overwhelmed by these tests, then the dropout rates will continue to

increase, but if students feel more successful in the classroom and in turn perform more successfully on the test, then perhaps this can change. It may seem highly theoretical that such a system could be implemented. However, the first steps may involve a more formal understanding of multiple intelligences. Though the more traditional ideals behind multiple intelligences encourage an alternative form of evaluation, evidence has also shown that utilization of this type of curriculum has also improved performance on state mandated tests (Campbell 1999).

It is important to have a variety of pedagogical approaches in the classroom, the more variety of instruction a teacher can offer, the more likely students will catch on. Multiple Intelligence instruction is a great way to accomplish this as well as give teachers a consistent approach. Teachers have a limited amount of free reign to work with in these high stakes testing situations, so a system like MI would allow districts and schools to allow more of this time, while still creating good test takers.

Multiple Intelligence

The theory of multiple intelligences was created after the pull in the early 1900's to better understand human intelligence. This was the time in which the IQ test many are familiar with was formulated. However, these IQ tests only tested a very narrow group of skills, similar to standardized tests, and Howard Gardner decided that intelligence should not be regarded in such an abbreviated way. Instead intelligence had more to do with solving problems and "fashioning products in a context-rich and naturalistic setting" (Armstrong, 1999).

This was the point when Gardner identified eight different intelligences that were useful in mapping out a broad range of abilities. The eight intelligences are as listed below:

The 8 intelligences

Linguistic Intelligence: The ability to use word most effectively either orally or in writing.

Logical or Mathematical Intelligence: The capacity to use numbers effectively and reason well.

Spatial Intelligence: The capacity to understand the visual-spatial world accurately and perform transformations on those perceptions.

Bodily-Kinesthetic Intelligence: “Expertise in using one’s whole body to express ideas and feelings and facility in using one’s hand to produce or transform things.”

Musical Intelligence: The ability to “perceive, discriminate, transform, and express musical forms.”

Interpersonal Intelligence: The capacity to “perceive and make distinctions in the moods, intentions, motivations, and feelings of other people.”

Intrapersonal Intelligence: “Self-knowledge and the ability to act adaptively on the basis of that knowledge.”

Naturalist Intelligence: “Expertise in the recognition and classification of the numerous specials—the flora and fauna—of an individuals environment.”

(Armstrong 1999)

These descriptions offer only a brief insight into each intelligence, but one might still ask, “Why should these be considered intelligences and not simple talents or aptitudes?” The answer Gardner gives to defend the idea of intelligence is that one must

consider each ability with equal regard. We are quick to classify most “intelligent people” into either the literary or logical-mathematical intelligences, when really people can be truly gifted in one of the other intelligences (Armstrong 1999).

This may seem quite theoretical, but schools who’ve used the idea of these intelligences in the classroom have found much success (Campbell 1999). A study of six schools conducted in the years prior to 1999, found that students taught in this manner, understood themselves better as students, were better able to aid in teaching their peers, and, in most cases, improved overall test scores on state mandated tests (Campbell 1999). This research, combined with other studies (Armstrong 2000), has shown that multiple intelligences can be effective in the classroom if set up and utilized correctly.

Students can be introduced to the concept. The best tool for figuring out what intelligences a student possesses is simply “observation”. Armstrong says that, “I’ve humorously suggested to teachers that one good way to identify students’ highly developed intelligences is to observe how they *misbehave* in class. The strongly linguistic student will be talking out of turn, the highly spatial student will be doodling and daydreaming, the interpersonally inclined student will be socializing, the bodily-kinesthetic student will be fidgeting, and the naturalistically engaged student might well bring an animal to class without permission (21)”. Of course further consideration is necessary, but this process allows teachers a change to look in depth at each student and understand gifts and intelligences.

Reform Initiative

Multiple Intelligences in the Classroom

Schools have chosen MI for a multitude of reasons all centered on improving student achievement (Campbell 1999). By choosing a multiple intelligence curriculum, a school is identifying itself as an institution concerned with creating a population of motivated learners. This design intends to challenge students in intelligences that do not necessarily come naturally, as well as strengthening those that do.

