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A CRITICAL APPRECIATION OF 'MULTIPLE INTELLIGENCES': JUSTIFYING ITS APPLICABILITY IN THE TEACHING-LEARNING SYSTEM

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Abstract:

Generally speaking, 'intelligence' refers to one's ability to learn about, learn from, understand, and interact with one's environment. In the first half of the 20th century, psychometric theorists like Spearman held that intelligence is a basic ability that determines the performance of all cognitive tasks and that it can be measured through IQ tests. On the other hand, the cognitive-contextual theory of intelligence that flourished in the second half of the last century held that cognitive processes operate in various environmental contexts. Among these theorists, possibly the most influential is Howard Gardner, who advanced the theory of 'multiple intelligences' (MI theory) in 1983. Refuting the age-old concept of intelligence as a single entity, Gardner held that there exists a multitude of intelligence, that are independent of each other, and that each intelligence has its strength and limitation. In the perspective of teaching-learning, MI theory recognizes each of the learners' uniqueness in his/her own ability. It holds that each can flourish according to his/her area of strength if given the proper environment and opportunity. This theory makes educators rethink over organizing and reflecting on curriculum, assessment, and pedagogical practices in the classroom. However, the reorganization of the classroom environment based on MI theory has many practical constraints. Teaching-learning of beginners in a specially structured classroom with a few students might be a way out to design the education system according to MI theory. Due to these limitations, MI theory has remained, among significant parts of the academic fraternity, a theory only and not practicality.

1.0. Introduction

In common parlance, the word 'intelligence' is used to refer to one's ability to learn about, learn from, understand, and interact with one's environment. However, human beings have been trying to understand the meaning and nature of

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intelligence since the times of Plato. In each and every occasion, psychologists came up with variegated definitions of intelligence when they were asked to do so. Many of them mentioned higher-level thinking processes and problem-solving as important aspects of intelligence. In 1986, metacognition and executive processes, the interaction of knowledge with mental processes, and the cultural context etc. were also added as elements of intelligence. In as late as 1986, controversy arose about the structure of intelligence, whether it is a single ability or amalgamation of many abilities (Sattler, 2001; Sternberg and Kaufman, 1998). In the first half of the 20th century, the followers of the psychometric school of intelligence included Spearman, Thurstone, Guilford, and Cattell and Horn, among others. Spearman (1927) spoke of only one mental ability, called 'general intelligence' (g factor), which, in collaboration with some specific ability (s factor), performs any mental task. Thurstone (1924) spoke of "*Primary Mental Abilities*" to challenge Spearman's unitary concept of intelligence. Horn and Cattell (1966) came out with their theory of 'fluid' and 'crystallized' intelligence. Then using a new approach of factor analysis, Guilford (1967), in his SOI, spoke of at least 150 possible abilities, often correlating with each other.

In the second half of the last century, cognitive-contextual theorists of intelligence, such as Sternberg (2000) held that intelligence has many facets and is a hierarchy of abilities, with g factor at the top and more s factors at lower levels of the hierarchy. Among the psychologists of this school, the most revolutionary seems to be Howard Gardner, who advanced the concept of 'multiple intelligences' (MI theory) in 1983. In the introduction to the tenth anniversary edition of his classic work "*Frames of mind: The theory of multiple intelligences*", Gardner (1993a: p. xix) wrote: "...there exists a multitude of intelligences quite independent of each other; that each intelligence has its own strengths and constraints...". In his "*Intelligence reframed: Multiple intelligences for the 21st century*", Gardner (1999: p. 33) defined intelligence as "... a bio-psychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture". Till date, Gardner has confirmed eight basic types of intelligence, not claiming that this is a complete list.

