Philosophical Approach in Applying Multiple Intelligence in Teaching and Learning as viewed by Malaysian School Teachers

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Abstract

The multiple intelligence theory had been widely adapted in all areas of education such as in the area of instructional design, construction of learning models and assessments as the philosophy and basis of the multiple intelligence concepts. It allows educators to plan educational programs that will help students to develop based on their innate potentials and to achieve their desired end states in which it helps students in realizing their dreams. Teachers will be able to present the materials of the subject matter in a flexible manner and providing opportunities for students in the classroom to use their dominant strengths and intelligences at the same time. In addition, multiple intelligence approach in education ensures that students learn and retain information of the subject matter longer than other available teaching approaches (Rettig, 2005). In doing so, teachers could gain by expanding their repertoire of teaching approaches and innovative.

Keywords: Multiple Intelligence, Instruction, Profile, Teaching.

The Philosophy of the Usage of Multiple Intelligences

The multiple intelligence theory was originally not developed specifically for the field of education. However, the theory had been widely adapted in all areas of education such as in the area of instructional design, construction of learning models and assessments as the philosophy and basis of the MI theory is a much needed element in overcoming the challenges of educators to meet the needs of students that are 'gifted' in all disciplines. With the constant on-going progress in research, the elements of MI theory had gradually been incorporated by teachers and practitioners of all education levels in their everyday activities in the classroom. MI has since being regarded as a powerful tool that helps in achieving educational goals more effectively (Hopper & Hurry, 2000).

According to Gardner, the MI theory is meant for two educational ends, (1) MI allows educators to plan educational programs that will help students to develop based on their innate potentials and to achieve their desired end states in which it helps students in realizing their dreams and (2) MI helps educators to reach out to more students who are trying to learn, cope and understand important concepts and theories in their selected fields. The use of the multiple intelligences in instructional activities and designs offer students natural and alternative ways of learning and getting students to participant in the classroom community so as to train students to be autonomous learners and be responsible towards their own learning. (Gibson & Govendo, 1999).

Educators of all disciplines had widely accepted the MI theory in their instructional design and curriculum and had acknowledged the positive implications that MI bring to the effectiveness of their instructional strategies and designs. The MI theory not only functions as a solution to the passiveness of the teaching process, but also serves as an organizational tool that facilitates present educational pedagogy (Stanford, 2003). According to Krechevsky & Seidel (1998) in the article by Fasco (2001), MI theory could help educators to be more detailed and specific in their instructional design where teachers could work with the abilities of their students and be flexible in designing their instructional plans to suit the needs of individual students. Krechevsky & Seidel also proposed four implications in teaching using the MI approach: individualizing students' learning, alternative methods in delivering subject matters, project-based or performance-based learning and assessment and art-infused curriculum to generate creativity and problem-solving skills among students.

Students that are exposed to a learning environment that take notice of different domains of intelligence and individual differences will be able to develop and grow in a more holistic manner. With the application of MI theory in instruction, it enables teachers to present the materials of the subject matter in a flexible manner and providing opportunities for students in the classroom to use their dominant strengths and intelligences at the same time nurturing their weaker intelligences and weaknesses (Currie, 2009). Hence, the MI profiles of students hold a significantly crucial role in the MI classroom. Other than that, an MI approach in education ensures that students learn and retain information of the subject matter longer than other available teaching approaches (Rettig, 2005). In doing so, teachers could gain by expanding their repertoire of teaching approaches and innovative teaching strategies. In addition, MI theory is not only suitable to be adapted into normal subject matter classes but also in Islamic religious lessons. According to Ariffin & Ismail (2007), the Islamic religion emphasizes on individual differences which is similar with the basis of the MI theory that respects the uniqueness of each individual.

The Islamic religion also looked heavily upon the idea of fairness and just and believed that each individual should be given equal attention and treatment in the field of education. Islamic advocates believed that the fairness in education involves teaching all levels of students based on their cognitive abilities and learning styles, and that no students should be left behind. This idea and believe is very much alike the philosophy of the MI theory that focused on the individual variations of students in terms of their intelligence profile. Hence, educators have been encouraged and were given appropriate training to conduct religious lessons using the MI approach.

