Can Multiple Intelligences Enhance Learning For Higher Education On-Line Instruction?

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Abstract

This paper will examine the applications of Howard Gardner's Multiple Intelligences (MI) theory to differential instructional strategies for the education of adults in institutions of higher education (IHE). With a trend of more IHE classes being offered online, there are new challenges and opportunities for individualizing instruction to meet unique student needs to assure their success. MI holds great promise in differentiating instruction for online classes by applying these intelligences to on-line instruction. This paper will define Multiple Intelligences (MI) theory, provide background information about IHE online instruction, the assessment of students, how students can be involved in identifying their MI strengths, and how online course activities can be applied to MI Theory. In addition, the role and training needs for instructors in utilizing MI Theory will be discussed, along with the challenges for instructors to make a paradigm shift to apply and practice MI to meet the individual needs of all students in online courses.

Introduction

Much has been written on Howard Gardner's Multiple Intelligences theory and how it can apply to the grades K-12 education young students from five years to eighteen years. Yet few of these Multiple Intelligences theory have been practiced for the instruction of children in public schools. In fact, to date, the current No Child Left Behind high-stakes test legislation does not encompass the Multiple Intelligences framework in the exams' design and/or implementation.

More surprising yet, very little has been written on how these Multiple Intelligences theory can be applied to differentiated instructional strategies for the education of adults in institutions of higher education (IHE). With a trend of more IHE classes being offered online, often students feel left out for the course activities to meet their individual needs. Multiple Intelligences theory offer opportunities to meet these student needs, but pose challenges for instructors to apply these intelligences in teaching online classes.

Theory of Multiple Intelligences

Nearly eighty years after the first intelligence tests were developed, Howard Gardner in his book *Frames of Mind* (1983), challenged the view that something called "intelligence" could be objectively measured and reduced to a single number or "IQ" score. He proposed the existence of at least eight basic intelligences. In his theory of Multiple Intelligences (MI), Gardner expanded the scope of human potential beyond a single criteria of the IQ score and advocated that intelligence has more to do with the capacity for (1) solving problems and (2) fashioning products in a context-rich and naturalistic setting.

Here are Gardner's eight comprehensive categories or "intelligences":

- **Linguistic Intelligence:** The capacity to use words effectively, whether orally (e.g., as a storyteller, orator, or politician) or in writing (e.g., as a poet, playwright, editor, or journalist). These learners have well developed auditory skills and are generally elegant speakers. There thought process is in words as opposed to pictures. Their skills include: listening, speaking, writing, story-telling, explaining, teaching, using humor, understanding the syntax and meaning of words, remembering information, convincing someone of their point of view, analyzing language usage. (ldpride.net)
- **Logical-Mathematical Intelligence:** The capacity to use numbers effectively (e.g., as a mathematician, tax accountant, or statistician) and to reason well (e.g., as a scientist, computer programmer, or logician). These learners think conceptually in logical and numerical patterns making connections between pieces of information. Always curious about the world around them, the learner asks lots of questions and like to do experiments. (ldpride.net)
- **Spatial Intelligence:** The ability to perceive the visual-spatial world accurately (e.g., as a hunter, scout, or guide) and to perform transformations upon those perceptions (e.g., as an interior decorator, architect, artist, or inventor).
- **Bodily-Kinesthetic Intelligence:** Expertise in using one's whole body to express ideas and feelings (e.g., as an actor, a mime, an athlete, or a dancer) and facility in using one's hands to produce or transform things (e.g., as a craftsperson, sculptor, mechanic, or surgeon).
- **Musical Intelligence:** The capacity to perceive (e.g., as a music aficionado), discriminate (e.g., as a music critic), transform (e.g., as a composer), and express (e.g., as a performer) musical forms.
- **Interpersonal Intelligence:** The ability to perceive and make distinctions in the moods, intentions, motivations, and feelings of other people**.** These learners try to see things from other people's point of view in order to understand how they think and feel. They have the skill to sense feelings, intentions and motivations. Although manipulative at times, they are great organizers. They make an effort to reach groups consensus and encourage co-operation. Both verbal (e.g. speaking) and non-verbal language (e.g. eye contact, body language) are used to open communication channels with others. (ldpride.net)
- **Intrapersonal Intelligence:** Self-knowledge and the ability to act adaptively on the basis of that knowledge. These learners seek their dreams, relationships, inner feelings, relationships with others

  strengths and weaknesses. Some of their skills include: reflecting and analyzing themselves, being aware of their inner feelings, analyzing their desires and dreams, evaluating their thinking patterns, reasoning with themselves, understanding their role in relationship to others. (lpride.net)
- **Naturalistic Intelligence:** The ability to easily recognize and classify plants, animals, and other things in nature. (Armstrong, 1994). The **Naturalistic Intelligence** was later added after Gardner's original seven intelligences.