1.1. Multiple intelligences as postulated by Gardner (1999)

- Linguistic intelligence: It is sensitivity to sounds, rhythms, the meaning of words, and different functions of language. Linguistic intelligence-dominant pupils tend to learn through discussions, debate, creative writing, and playing word games.
- Logical-mathematical intelligence: It refers to the learners' capacity to discern logical or numerical patterns, ability to handle chains of reasoning. Children with this intelligence use numbers and logic to understand and solve problems.
- Musical intelligence: It is the ability to produce and appreciate rhythm and musical expression. Musical-smarts learn best when there is a musical beat to the information provided to them.
- Bodily-kinesthetic intelligence: It is the ability to control body movements and to handle objects skillfully. People having this intelligence learn well by doing, touching, and moving things. Dancers and athletes possess this type of intelligence.

- Spatial intelligence: It is the ability to perceive the visual-spatial world accurately. Spatial learners are comfortable with charts, graphs, maps, tables, illustrations, and anything that is related to sight. Navigators, sailors possess such intelligence better.
- Interpersonal intelligence: It is the ability to discern and respond appropriately to moods, temperaments, and desires of other people. Salespersons are the best example of people having such intelligence.
- Intrapersonal intelligence: It is access to one's own feelings and the ability to discriminate among them; the knowledge of one's own strengths and weaknesses.
- Naturalist intelligence: Children having this intelligence can recognize plants and animals, can make a distinction in the natural world.

After 1993, subsequent research prompted Gardner (ibid) to speculate that there may be two other types of intelligence – 'spiritual' and 'existential' (the ability to contemplate big questions about the meaning of life). However, Gardner is not, right now, ready to add them to the list of intelligence. The next candidate for inclusion in Gardner's list is 'moral intelligence' which refers to concern with those rules, behaviours, and attitudes that govern the sanctity of human life, and in many cases, the sanctity of any other living creature and the world they inhabit (ibid: p. 70). Just a few years ago, in an interview with Big Think, Gardner (2016) mentioned that he is considering adding to the list 'teaching-pedagogical intelligence' *"which allows us to be able to teach successfully to other people"*.

Gardner believes that these bits of intelligence have biological bases and are separate abilities on evidence that due to brain damage or any other illness, for example, a Cerebrovascular accident (commonly termed as stroke), the victim often loses functioning in one ability, such as the loss of speech. However, it does not affect the functioning of other abilities. Also, any individual may excel in one of these eight abilities but may have no noteworthy contribution in the other seven areas. These intelligences are used simultaneously, and they complement each other as individuals learn a skill or solve problems in a given context. Due to heredity, training, or in all probability, a constant interaction between these factors, some individuals will develop certain intelligence better than others; but every normal individual should develop each type of intelligence to some extent given but a modest opportunity to do so.

1.2. Multiple intelligences and learning styles: Are both the same?

Both the theories of multiple intelligences and learning styles have been put forward in an attempt to interpret individual differences and uniqueness of each learner. Both combine insights from biology, anthropology, psychology, medical case studies, and an examination of art and culture. Yet much confusion is seen in the educational fraternity regarding differences between these two terms. Simply put, multiple intelligences are different types of 'abilities', while learning style is the preferred mode of receiving and interacting with information in a learning situation. While multiple intelligences centre on the content and products of learning, learning styles are concerned with differences in the process of learning.

Silver, Strong, and Perini (1997) remarked that multiple intelligences and learning styles complement one another; without multiple intelligences theory, style is rather abstract; and without learning styles, multiple intelligences theory proves unable to describe different processes of thought and feeling; together they form an integrated picture of human intelligence and individual difference. Prashnig (2005) held that multiple intelligences must be understood more as the 'output' function of information intake, knowledge, and skills – mathematical, musical, linguistic etc. whereas learning styles can be seen as explaining information 'input' capabilities of human beings. Students with similar intelligence factors may have vastly different learning styles, based on their biological make-up and individual conditioning. It is not hard to believe that a learner with dominant bodily-kinaesthetic intelligence may like to learn through musical beats or looking at charts or diagrams.