Proponents of MI education identify school as more than a place that students simply learn facts, but instead where students learn how to learn and think critically. This enhances each individual's prospects post graduation because they come out with the ability to problem solve and work in a multitude of work settings. The opportunities created post-grad give each student a purpose in the classroom. School no longer is only an institution for students going on in academia, but instead everyone is prepared to be a "citizen of the world". Specific goals and notions of the program will be identified later, but students will emerge with a higher probability for success.

Further, MI offers a time and place to put emphasis on the important tests students are given. Since cognitively students will perform best if they indeed "practice testing" there must be a time for this. MI allows students to practice the test in their curriculum, but also look at the information being tested from a variety of perspectives. This in turn allows students to approach the test with more strategies and understanding than students who are only taught narrowly "to the test".

Basically, MI creates a force of critical thinking individuals prepared for the world. This program is meant to be an aid to teachers who want their students to succeed on such tests, but also emerge with a greater love of learning and understanding of their

world. It helps teachers achieve this important and necessary goal by providing a frame work and specific “how-to” guide.

MI versus other options

There are many options for teachers when considering the curriculum to teach in their classroom. One positive thing about MI in the classroom is that teachers do not need to dismiss what they already do, but instead adapt current curriculum and assessment to meet these standards. This may sound challenging, but specifics will be laid out in the teacher training portion on MI education.

MI, though slightly experimental, has been tried in a variety of school settings. Most results have shown improvement in student achievement across the board, so it’s not as risky as other progressive ideas. However, it fits well with other ideas and can work with any experimental type of education. For instance, the guidelines of this plan provide a framework and not a complete “set in stone” idea of education. It is contingent on teacher creativity and underlying curriculums.

Also, MI is a great approach because it allows all students to understand certain strengths along with the weaknesses. It is centered on the idea that everyone is “intelligent” in some way and counters larger societal ideals only valuing analytical intelligence. However, it doesn’t discount the importance of such skills. MI allows students to feel strength in some areas, while still embracing the challenges experienced in other areas. Also, it demonstrates how one might use strategies when crossing intelligences. For instance, a spatially intelligent person might apply such skills to a

literacy test by understanding how paragraphs are constructed and organization is used in producing literature.

Multiple Intelligence curriculum is the best option because of its flexibility and easily integrated plan. It is somewhat experimental, which is why it must be slowly integrated into an existing system, but experiences and applications have thus far proven successful and it may be the answer to the challenge of improving performance on high stakes testing.

The plan

The nature of an experimental and new curriculum requires a formulated plan for integration. It would be a mistake to just throw the curriculum at students and teachers alike without thinking through the process of how this would work. The plan includes a five phase process in which the curriculum is slowly implemented into the existing programs. There is no exact time frame for the phases; instead specific measurable goals must be achieved to step into the next phase. It is important to complete the goals, as otherwise the overload of novel information will inhibit the program from working. Also, if it is put into action too quickly, there could be adverse effects on test scores, which is not the aim of the program at all.

The plan might also need minor adaptations in going into an already progressive system. It is written to be integrated into a more “traditional” school setting. However, these adjustments shouldn’t be too difficult and should not deter a school from adopting the system. If the phases are completed and the goals are attained, the overarching goals

of enriching curriculum, creating well rounded individuals, and improving student achievement should be met.

Phase 1-Teacher familiarity

In order for successful integration of this plan teachers must have a rich understanding of what the program is and strategies for success in the classroom. For this to work teachers must be given workshops after school. The amount of time for this should be between 5-10 working hours. In other word, teachers should be supplemented for this extra time spent at school learning the new program.

The training then begins with teachers identifying their own intelligences. In doing this teachers can find out how they use these everyday in the classroom and identify the type of learners benefiting the most from their personal instruction. It is then important for the teachers to work in co-operative groups with teachers of other intelligences or strengths to better understand how they work. To do teachers should first brainstorm, then observe in other teachers' classrooms, and finally reflect.