Factors Influencing Individual Possession of Multiple Intelligences

Critics look at some of the above intelligence categories, and question how Gardner can consider some as true intelligences, i.e. bodily-kinesthetic, musical, and spatial as truly intelligence criteria, and not talents or aptitudes. Gardner contends that everyone is born possessing the seven intelligences. Nevertheless, all students will come into the classroom with different sets of developed intelligences. This means that each student will have his own unique set of intellectual strengths and weaknesses. These sets determine how easy (or difficult) it is for a student to learn information when it is presented in a particular manner. This is commonly referred to as a learning style. Many learning styles can be found within one classroom, which may be influenced by any one or more of the following criteria:

- the potential for brain isolation by brain damage,
- its place in evolutionary history,
- the presence of core operations,
- susceptibility to encoding (symbolic expression),
- a distinct developmental progression,
- the existence of idiot-savants, prodigies and other exceptional people,

- support from experimental psychology and psychometric findings. (en.Wikipedia.org/wiki/Theory_of_multiple_intelligences)

Beyond the descriptions of the original eight intelligences and respective theoretical underpinnings, Gardner emphasizes that:

- Each person possesses all seven intelligences between the lowest and highest extreme
- Most people can develop each intelligence to an adequate level competency with adequate encouragement, enrichment and instruction
- Intelligences usually work together in complex ways. No one intelligence stands out alone, but rather they interact with each other in complex ways depending on the person
- There are many ways to be intelligent (Businessballs.com)

Examples of Different Multiple Intelligences

- The most brilliant scientific professor may well have exceptional intelligence in a number of areas (probably Logical-Mathematical, and one or two others) but will also be less able in other intelligences, and could well be inept in some.
- By the same token a person who struggles with language and numbers might easily be an excellent sportsman, or musician, or artist.
- A hopeless academic, who is tone-deaf and can't add up, could easily possess remarkable interpersonal skills.
- Many very successful business-people were judged to be failures at school. They were judged according to a very narrow definition of what constitutes intelligence.
- Many very successful and fulfilled people in life were also judged to be failures at school - brilliant scientists, leaders, writers, entertainers, sports-people, soldiers, humanitarians, healers, religious and
- political leaders - all sorts of happy, fulfilled remarkable people - they too were judged according to a very narrow definition of what constitutes intelligence.
- Each one of us has a unique and different mix of intelligence types, and commonly the people with the least 'conventional' intelligence (as measured using old-fashioned narrow criteria), actually possess enormous talent - often under-valued, unknown and under-developed. (Businessballs.com)

Background Information Regarding On-Line Instruction At the Higher Education Level

Online instruction at the higher education level has become increasingly more popular both with universities and with students. For universities, it is considered a financial “cash cow,” with similar tuition charges to students as on site/ground, but without the overhead cost of brick and mortar classrooms, utilities, parking lots and often utilizing lesser qualified instructors. For students, it provides a means of having their classroom and instruction at home on their computer without having to take the time to drive to class in often heavy traffic circumstances and pay a parking fee.

As online instruction becomes more popular, often completely replacing on-ground classes for both credential and degree programs, critics question the quality of instruction, qualifications and adequate of instructors, academic honesty of some students, and the overall academic rigor compared to on site/ground classes. (Tyler, 2008) As online instruction has been developed, it has encouraged discovery, integration, application, and practices. Instructors need to discover students' learning preferences and styles, integrate technology tools, apply appropriate instructional techniques, put them all into practices, and generate the most suitable method for individuals (Cooper, 2000). Certainly, this instructional effort needs includes applying Multiple Intelligences.