2.0. Assessment of multiple intelligence

Gardner believed that traditional intelligence testing instruments are biased in favour of two different kinds of intelligence – logical-mathematical and linguistic. Individuals, who are strong in these kinds of intelligence, are tagged as successful; and those who have problems with these domains are labeled as under-achievers. He held that the technique for determining an individual's dominant intelligence is to expose him/her to a complex situation that can stimulate several forms of intelligence or provide him/her a set of materials drawn from different forms of intelligence and determine towards which one he/she gravitates and how deeply he/she explores it. Gardner proposed three important criteria of the tool for the assessment of multiple intelligences:

- The test should be intelligence-fair;
- It should be developmentally appropriate; and
- It should be linked to recommendations.

However, at present, there is no such tool that may be considered as absolutely accurate for the assessment of multiple intelligences. The best-known instruments, till date, to assess multiple intelligences are Teele Inventory of Multiple Intelligences (TIMI), developed by Teele in 1992[‡], and Multiple Intelligences Developmental Assessment Scales (MIDAS)[§], developed by Shearer in

[‡] Teele Inventory of Multiple Intelligences (TIMI), developed by Teele in 1992, is a forced-choice pictorial inventory, containing 56 pictures of panda bears that represent characteristics of seven intelligences, postulated by Gardner. This inventory allows 28 chances to a respondent to select between two choices. Different intelligences are matched with one another and the respondent has eight different opportunities to select each of the seven intelligences. The maximum possible points for each intelligence is 8. While selecting between the choices, there is no right or wrong answer. TIMI has been used from preschool to university level to identify the dominant intelligence an individual possesses.

[§] The Multiple Intelligences Developmental Assessment Scales (MIDAS), developed by Branton Shearer in 1994 according to standard psychometric procedure, is a research-based self-report measure of intellectual disposition for people of all ages. It consists of seven main scales and 24 subscales and provides an efficient method for obtaining a rich and descriptive understanding of a person's multiple intelligences profile. MIDAS results are given back to the person in a useful way to help him plan his educational career, putting the attention on areas of strength and possibilities.

1994. But neither of these tools can indicate what intellectual strengths a responder possesses.

2.1. Future schools based on MI theory

Gardner (1993b) advocated for individual-centered education. As he believed that individuals are unique, education should be planned according to individual differences among the learners. Based on MI theory, Blythe and Gardner (1990) sketched the features of future schools. These schools should dedicate themselves to foster students' deep understanding of the core knowledge of disciplines; should encourage students to use their knowledge to solve problems and complete tasks; and should promote students' efforts on individual projects. In such schools, students will study traditional subjects in untraditional ways. In almost all areas, there would be projects. While speaking on the issue, Armstrong (2000) mentioned the following dimensions of such schools:

- The classrooms will provide a learning environment to all students with easy access to tools that stimulate each of the intelligence in them;
- The curriculum will provide opportunities for each student to explore and develop all intelligence;
- The educators will use different kinds of intelligence as tools of instruction; and
- The students will work together in multi-age and multi-ability groupings.

2.2. The novelty of MI theory

In MI theory, Gardner has made two essential claims:

- The theory provides "*a new definition of human nature, cognitively speaking*" (Gardner, 1993a: p. 44).
- People have a unique blend of intelligence and the big challenge facing the deployment of human resources "*is how to best take advantage of the uniqueness conferred on us as a species exhibiting several intelligences*" (ibid: p. 45).

The web-article "*A Crash Course on Multiple Intelligence Theory*" (2020) mentioned that Gardner had debunked the notion that intelligence can be measured on a single scale. He asserted that each one of us possesses a unique mixture of at least eight intelligences. People, hitherto under-esteemed, undervalued, and underdeveloped—as measured with narrow intelligence tests – actually may possess enormous talent. Our traditional schools and culture have been focusing mostly on nurturing either linguistic or logical-mathematical intelligence, but we should also place equal attention on individuals who are blessed with other intelligence and who may enrich the world with their multi-dimensional abilities. Many of these kids end up, being labeled 'learning disabled', or simply 'underachievers', and their unique ways of thinking and learning go in vain in the traditional linguistic or logical-mathematical classrooms.