After teachers are familiar with their own intelligences they will receive information on how MI manifests itself in the classroom and several teaching strategies and classroom management techniques. The teaching strategies are broken down by intelligence and are demonstrated in Table 1 below. These would be taught in depth and discussed in small groups as to whether teachers have used these before in their classrooms and what was successful and what wasn't as successful

Table 1:
MI Teaching Strategies

Linguistic Intelligence	Storytelling Brainstorming Tape Recording Journal Writing Publishing
Mathematical Intelligence	Calculations and Quantifications Classifications and Categorizations Socratic Questioning Science Thinking
Spatial Intelligence	Visualization Color Cues Picture Metaphors Idea Sketching Graphic Symbols
Bodily-Kinesthetic Intelligence	Body Answers The Classroom Theater Kinesthetic Concepts Hands-on Thinking Body Maps
Musical intelligence	Rhythms, Songs, Raps, and Chants Disco graphics Super memory Music Musical Concepts Mood Music
Interpersonal Intelligence	Peer Sharing People Sculptures Cooperative Groups Simulations Board Games
Intrapersonal	One-Minute Reflection Periods Personal Connections Choice Time Feeling-Toned Moments Goal-Setting Sessions
Naturalist Intelligence	Nature Walks Windows onto Learning Plants as Props Pet-in-the-Classroom Ecostudy

(Armstrong, 2000)

Teachers would then work on what MI looks like in the classroom environment. Many teachers will find they already use some of these strategies and learn about some they haven't used yet. One main example that is commonly used in classrooms is

“Activity Centers”. The MI suggestion for these differs somewhat from the traditional notion. Teachers would be familiarized with MI’s approach, but also discuss how they are currently using some of the techniques.

There is also much to consider in classroom management under the MI system. Teachers would also be familiarized with this during the training. It is important to note this would vary from grade level to grade level. For example, when preparing transitions (i.e. getting ready to dismiss, getting ready for lunch, etc) teachers can consider what their own intelligences are or the intelligences they wish to focus on and have a song or gesture to signify. Also, considering the variety of learners is important in communicating class rules and managing individual behaviors. These would also be discussed and teachers would be given workbooks based on the suggestions from the book, “Multiple Intelligences in the Classroom” by Thomas Armstrong.

In the next phase of teacher familiarity, teachers will collaborate with other teachers in the grade level. This is where teachers will work to plan assessments, projects, and how to incorporate MI into preparation for standardized testing. These ideas would be presented before everyone at the training, so that all teachers benefit from one another’s ideas and so that everyone in each school is on the same page.

Goals for Teacher Familiarity Phase:

1. Teachers will identify which intelligences they personally possess
2. Teachers will observe colleagues who have are stronger in different intelligences
3. Teachers will work with other teachers in their grade level to brainstorm best implementation of the system
4. Teachers will create an outline of assessments and projects they plan to do when bringing MI into the classroom
5. Teachers will collaborate and discuss techniques for incorporating MI into preparation for high stakes tests.
6. Teachers will be complete an instructional meeting for MI and classroom management

Phase 2-Changing assessment

The next step in the implementation plan is to change assessment in the classroom. This “complete change” does not eliminate preparation time for high stakes tests, but begins the transition into “authentic assessment” (Armstrong 2000). These new assessment methods should first appear as either student choice or be varied by the teacher. Thomas Armstrong (2000) gives several good examples of assessment on a variety of topics.

Factors Associated with the South Losing the Civil War

Intelligence	
Linguistic	Give an oral or written report
Logical-Mathematical	Present statistics on dead, wounded, supplies
Spatial	Draw maps of important battles
Bodily-Kinesthetic	Create 3-D maps of important battles and act them out with miniature soldiers
Musical	Assemble Civil War songs that point our causal factors
Interpersonal	Design class simulation of important battles
Intrapersonal	Develop their own unique way of demonstrating competency
Naturalist	Examine how the geographical features of North and South contributed to result

Development of a Character in a novel

Intelligence	
Linguistic	Do oral interpretation from the novel with commentary
Logical-Mathematical	Present sequential cause-effect chart of character's development
Spatial	Develop flow chart or series of sketches showing rise/fall or character
Bodily-Kinesthetic	Pantomime the role from beginning of novel to end, showing changes
Musical	Present development of character as a musical score