At National University, online courses have replaced on-ground classes as the major proportion of its enrollment in the School of Education. Out of 1,200 students enrolled in Educational Administration, approximately 900 students are taking on-line courses. Each class, with limited exceptions, are rigorous one month classes, and carry 4.5 credit units. Some classes are “hybrid” in design, meaning they are a combination of on-ground (four class meetings) midterm and final exams. Students may be assigned a class project in lieu of the final exam to prepare with the remaining sessions being online.

Students taking these classes are expected to participate in either threaded discussions (students respond once to instructor regarding threaded discussion question and once to a student of their choice), or Class Live Pro (written or oral chat room discussions, where all class members need to meet online at the same time). Students are assessed in these classes by the instructor using established rubrics for threaded discussions, written assignments, projects, individually or with a group of students.

Online classes are continually being revised and updated by lead faculty members for each course to offer state of the art technology, making their classes more relevant to real world situations, sprucing up the E-College platform through colorful power point presentations, interesting and exciting videos, and other ways to generally making the class more interesting and entertaining to students. Examples have included power point presentations, video lectures from well known writers, lecturers and authorities in their field, virtual office and "Class Live Pro," which is a chat room software designed specifically for online courses active chat room discussions.

Students are currently assessed for their performance and subject matter mastery for online courses from threaded discussions, Class Live Pro chat rooms, midterm and final examinations, and individual research papers or projects. Most class online shells have rubrics to measure student performance for threaded discussions, individual research papers and projects. Class Live Pro performance rubrics have yet to be developed, but will as the delivery mode of instruction becomes more popular.

Role of Professors in Utilizing Multiple Intelligences in Online Instruction

What should be the role of instructors in regards to designing on-line instruction utilizing Multiple Intelligence activities? Since the online environment is different from on-ground instruction, research continuously confirms that the instructors' most important role is to motivate students. This means moving from being an intellect on-stage performer to a learning catalyst on-line. This is accomplished through both an asynchronous virtual community between students and their instructors. (Yi, Cornelious, 2004), and a synchronous "class live pro," Although some (usually full-time) skillful instructors will have an innate ability to motivate students on-line, most need comprehensive training to make it happen.

Frequency of interaction and prompt responses to all students is another key to successful on-line instruction for all multiple intelligence activities. Studies have shown that the single greatest factor affecting student satisfaction in distance education course is the amount of interaction that occurs between teacher and students. This happens from the instructor's careful planning of collaborative course activities (Kirby, Elizabeth, 1999). This study is confirmed by some instructors making some fatal mistakes by not introducing themselves on-line at the beginning of the course, or immediately before the course begins. Others do not respond to individual student threaded discussion responses (instead respond to a group of student responses), or delay their response for two or three days.

Students also have the responsibility of transitioning from a passive on-ground learner to a more active online participant and learner focusing on a multiple intelligence of their strength. The question that students should ask themselves is, "Am I ready for an on-line learning environment?" Good on-line students should be ready to share their professional experiences, know how to participate on-line, synthesize ideas, show a sense of humor on-line, and work collaboratively with the instructor and other students (Yang, Cornelious, 2002)

Are universities able to assess quality teacher and school administrator candidates on-line as effectively and accurately as student personal contact and assessment? Students at National University can meet almost all of their state license and Master's Degree requirements through on-line classes utilizing appropriate multiple intelligence activities. Students are assessed and evaluated similarly to traditional on-ground instruction, i.e. midterm and final exams, research papers and projects, and from the quality of their threaded discussions and/or chat room discussions. The only exception where students are not evaluated is for on-line courses are administrator fieldwork or intern classes, which are strictly on-ground. In these programs, students apply the acquired knowledge and skills from their on-line (or on-ground courses) in their field work projects.

Connecting Higher Education Online Instruction and Teaching Strategies with Multiple Intelligences

When curriculum, instruction, assessment, and pedagogy are viewed through a Multiple Intelligence (MI) perspective, there are a myriad of ways for student to learn. Some online courses offer more options for students to

learn utilizing a variety of Multiple Intelligences than other courses. When MI is the palate, the instructor (professor) relies on her/his wisdom to find the right brush and the right colors to make learning meaningful. (Hoer, 2002). In order to locate the right brush, students should be encouraged to take a "learning styles self-assessment .