2.3. How MI theory can benefit teaching-learning

Many educators and researchers have been getting lured to MI theory, thinking that it will bring revolutionary changes in the end-product of the

education system. One such researcher, Campbell (1991) commented that MI theory offered a theoretical foundation of mind and bolstered beliefs about students' competences. According to Smith (2008), Gardner did not initially spell out the implications of his theory for educators in any detail. Subsequently, he looked more closely at what the theory might mean for schooling practices in his later research works as in *"The Unschooled Mind"*, *"Intelligence Reframed"* and *"The Disciplined Mind"*. From these works, three particular aspects of Gardner's thinking need to be noted:

- A broad vision of education: All eight forms of intelligence are needed to live life to its fullness. Teachers, therefore, need to attend to all intelligence, not just the linguistic or the logical-mathematical intelligence that has been their traditional concern.
- Developing local and flexible programmes: Gardner's interest in *"deep understanding"*, performance, exploration, and creativity are not easily accommodated within an orientation to the *'delivery'* of a detailed curriculum, planned outside the immediate educational context. An *"MI setting can be undone if the curriculum is too rigid or if there is but a single form of assessment"* (Gardner, 1999: p. 147).
- Besides these, MI theory might have the following functional implication in the teaching-learning situation:
- Cultivation of desired capabilities: *"Schools should cultivate those skills and capabilities that are valued in the community and the broader society"* (Gardner, 1998), as edited in A. Woolfolk's *"Readings in Educational Psychology"* (2nd ed.: pp. 64-66).
- Approaching a concept, subject matter, and discipline in a variety of ways: Schools try to cover too much. *"It makes far more sense to spend a significant amount of time on key concepts, generative ideas, and essential questions and to allow students to become familiar with these notions and their implications"* (ibid).
- Personalization of education: *"At the heart of the MI perspective – in theory and in practice – inheres in taking human difference seriously"* (ibid).

Kornhaber (2001: p. 276), associated with Project Zero, held that Gardner's theory helped educators with a conceptual framework for reorganizing and reflecting on curriculum, assessment, and pedagogical practices. This theory also led them to develop new approaches that might better meet the needs of diverse learners with a bunch of intelligences. Hoerr (2002) indicated that this theory has two powerful lures to attract educators. First, when viewed through MI lens, more children succeed in life. The second feature of this theory – one which may not be so obvious – is that it transforms the role of the teacher; he does no longer explain the topic; rather, he becomes a guide to the learners. This theory will also give additional impetus to fostering intrinsic motivation (Gardner and Avery, 1998). According to Giles, Pitre, and Womack (2003), instructional models, such as projects and collaborative learning, may be easily integrated into lessons on the basis of MI. Collaborative learning will allow students to explore their interpersonal intelligence, while project-based learning may help structure activities designed to cultivate the eight forms of intelligence. Armstrong (1994) speculated that the application of MI might be helpful for the students to learn different subjects like history, chemistry, mathematics, and languages through

interviewing, surveying, building, dramatizing, computing, problem-solving, and such other numerous ways. Again, MI theory can influence students' behavioural aspects in the classroom by creating an environment where the needs of the individual learners are recognized and attended to throughout the school hours. It also has broad implications for team teaching (Armstrong, 2000). The web-article "*A Crash Course on Multiple Intelligence Theory*" (2020) mentioned that this theory has something to offer for adult learning. Many adults might have already engaged in jobs that do not make optimal use of their dominant intelligence. Gardner's theory will allow them to weigh their potentials that they had left behind long ago, such as love for art or drama or wild-life photography. Now they will have a chance to develop their potential through courses or programmes of self-development and bring them self-actualization.