Other than being adapted into designing instructional designs and learning model, MI is also a key element in the area of assessment. Assessment should be an on-going process to monitor the progress of students in the particular field. Educators in recent years had adopted the MI approach in assessment to break free from the rigid system of only focusing on linguistic and logical mathematics intelligences formal examinations that fail to acknowledge students that were more inclined towards other forms of intelligences. In order to successfully assess students' performances, many educators had opted for portfolio and performance-based assessment that deviates from the conventional paper-and-pencul examinations. These alternative forms of assessment had taken account of the philosophy of the MI theory in applying different forms of assessment to match the intelligence type and learning styles of students, so as to ensure that students are able to present their knowledge through their preferred learning method and dominant intelligence. According to Krechevsky & Seidel (1998) in the article by Fasco (2001), there are four principles in designing assessment according to the MI theory:

- In order to be intelligence-fair, assessment should be contextualized to ensure that students are familiar with the subject and the topic of their assessment.
- Assessment should be subjective and not restrictive that they allow students to demonstrate their understanding through various forms and modes.
- Assessment should be able to monitor the progress of students in putting their knowledge to use over time as they develop.
- Assessment plays an integral part in the learning process. Through constant reflection and self-assessment, students should have a better understanding of their own learning and forms of intelligences.

Various programs and projects have been conducted using these guidelines in assessment. Some of the programs include the Key School in Indianapolis, Arts Propel in Pittsburg and Project Spectrum in Boston. These programs had claimed to be successful and had reported positive findings in students' performances after the implementation of the MI approach in the learning process and assessment.

Multiple Intelligence Theory

The gradual progress in educational researches had brought to the existence of an extensive set of literature reviews in the field of education. Education research in the aspect of intelligence had moved into a new era with the emergence of the Multiple Intelligence (MI) Theory proposed by Howard Gardner in his book *Frames of mind* (Gardner, 1983). Howard Gardner, a Harvard's cognitive researcher suggested that that a redefinition of the notion of intelligence would further enhance the understanding of educators on the learning styles of students and how they become successful students (Jordan, 1996). The MI theory no longer restricts intelligence as a single entity which is normally assessed through conventional intelligence tests or instruments such as the IQ score, but a multifaceted one. It is believed that every individual is unique in many ways be it in terms of their learning styles and dominant intelligences. Individual difference is ideally the basis of the multiple intelligence theory. Gardner had hence broaden the scope and perspective of intelligence that was previously being confined in the area of linguistic and logical mathematics intelligence that was emphasized in most standardized examinations.

The MI theory can be used to meet three visions (Özdemir, Güneysu & Takkaya, 2006): 1) to match instructional strategies with students' learning styles; 2) to encourage students to broaden their abilities and develop their intelligences as fully as possible; and 3) to celebrate and acknowledge diversity. The MI theory had become a useful tool in helping both teachers and students in the teaching and learning process. The MI theory could be adapted and adopted in the process of exploring different teaching styles to enhance the quality of students' learning experience, as well as constructing new learning models and curriculum to suit the different needs and leaning styles of students. MI instruction in classroom helped students to learn through their dominant intelligences at the same time strengthening their weaker intelligences through activities that are based on the eight types of intelligences.

In Howard Gardner's book *Frames of Mind: The Theory of Multiple Intelligences (1983)*, Gardner defines intelligence as the ability to find and solve problems and create products of value in one's culture. The eight types of intelligences proposed by Gardner consist of visual/spatial, verbal/linguistic, musical, logical/mathematics, bodily/kinesthetic, interpersonal, intrapersonal and naturalistic intelligence. According to Gilman (2001), the eight types of intelligences proposed by Gardner can be divided into three main groups: object related intelligence (logical/mathematics); object-free intelligence (music and language); and personal intelligence. All the eight types of intelligences are present in each individual but in varying degrees where some intelligences are more developed in some individuals. The intelligences that are present in each individual could be nurtured and developed, where the dominant intelligences in each individual are not fixed and could change in time.