Applying Multiple Intelligences in Designing Class Strategies and Activities

According to Armstrong, there are a number of teaching materials and methods available in MI beyond the traditional professor as lecturer mode. For illustration purposes, three specific Multiple Intelligences will be selected applicable for Educational Administration online classes. The first is Linguistic Intelligence, which is typically strong in reading books and literature, communication skills, and writing skills. Class activities that promote these skills may include large and small group discussions, brainstorming in class live pro, chat-room, and threaded discussions among faculty and students and between students. Writing and interactive activities are also alternative activities.

Specific Educational Administration classes in leadership, school law, and the capstone Action Research Project for the Masters Degree all lend themselves well to Linguistic Multiple intelligence. The Action Research Project is particularly applicable to Linguistic Intelligence because of the class requirement of extensive research, identifying clearly stated questions, formulating a hypothesis, focusing on a topic, revising, and reflecting. Linguistic intelligence underscores the potential of students getting their research papers published.

Spatial multiple intelligence also lends itself to the Action Research online class as students prepare their action research paper, because of its emphasis on visualizations, i.e. charts, graphs, diagrams and maps. These are typically found in the appendices of the paper. Bar and line graphs along with pie charts are used for student performance comparisons and pre and post test scores.

Inter-personal and intra-personal Multiple Intelligences also provide exciting possibilities for online classes. Inter-personal Intelligence is extensively applied as students are encouraged to work together in cooperative groups where interpersonal interaction is practiced. Collaboration among peers, peer feedback and tutoring, students presenting to the class in class live pro, and encouragement of group editing are also effective activities.

In Educational Administration fieldwork class, Intrapersonal Intelligence is appropriate where students are involved in independent study, self-paced instruction, individualized projects, personal connections, and self-programmed instruction. Feeling toned moments is particularly exciting to online students in the event of an exciting lecture. The results of their efforts in projects may include posters, timelines, models, power point slides, maps, illustrations, charts, concept mapping, and other visuals.

Involving Students By Identifying Their Learning Styles for Multiple Intelligences

Learning styles are different from Multiple Intelligences, in that learning styles are different approaches to learning. Examples are visual (learn through seeing), auditory (learn through listening), and tactile/kinesthetic (learn through moving, doing, touching). According to Gardner**,** Multiple Intelligences are seven different ways to demonstrate intellectual ability (Gardner, 2006). Each child and adult possesses and can develop all seven intelligences to a fairly high level of competence, although children and adults show an inclination, i.e. proclivities. Information about learning styles and Multiple Intelligence (MI) is helpful for everyone especially for people with learning disabilities and Attention Deficit Disorder(ldpride.net).

People who learn their learning style may help themselves develop coping strategies to compensate for their weaknesses and capitalize on their strengths. They can participate in an interactive assessment of their learning style/MI, and practical tips to make their learning style work (Armstrong, 1994). There are many Multiple Intelligences and learning style assessments for online instructors to identify Multiple Intelligences and learning styles for students. Below are sample questions to determine a student's true Multiple Intelligence:

Multiple Intelligences Example Test

"Where does your true intelligence lie? This quiz will tell you where you stand and what to do about it. Read each statement. If it expresses some characteristic of yours and sounds true for the most part, jot down a "T." If it doesn't, mark an "F." If the statement is sometimes true, sometimes false, leave it blank.

1. _____ I'd rather draw a map than give someone verbal directions.
2. _____ I can play (or used to play) a musical instrument.
3. _____ I can associate music with my moods.
4. _____ I can add or multiply in my head.
5. _____ I like to work with calculators and computers.
6. _____ I pick up new dance steps fast.
7. _____ It's easy for me to say what I think in an argument or debate.
8. _____ I enjoy a good lecture, speech or sermon.
9. _____ I always know north from south no matter where I am.
10. _____ Life seems empty without music.
11. _____ I always understand the directions that come with new gadgets or appliances.
12. _____ I like to work puzzles and play games.
13. _____ Learning to ride a bike (or skates) was easy.
14. _____ I am irritated when I hear an argument or statement that sounds illogical.
15. _____ My sense of balance and coordination is good.
16. _____ I often see patterns and relationships between numbers faster and easier than others.
17. _____ I enjoy building models (or sculpting).
18. _____ I'm good at finding the fine points of word meanings.
19. _____ I can look at an object one way and see it sideways or backwards just as easily.
20. _____ I often connect a piece of music with some event in my life.
21. _____ I like to work with numbers and figures.
22. _____ Just looking at shapes of buildings and structures is pleasurable to me.
23. _____ I like to hum, whistle and sing in the shower or when I'm alone.
24. _____ I'm good at athletics.
25. _____ I'd like to study the structure and logic of languages.
26. _____ I'm usually aware of the expression on my face.
27. _____ I'm sensitive to the expressions on other people's faces.
28. _____ I stay "in touch" with my moods. I have no trouble identifying them.
29. _____ I am sensitive to the moods of others.
30. _____ I have a good sense of what others think of me.

