

Connecting *Multiple Intelligence* to the Process of Teaching and Learning

Teaching for me implies designing environments that impact learning. And, by learning I include all dimensions, such as academic, social, ethical, and thinking etc. As an advance organizer for the reader of this article, keep in mind that I am not arguing for a best way of teaching or of learning. I simply want to argue the value of Howard Gardner's work on Multiple Intelligence (MI) as a useful patch in the boundary free quilt-work of teaching and learning.

Before I start, I realize that educators/researchers exist who do not support Gardner's work...such as John Hattie. And, I understand their 'take' on MI...that MI does not directly have a measureable effect size on student academic learning. And they are right. And in the same breath, somewhat naïve. (If I upset them a bit they are more likely to read on...even if I'm wrong.)

In a recent chapter I was asked to write for the *Wiley Handbook of Teaching and Learning* (Hall et al., 2019) titled '*What Effect Size Does Not Tell Us*', I respectfully critique Hattie's use of effect size research. Note that my Ph.D., was a meta-analysis so I'm familiar with the concept of 'effect size'. Effect size, or the power of an innovation to impact a change, is the statistic employed in a meta-analysis. I have explained effect size to eleven and twelve year olds...and they get it. As a practical example, a chain saw has more power to reduce the size of a plank of wood than sandpaper. In terms of the 'effect' of taking off wood, the chain saw wins; however, what if the effect we are looking for is a 'smooth finish'? Then sandpaper wins. In education, Mind Maps are more powerful to organize information and to aid memory than wait time in questioning. But what if the issue is 'safety' in the classroom. Then providing time to think before having to answer a question would win...especially if we also provided a chance to discuss with a partner before responding publically. You can see how easily we can misuse 'effect size'.

So, now you have an idea of why I am arguing for a better grasp or positioning of Multiple Intelligence and to argue why I value Gardner's work in rethinking what we mean by 'intelligence'.

I often share, when asked about the best way to teach, that you will most likely find Ponce de Leon's fountain of youth at about the same time you find the best way to teach. I do not know the best way to teach. Tangentially, just like artists can be great artists and not use 'red', teachers can be great teachers and not put students into groups...or use the thinking behind Multiple Intelligence. Of course, artists may be even greater painters if they did include red in their palette. And ditto with teachers in terms of adding structuring groups effectively into their instructional repertoire and also attending to the ideas supporting Multiple Intelligence in teacher decision making.

Of course, in the final analysis, as a professional teacher, you have to ask yourself whether or not MI should be on your teacher 'palette'. And tangentially, should you be able to explain, if a parent or student asks, why or why not?

In this brief article, I will also argue that 'teaching effectively' should be considered as an additional intelligence...an intelligence that equally respects all intelligences. Additionally, I will position the inquiry into the multiple ways of being intelligent re Garner's work into the delightfully complex process of teaching and learning. I will start by creating a space of conceptual discomfort by arguing that you will struggle to answer 'all' three questions below. You will most likely get the first question.

1. What is meant by the concept 'fact'?
2. What is meant by the concept 'concept'?
3. What is the relationship between facts and concepts?

To balance my arrogance (of saying you can't answer those three questions) with a wee bit of humility, I was asked by a Bachelor of Education student back in 1984, while I was just finishing my Ph.D., for the meaning of 'concept'. Keep in mind that I was teaching Bruner's Concept Attainment strategy at the time. I started to talk, stammered and realized I had no idea. So I said, *"This is embarrassing. I've been using that word for years and I'm not sure how to define 'concept'. And come to think of it, now I'm now not sure what is meant by fact. Next class we will all find out."* I called Bruce Joyce. His answer is at the end of the next paragraph

In 1954 Herbert Blumer wrote that we can classify concepts into two types: (1) definitive...those we do not argue about (e.g., truck, rainbow, cow, proper fraction, chemical change, tornado) and (2) sensitizing...those concepts we will argue about...concepts that no one person owns as 'the' definition. Examples would be love, motivation, critical thinking, democracy, and intelligence. So, you can see from Blumer's perspective that no one-person owns the definition of intelligence. This 'not owning' is delightful in that it opens the door to indefinitely explore the concept of intelligence; much like the concept 'love'. (And here is the answer re 'concept'. By Jerome Bruner argues that a concept must have a label, a definition, and at least two or more examples with the same critical or essential attributes. Can you see why 'most' proper nouns are not concepts (e.g., Dublin, Toronto, France, José, and Maria). Is Australia a concept? How much would you bet that you know for sure? Valentines Day and Catholic are concepts. So some proper nouns are concepts. Multiple Intelligence is a concept; Gardner is working to shift MI from a sensitizing concept to a more definitive concept. The bottom line is that MI is still a theory.

The missing think in the above paragraph is that I've seldom (actually never) found anyone that can explain what is meant by a concept, a fact and the relationship between concepts and facts. (*Feel free to insert opinion or a question in place of fact.*) Of course, you should step back and consider whether or not it matters whether or not you understand 'concept' 'fact' and their 'relationship'. That said, is it possible to

make a statement or ask a question in the absence of concepts? Answer, “No”. Concepts are the building blocks of language (of facts, questions, statements, etc.)