3.0. Criticism of MI theory

Gardner's MI theory has not been accepted in the scientific fraternity without question. Some major criticism against MI theory are listed below:

- Several of the intelligence postulated by Gardner, such as musical or bodily-kinaesthetic abilities, are really 'talents' or personality traits. Other intelligence are not novel ideas (Woolfolk, 2008: p. 143). For example, Thurstone (1924) mentioned of verbal and spatial abilities long before Gardner did.
- These eight forms of intelligence are not independent, as Gardner claims; correlations have been found among them. For example, logical-mathematical and spatial intelligence are highly correlated (Sattler, 2001). Recent developments linking musical and spatial intelligence prompted Gardner (1998) to consider that there may be connections among the intelligence.
- In this theory, Gardner is not expanding the definition of 'intelligence'; rather, he denies the existence of intelligence, as it is traditionally understood (Haas, 2005).
- For those researchers who have traditionally viewed intelligence as a construct, measured by intelligence tests, Gardner's theory may prove problematic. They can still argue for the existence of g factor, as upheld by Spearman.
- This theory originated mostly out of Gardner's own intuition and reasoning rather than out of empirical research.
- Till date, no properly worked-through set of tests could be constructed to identify and measure these intelligence.
- Researchers point out that Gardner's list of intelligence resembles the lists given by researchers in the field of learning styles, working styles, personality styles, human archetypes, and the likes.
- Recent cognitive neuroscience researches do not support MI theory. Waterhouse (2006: pp. 207-225), held that "*the human brain is unlikely to function via Gardner's multiple intelligences...it is unlikely that each of Gardner's intelligences could operate via a different set of neural mechanisms*".
- It holds little merit to classify learners and labeling them as linguistic, kinaesthetic, spatial learners, and so on. In other words, in the goal to reach all students, there is a certain danger in stigmatizing students. If we label a learner to be bodily-kinaesthetic because he works on cars or plays football, it could simply be his socialization that led him to that end.

- The most common critique of MI is that it denies the fact that there are smarter students than the theory presupposes; and that all students need the same skills of reading, writing, and arithmetic.
- The premise of MI theory that human intelligence is a collection of specialist abilities has been criticized for not being able to explain human adaptation to most, if not all, environments in the world (Mithen, 2005; and Frohlich, 2009).
- Gardner believes in individuals/groups to be high or low in a specific intelligence. The first of these are the geniuses, such as Yehudi Menuhin with exceptional musical intelligence; Babe Ruth with outstanding bodily-kinaesthetic intelligence; and Barbara McClintock with superb logical-mathematical intelligence (Gardner, 1993b). However, many of these figures excelled in more than one domain: Barbara McClintock's work spanned the logical-mathematical and natural domains (pp. 19-20), Virginia Woolf's, the linguistic and intrapersonal domains (pp. 24-25), and Albert Einstein's, the spatial and the logical-mathematical domains (pp. 104-105). Thus, Gardner's claim that individuals achieve excellence in one specific domain gets threatened.
- Another objection to Gardner's view is that the talents of many prodigies simply do not fit the categories of MI theory; instead, they reflect the importance of specific enculturation. Talent at chess is an example at hand.
- Again, it is not always true that a child will show his/her bent to a particular intelligence since the beginning of his/her life. Einstein's case may be taken as an example to prove the point that he showed no promise, during his school life, of his extraordinary logical-mathematical intelligence, until his later teens.

4.0. How far is MI theory applicable in a real teaching-learning situation?

There is no doubt that MI theory will expand teachers' thinking about diverse abilities of learners, but there are certain practical disadvantages of the theory while applying it to real teaching-learning situation: These constraints are pointed below:

- First of all, the theory is not founded on the strong empirical ground. Gardner (1993a) himself confessed that MI *"has not been subjected to strong experimental tests... Within the area of education, the applications of the theory are currently being examined in many projects."* In as late as 2004, Sternberg and Grigorenko complained that there were no validating studies for multiple intelligences, and in reply, Gardner (2004) stated that he would be *"delighted were such evidence to accrue"*. Due to the lack of empirical evidence, MI theory is sometimes cited as an example of 'pseudoscience' (Ploeg, 2016). Charles Murray and Richard J. Herrnstein in *"The Bell Curve"* in 1994 called Gardner's theory *"uniquely devoid of psychometric or other quantitative evidence"* (Eberstadt, 1999).
- Gardner (2006) himself stated that there is no 'right' way to apply MI theory in the classroom since it is a descriptive theory of intelligence and not a pedagogical framework. Implementing this theory as a framework in the classroom is no simple matter, educators need to be creative in their teaching, learning, and assessment. It is a cause of concern that not all school teachers are adequately trained to incorporate MI in the classroom. Some of the applications of Gardner's theory have been described as 'simplistic' and Gardner said that he felt 'uneasy' with the way his theory has been used in schools (Revell, 2005).
- Traub's (1998) article noted that Gardner's theory had not been accepted by most academics in the field of intelligence or teaching. Even though many teachers and schools are enthusiastic about Gardner's ideas, there is not enough strong research evidence that, adopting a multiple intelligences approach will enhance learning. In

one of the few carefully designed evaluations, Callahan, Tomlison, and Plucker (1997) found no significant gains in either achievement or self-concept of the students who participated in START, a multiple intelligences approach to identify and promote talent in students who were at risk of failing.

- MI theory has been grossly misused by educators. Gardner (1998), as edited in A. Woolfolk's *"Readings in Educational Psychology"* (2nd ed.: pp. 64-66), hinted at the following misuses of MI theory when moulded in school practices:
- Trying to teach all concepts or subjects using all intelligence, whatever inappropriate it might be: *"There is no point in assuming that every subject can be effectively approached in at least seven ways, and it is a waste of effort and time to attempt to do this"*.
- Assuming that it is enough just to apply a certain intelligence, no matter how we use it: For bodily-kinaesthetic intelligence, for example, *"random muscle movements have nothing to do with the cultivation of the mind"*.
- Using intelligence as a background for other activities: Such as playing music while students solve mathematics problems. *"The music's function is unlikely to be different from that of a dripping faucet or humming fan"*.
- Mixing intelligence with other desirable qualities: For example, interpersonal intelligence *"... is often distorted as a license for cooperative learning"* and intrapersonal intelligence *"... is often distorted as a rationale for self-esteem programmes"*.
- Direct evaluation or even grading of intelligence without regard to context: *"I see little point in grading individuals in terms of how 'linguistic' or how 'bodily-kinaesthetic' they are"*.

Now-a-days, researchers have been spending much effort to find out whether there exists any relationship between any particular type of intelligence of learners and their level of academic achievement in any particular subject. It could be assumed that a learner with strong logical-mathematical intelligence will shine in mathematics or such related subjects that deal with logic and number. Contrastingly, a learner possessing bodily-kinesthetic intelligence to the maximum will easily become an athlete; or even a learner with strong interpersonal intelligence will end up being a successful political leader or a salesman. However, such linear correlation does not always occur. The survey of the literature shows that linguistic intelligence, for instance, might have a positive impact on academic achievement in language or speaking or reading skills of the respondents. Some studies found that logical-mathematical or any other intelligence, having no relation with linguistic acumen, had the same impact on the language acquisition skill of the learners. Some instances of such studies may be cited here:

- While the study of Fayazi-Nasab, and Ghafournia (2016) in Iran found a significant correlation between verbal-linguistic intelligence and reading ability of the respondents, the study of Mohammadi, Abidin, and Ahmad (2012), conducted in Malaysia, revealed that interpersonal intelligence had the strongest significant positive influence on language achievement of learners.
- The study of Cheong, Loong, Cheng, and Rajangam (2007) with pre-university level students in Malaysia showed a positive relationship between achievement in English for College Studies I and linguistic and intrapersonal intelligence of the respondents, but the study of McMahon, Rose, and Parks (2004), among fourth-grade students, found that the respondents with higher scores on logical-

mathematical intelligence were more likely to achieve above the grade-level scores in reading comprehension.