Interpersonal	Discuss underlying motives and moods relating to development
Intrapersonal	Relate character's development to one's own life history
Naturalist	Compare development of character to the evolution of a species or the history of an ecosystem

Principles of Molecular Bonding

Intelligence	
Linguistic	Explain concept verbally or in writing
Logical-Mathematical	Write down chemical formulas and show how derived
Spatial	Draw diagrams that show different bonding patterns
Bodily-Kinesthetic	Build several molecular structures with multicolored pop-beads
Musical	Orchestrate a dance showing different bonding patterns
Interpersonal	Demonstrate molecular bonding using classmates as atoms
Intrapersonal	Create scrapbook demonstrating competency
Naturalist	Use animal analogies to explain dynamics of bonding (e.g. animals that attract and don't attract, symbiotic relationships in nature)

(Armstrong 2000)

This type of assessment strategy would be used along with more traditional testing in the beginning and would be slowly integrated into the curriculum. While students are measured in these ways they will do a follow up standardized test. Students will be required to apply information they used in the “authentic assessment” and have a clear understanding that the same information exists in both forms of evaluation. If there are certain facts that are important the teacher should include them on the assignment sheet given out at the beginning of the activity.

Goals for Changing Assessment Phase

1. Teachers will try each form of intelligence's assessment
2. Teachers will give students 5 different options to chose their assessment
3. Each new assessment will be followed up with a standardized test
4. Students will be proficient on standardized test following other assessment

Phase 3 –Student familiarity

If students are going to be successful in the MI program they must have an understanding of what the intelligences are and how they work. For younger kids this may be a visual dial on a bulletin board, whereas for older kids a test of multiple intelligences might help them identify with the concept. After an introduction has been made, it is important for students to first understand how it has already been integrated into their study, so breaking it down that way would be effective. The teacher should then assess the students understanding of MI with a MI assessment. An example could be the following:

Multiple Intelligence Assessment

Intelligence	
Linguistic	Write a report and present on what multiple intelligence is and which intelligences you think apply to you
Logical-Mathematical	Create a chart describing the intelligences and then graph how many students feel they fall into each category
Spatial	Create a drawing or painting about the different intelligences and make the intelligences you consider your best to stand out
Bodily-Kinesthetic	Create and act out a short skit on multiple intelligences. Within the skit create different gestures to represent each intelligence.
Musical	Compose a short musical number to represent each intelligence.
Interpersonal	Conduct interviews about what your classmates feel about the different intelligences and how they apply. Report your findings to the group.
Intrapersonal	Create your own representation about the different intelligences and journal about which ones apply most to you.
Naturalist	Create an environmental model to suggest how these intelligences co-exist. Find objects outside to represent each of the intelligences including the ones you identify most with.

When students have a clear understanding of the intelligences the teacher can then begin to point out specific strategies each intelligence can use when taking standardized tests.

This will be demonstrated from practice applying concepts between the two forms of

assessment, only after this phase students will understand *why* they've been doing the type of assessment. Students should also be more confident as they'll have a basis for strategy.

Goals after Student Familiarity Phase:

1. Students will demonstrate understanding of multiple intelligences measured by an assessment utilizing MI assessment
2. Students will begin understanding strengths and weaknesses in learning
3. Students will understand and apply strategies from these skills on practice standardized tests.

Phase 4-Learning and Assessment Integration

This phase is just a stop to gauge results and ensure students and teachers are benefiting from the process. It is designed to have students and teachers stop and evaluate how learning and assessment are going and whether standardized test scores are improving. This is important before the full implementation of the system takes off. At this point the success of the program should be visible through student progress, but also student learning. There should be a variety of assignments turned in by students valuing all types of learning and intelligence.

This is also the phase in implementation where teachers and students will take surveys to show whether the system is an improvement on the past system. Teachers will also attend another workshop to discuss progress and evaluate what's working and what's not. This workshop will also allow teachers to discuss whether the goals of the program are truly evident subjectively in their students (i.e. increased motivation and love of learning).