(http://www.spannj.org/BasicRights/appendix_b.htm)

Multiple Intelligence Scoring Sheet

Place a check mark by each item you marked as "true." Add your totals. A total of four in any of the categories A through E indicates strong ability. In categories F and G a score of one or more means you have abilities as well.

A	B	C	D	E	F	G
Linguistic	Logical-Mathematical	Musical	Spatial	Bodily-Kinesthetic	Intra-personal	Inter-personal
7 ___	4 ___	2 ___	1 ___	6 ___	26 ___	27 ___
8 ___	5 ___	3 ___	9 ___	13 ___	28 ___	29 ___
14 ___	12 ___	10___	11___	15 ___		30 ___
18 ___	16 ___	20___	19___	17 ___		
25 ___	21 ___	23___	22___	24 ___		
Totals: ____	____	___	___	___	____	____

(http://www.spannj.org/BasicRights/appendix_b.htm)

Application of Multiple Intelligences To Online Instruction

There is no question that online instruction is gaining in popularity in both higher education and virtual high schools because of the access convenience to students, compared to on-site classes. However, there is some question as to how much instructors will utilize Multiple Intelligences in delivering online instruction that meets every student need and capitalizes on their strengths, which is possible for on-site instruction. Instructor utilization will depend on both the individual institution of higher education and instructor commitment to utilizing Multiple Intelligences theory for online class instruction. It certainly offers students a greater chance for success than utilizing a single measure of intelligent quotient (IQ) or student test taking skills.

Another question is how will instructors deliver Multiple Intelligences instruction to 25 or more students for an online course in a previously packaged and prepared course shell curriculum? While certainly a new challenge for instructors, it should start with instructors surveying student multiple intelligent by administering a Multiple Intelligences test similar to the above example. Following an assessment of student Multiple Intelligences strengths and weaknesses, students should be given a choice of course activities that matches their strengths. For example, students who have strength in Linguistic multiple intelligence should appropriately be assigned a written research report for the class capstone assignment.

How will instructors assess individual student performance, using different Multiple Intelligences, when it comes to posting their course grade? Instructors will assess student performance by the agreed on assessment activities based on the student multiple intelligence strength(s). Examples may include essay midterm and/or final exam(s), student research project, oral presentation on class live pro, etc.

How will instructors be sufficiently trained to provide differentiated instruction online to meet multiple student needs? The sufficiency of training depends largely on the institution of higher education (IHE) commitment, and enlisting only the instructors genuinely interested and committed to online instruction. Training may include familiarity with Multiple Intelligence theory, differentiated instruction, and assessment of student performance in each course. Instructors not interested nor confident in their ability to teach online classes should never by coerced by IHE's into teaching online classes.

One significant feature of MI is that it transforms the role of the teacher. In traditional courses, teachers typically rely on – are often tied to – text books and other mandated curriculum materials. In these situations, the name of the game is often scoring well on standardized tests, period. Naturally, then, materials are purchased which prepare students for the tests; the closer the match between the curriculum and what is tested, the "better" the curriculum. Aside from the losses to students – which are considerable – this approach also takes a heavy toll on teachers. How much fun can it be to read from a script all day? What's the message to us about our competencies when everything is set out and predetermined by a faraway publisher? (www.newhorizons.org › ... › multiple intelligences).

Conclusion

The future use of Multiple Intelligences to higher education online instruction holds much promise because it provides a legitimate form of differentiated instruction to meet the individual needs of adults to assure their success for online courses. Furthermore, it provides alternative means for instructor assessment of student performance based on the strengths of students rather than relying on a traditional IQ. However its utilization success for differentiated instruction will depend on the level of commitment and training by instructors to implement Multiple Intelligences.

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