- Kandeel's study (2016) in Saudi Arabia showed the impact of spatial, bodily-kinaesthetic, logical, and sometimes interpersonal, musical, and naturalist intelligence on the respondents' mathematics achievement. But Razmjoo (2008) did a study on students taking part in the Ph.D. entrance examination in Iran and found no significant relationship between the respondents' English language proficiency and combination of intelligences in general and types of intelligences in particular.
- Smith (2008) observed that Gardner's MI theory seemed to give a heavy setback to age-old formal education. It is hard to teach one intelligence, not to speak of eight or more.
- Klein (1997: p. 389) argued that MI theory is too broad to tell the teacher how to teach. *"For instance, the knowledge that basketball relies on 'bodily-kinesthetic intelligence' tells a coach nothing about the skills her players need to learn"*.
- Gardner's theory puts us to a dilemma: Is early tutoring a response to early talent, or vice versa? Howe (1990) noted that children with exceptional abilities, explore and practice too much in their area of interest, observe models, and receive tutoring from an early age. In another study, Fowler (1986) found that out of 24 outstanding mathematicians, 21 received special stimulation in mathematics before the age of five, and several of them before the age of three.
- Gardner favours a general education in primary school. His preferences for the middle elementary years are less clear, but he stresses *"early specialization"* in areas chosen by each child and family, and informed by an assessment of his/her intelligence (Gardner, 1993c: pp. 194-196). Later, students would pursue a broader education during adolescence. This preference for specialization in middle childhood needs a subtle kind of streaming. Opportunities for activities of various kinds are not allocated to all pre-school children equally. Choosing specialties on the basis of the 'intelligence' they have acquired by age seven could potentially exacerbate these inequalities (Klein, 1997: p. 388).
- Another problem from a pedagogical perspective is that, in most of the public schools in almost every country of the world, growing class sizes, aggravated by the 'supposed' existence of eight forms of intelligence, and the many levels at which children could operate in each of these intelligences, would heavily increase the workload of the teachers who would have to plan and deliver the educational programme based on MI theory.
- MI theory believes that children learn to identify their own areas of strength. The converse of being 'high' in some intelligence often makes it obvious to become 'mediocre' or 'low' in other intelligence. Students who believe that they are low in an ability often avoid activities that demand it, even when they might learn from the effort (Covington, 1992; Palmquist and Young, 1992).

In connection to the inconveniences mentioned above, it will not be a false claim that MI theory is practically impractical to incorporate into conventional teaching-learning set-up. However, Gardner (1993a: p. xix)) clarified that psychology does not directly dictate education; *"... it merely helps one to understand the conditions within which education takes place."*

5.0. Schools incorporating MI Theory in classrooms

MI theory has lured some educational institutions to restructure their curricula, modes of lesson delivery, and the teaching-learning environment,

keeping this theory in view. A few schools in North America have sought to design classrooms and structure curricula according to multiple intelligences. The Key School in Indianapolis (Blythe and Gardner, 1990), the New City School in St. Louis^{**}, The Hart-Ransom Union School District, and Green Tree East Elementary School in Victorville, California^{††} are examples of schools that have used Gardner's theory in reforming their curricula to make themselves 'individual-centered' schools. In Japan, MI movement has been gaining popularity in the school education sector since 2004. There MI is being incorporated in schools to shape the cognitive pattern of the kids. Grade 1-12 schools, such as Niwatuka Elementary School, Fukushima Prefecture, and Keiwa College^{‡‡} teach the kids science, education, English, and Humanities following MI theory. The Ivy Academy^{§§} is a Multiple Intelligences pre-school based in Beijing, China and this school has been working in areas such as curriculum development and teacher training. In Taiwan, Binmao Elementary School and Binmao Junior High School^{***} in Taitung County implemented MI theory in their school. In India, only a few privately-run schools have accepted MI in teaching-learning since the last decade. These schools include Indus International Schools^{†††}, The Paras World School^{‡‡‡}, located at Gurugram, and the GEAR Foundation^{†††}, among others. Sadhbhavana World School^{§§§}, Kerala, has embraced MI theory to better understand the learning potential and vocational orientation of students. Inventure Academy^{****}, and Oakridge International School^{††††} at Bengaluru, Vidyashilp Academy^{‡‡‡‡}, Canadian International School^{§§§§}, Brigade School^{*****} at Malleswaram, Bengaluru, and JM International School^{†††††}, Dwarka, New Delhi – also follow MI theory to some extent from methodological point of view. XSEED^{†††}, a private company, has been providing tools and training to integrate MI theory with existing CBSE, ICSE, and different State curricula. The Achievers Programme (TAP) ^{†††}, a private organization, has partnered with UK-based MAW Education to bring expertise in MI-based education in India.