Goals after Learning and Assessment Integration Phase:

1. Teachers will identify an increased motivation in students
2. Teachers will attend a workshop and share ideas and experiences with the MI system
3. Teachers will make constructive suggestions for the future of MI
4. Students' test scores should be improving

Phase 5-Full implementation

This is the phase where MI curriculum has been brought completely into the school. At this point schools should set up new requirements such as the following to show the value of MI and well rounded curriculum:

Example of goals from Key Learning Community in Indianapolis, IN

- Communicate clearly in written form
- Be verbally articulate in two languages
- Sing or play a musical instrument proficiently
- Use math and logic in applied areas
- Use technology as a tool for inquiry and communication
- Be physically fit
- Select an applied area for inquiry, reflection, and apprenticeship
- Participate in stewardship activities with nature
- Express a capacity to care about global issues
- Participate in groups and organizations in the larger community

(Campbell 1999)

These might not be the exact words or goals of a school, but they are certainly a good baseline to consider. At this phase the school should be valuing alternative assessment and periodic workshops with teachers to support and consider new ideas should happen quarterly. Grade level teachers should meet weekly to brainstorm and share successes as well as concerns.

Goals after Full Implementation Phase:

1. Quarterly workshops and reviews will be held by schools
2. Weekly grade level meetings will be held by teachers
3. Students will have clear requirements and goals of what must be attained before completion of school

In the future, it would be nice to see all schools adopt this system and find success with it. This success, at the moment, will still be measured by performance on high stakes standardized tests. However, if this program is as successful as projected, it may give test creators a new approach to the creation of a these tests. The new test design will demonstrate more of each intelligence. It was value the ability for students to express themselves in a variety of ways. This way the test truly does evaluate learning instead of just the ability “to test”. This design might be a ways into the future at the moment, but should be considered the best way to look at student ability.

Dissemination Plan

This document along with the introduction video will be available online for teachers. The promotion video and information packet will also be sent to school districts and a presentation can be set up with those expressing interest. The presentation can be given to all interested parties.

As the schools adopt the program, specific success stories will be documented and added into the presentation. Eventually an instructional video will be available in case a large number of schools are interested and it proves difficult to give all necessary presentations. However, there will be a group behind the program and as it expands other individuals can begin giving the presentation.

Annotated Resources

Consultants:

Susie Craig, former elementary school teacher (1st-5th grade)

Susie provided useful information from the perspective of an experienced teacher. She was able to evaluate the ideas critically, but also identify positives of the program. Her advice was particularly helpful in understanding how the program could be most effectively implemented.

Seth Greenberg, PhD, Professor of Cognitive Psychology at Carleton College

Seth provided useful information from a cognitive test taking perspective. He was able to critically evaluate this program in terms of the attention and best means of preparing for tests. His advice was most useful in considering the hard truth that the best way to prepare for tests is to indeed “practice the test”.

Books:

Armstrong, Thomas. Multiple Intelligences. 2nd. Alexandria, VA: ASCD, 2001.

This book is an especially helpful tool in understanding MI and it's practical uses. It provides numerous examples of lessons in MI instruction and detailed information

about each intelligence and classroom management strategies. It also provides a theoretical framework.

Campbell, Linda, and Bruce Campbell. Multiple Intelligences and Student Achievement. Alexandria, VA: ASCD, 1999.

This book provides examples of six schools, ranging from elementary to high school, that have used MI instruction. It gives examples of what MI looks like in their specific school, why they chose to use MI instruction, and important statistics about how MI has improved student performance. The book also provides examples of school requirements under the MI system.

Gardner, Howard. Intelligence Reframed: Multiple Intelligences for the 21st Century. New York, NY: Basic Books, 1999.

This book is a helpful supplement in understanding the theoretical background for MI. Gardner explains the ever evolving idea of MI and actually suggests the possibility of more intelligences. This book is important for teachers and schools who plan to use MI to gain a background and basic understanding of the plan.

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