I agree that the above paragraph is boring and one you should keep by your bed to assist with falling asleep. But, beware ‘the coma’. Some who’ve read it have never recovered

I’ll now shift to positioning the concept of ‘multiple intelligence’ into the delightfully complex process of teaching and learning; this next part of my argument for teaching being an additional intelligence. First, I’ll switch the idea of intelligence into the idea of ‘teaching expertise’. The earlier determination of intelligence (g) was a number, “*Her intelligence score is 126.*” That said, David Perkins and Robert Sternberg (professors at Harvard) report that this general intelligence number is a poor predictor of expert behavior. Perkins’ argues that expertise depends on four factors: (1) a wide range of experience and knowledge in multiple domains where one collects patterns; (2) constant reflection to create and connect patterns; and (3) a large repertoire of methods to respond to those patterns. So, we can start to sense that focusing on ‘multiple intelligences’ connects to having a wide range of experiences in multiple domains.

In terms of ‘teaching’, an expert teacher makes wise decisions about powerful ways to engage students in learning. And concomitantly, students have diverse ways in which to approach learning. From my 47 years of teaching experience, expert teachers understand the interactive/integrative nature of instructional methods and how to select those methods from an extensive repertoire of methods that most effectively meet the existing demands of the classroom...of their students. Perhaps more importantly, they have an ever increasing number of ‘lenses’ that guide their thinking related to what methods to select and how to integrate them to maximize student learning. Multiple intelligence is one of many lenses that guide teacher thinking and action. Below I illustrate how I classify Multiple Intelligence.

Experts will understand that certain methods are less complex and less powerful than other methods. Key here is that ‘less complex and less powerful’ does NOT mean they are less important. We can label the least complex and powerful methods as instructional skills. And, although they are the least powerful they are key to implementing the more complex methods that I will label instructional tactics (mid-complexity) and strategies (the most complex).

Note: the above classification of ‘skills’, ‘tactics’ and ‘strategies’ plays out in other areas as well. For example, when building a house, the skills of hammering, sawing, measuring are key to enacting the tactics of constructing and framing the foundation that collectively ‘skills’ and ‘tactics’ are key to enacting the blueprint (the strategy). So in education, the skills might be framing questions, using wait time, responding to an incorrect response, suspending judgment, discussing the object and purpose of the lesson. Tactics might be Think Pair Share, Venn diagrams, Place Mat, Examining Both Sides of an Argument (EBS), Ranking Ladder, and Time Lines. Strategies might

be Group Investigation, Mind Maps, Concept Maps, and Academic Controversy. Strategies are more complex, have steps or phases and are usually developed from theories of learning. For example, Concept Attainment is based on information processing theory and Jigsaw on social theory and Mind Mapping on memory work from brain research.

So where does Multiple Intelligence fit? 'Above I have classified instruction into three categories: skills, tactics, and strategies...all are concepts we can enact. Two more categories 'sandwich' those three categories. The first is 'instructional concepts'. Those are concepts we cannot actually directly 'do' or 'enact'. Examples are 'safety', 'success', 'interest', 'accountability', 'meaningful' etc. You would not say, "Oh, look how that teacher safeties." Safety occurs because you provide time for students to think and share with a partner before sharing with the class. By letting them know you will be randomly calling on them to share their partners thinking, you also enact accountability and active participation (two additional concepts).

The other side of the 'sandwich' is 'instructional organizers'. This category refers to those bodies of research or inquiry that provide the wisdom to make the wisest decisions about what skills, tactics, and strategies to select to maximize learning. Research on autism, the human brain, language acquisition, dyslexia, students at risk, gifted students, taxonomies of thinking, and multiple intelligence are all examples. A lot of researchers spend their career inquiring into these areas that provide key information on how to design learning environments for all students to effectively differentiate our instruction. Gardner would be an example of an intense inquiry into intelligence.

In summary, the key piece to remember, from my experience is that teachers do not 'directly do' multiple intelligence any more than they would 'directly do' brain research. Organizers are not 'strategies' they are guides to wisdom for action. Collectively, that concept, skill, tactic, strategy, organizer interface is key to teaching as an intelligence.

Researchers looking to determine an effect size or impact of organizers such as MI on student learning are somewhat naïve. One would not research the effect of hammers on cutting wood; hammers are not designed to 'cut wood'. Why research something when it was not designed to do what you incorrectly think it should do? If you understand research, that naivety represents a severe problem with validity. This is where Hattie gets caught.

If you want to construct a research project on Multiple Intelligence in education, then look at the impact literatures such as Multiple intelligence, Autism and Brain Research etc., have on teachers' conceptual flexibility (the work of Francis Fuller in the 1960s) and teachers willingness to work to develop an ever-increasing repertoire of instructional methods to meet the diverse needs of a diverse population of learners. *(If you want to discuss this further, please email me at bbennett@oise.utoronto.ca.)*