At the heart of the MI perspective – in theory, and in practice – inheres in taking human differences seriously. Therefore, one important thing must be kept

^{**} Source of information: <https://www.newcityschool.org/about/multiple-intelligences>

^{††} <https://scholarworks.lib.csusb.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=2159&context=etd-project>

^{‡‡} <https://books.google.co.in/books?id=C-5bI3Kk46QC&pg=PA92&lpg=PA92&dq>

^{§§} <https://www.learn4good.com/schools/china-beijing-international-kindergartens.htm>

^{***} <https://www.researchgate.net/publication/319330896>

^{†††} <https://blog.firstcrayon.com/multiple-intelligences-india-85cea3dd471d>

^{‡‡‡} <http://parasworldschool.com/istreamm/>

^{§§§} <http://www.sadhbhavaschool.org/understanding-by-design.php>

^{****} <https://www.inventureacademy.com/multiple-intelligences-xplored/>

^{††††} <https://www.oakridge.in/blog/gachibowli/5-ways-great-teacher-inspires-love-for-learning-in-children/>

^{‡‡‡‡} <https://vidyashilp.com/vidyashilp-curriculum.php>

^{§§§§} <http://canadianinternationalschool.com/cis/wp-content/uploads/2016/09/CIS-Strategic-Plan-2016.pdf>

^{*****} <https://greycaps.com/theteacher/teachers-day-contest/Vinoda-Harikrishna-Rao>

^{†††††} <https://www.jminternationalschool.com/dwarka/contactus.aspx?enc=cGFnZT04>

in mind that, in order to apply MI theory in the teaching-learning situation, one needs to arrange the whole educational programme – the educational environment and resources – in such a way that intensive individual learning of the children can be possible; that the learning environment can foster students' deep understanding of the core knowledge of disciplines. Organizing such an educational system may be the privilege of only a few rich nations if education be in the public sector there and the government wishes to do so. Only non-governmental schools in India and in other developing countries may offer such 'individual-centered' education, and that is also at the cost of hefty tuition and other fees. Naturally, a classroom with one hundred or nearly that many students, may not even dream of adapting this theory into practice. In almost all the schools where teaching-learning is going on based on this theory, both at nursery and primary level, there are ways, to teach a particular subject as diverse as mathematics or history, that suits each of the eight bits of intelligence. Different types of teaching aids are used there. Co-curricular activities are more education-oriented in these schools, and not a 'break' from education. There are no top-down suggestions from teachers to students about their specific intelligence; rather the 'discovery' of intelligence and actualization of that potential is left to the students, while teachers are left to build the educational environment and assess students' interaction with the created educational ecosystem.

6.0. Endnote

Multiple intelligences of an individual are influenced by certain demographic, socio-economic, cultural, and technological factors. It is not a matter of "*one size fits all*". So why is there so much 'craze' with MI theory-based learning nowadays? Part of the answer may be that many thriving commercial companies are making large profits by providing advice to teachers, tutors, and managers about multiple intelligence-based teaching-learning on 'inflated' claims. As our insatiable curiosity about the learning process persists, we have to conduct more and more action researches, based on the theory of multiple intelligences, to explore its benefits, if there be any, in the actual teaching-learning situation and gain from there.

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