According to him, logical/mathematics, refers to the ability to discern logical and numerical patterns; reasoning skills and problem solving; verbal/linguistic refers to the ability with the use of language, and sensitive to the different functions of language; musical refers to sensitive to pitch, rhythm, melody and tone, and musically expressive. Visual/spatial, refers to the ability to visualize, recognize and manipulate patterns of wide space. Bodily/kinesthetic, refers to the ability to control body movements and coordination, and good in handling tools. Interpersonal refers to the ability to understand and communicate with other individuals. Intrapersonal, refers to the ability to assess own feelings and emotions, and knowledge of one own strengths and weaknesses; and lastly naturalistic refers to the ability to understand and relate to the natural world, and identification and observation.

Teaching styles and Multiple Intelligence Theory

According to Mosston & Ashworth (2002) in Morgan, Kingston & Sproule (2005), the 'spectrum of teaching styles' refers to the continuum of teaching styles which range from the end of 'teacher-centered' to the end of 'student-centered' activities. The continuum of teaching styles are categorized according to the decisions made by teachers or practitioners in the planning (pre-impact), teaching (impact) and evaluation (post-impact) phases of the lesson conducted in the classroom. At the extreme end of the spectrum where teacher carry out teacher-centered activities, involves traditional teaching method where teachers transmit their knowledge through a unified strategy to all kinds of students. Students took on a passive role in their learning instead of actively participating and being responsible in their own learning as emphasized at the other end of the teaching style spectrum which focuses on student-centered activities.

In the field of education, in order to cater to the different needs of students in the classroom, there exist a large and rich repertoire of teaching strategies and styles that are readily available to be adopted by teachers and educators. Teachers in classroom may utilize different teaching styles under a single instructional design to ensure that students with different dominant intelligences as proposed in the MI theory to maximize the quality of students' learning experience. When Multiple intelligences (MI) is being applied in the context of classroom, it enables teachers to notice the existence of various abilities and interest that students portray and also allow students to have a better learning experience and understanding of the content (Mokhtar, Majid, & Foo, 2008; Rettig, 2005).

Teachers struggle with finding ways to reach individual learning styles and needs, hence the solution to teaching students with differences is adapting Howard Gardner's Multiple Intelligence (MI) teaching methods. The greatest contribution of the MI theory in education is by encouraging teachers to expand their repertoire of teaching, tools and strategies beyond the typical linguistic and logical approaches and functions not only as a specific remedy to one-sidedness in teaching but also serve as an organizational tool that facilitates and synthesizes existing educational pedagogy and to develop innovative teaching strategies (Stanford, 2003).

In many studies, it was found that both teachers and students agreed that the implementation of MI theory in their teaching and learning process had a positive impact and students had gain self-confidence as a result of the collaboration. Other than that, students had embraced the concept of MI theory in their learning as it celebrated their diverse talents (Mattetal & Jordan, 1997).

According to the study conducted by Wu & Alrabah (2009), it was found that the Multiple Intelligence (MI) profile of an individual is very well related to their specific learning styles. Individual will be able to learn and absorb knowledge better when the content is delivered to them using teaching methods that emphasizes on their dominant intelligence. Hence, the teaching styles of teachers may very well be influence by the learning styles of teachers themselves. According to Heikkinen, Pettigrew & Zakrajsek (1985), teachers themselves too have a preferred method in perceiving and processing information and it is logical that teachers will communicate and teach their subject matter that is most compatible with their learning style. A study had been conducted on education majors to examine whether education major of different subject matter fields exhibit similar or different learning preferences. Research findings suggested that there is a significant relationship between learning styles and teaching styles among education majors at the University of Idaho. Each group of subject majors has strong preferences for certain learning variables. The results also showed that there were significant differences in learning styles between primary and secondary education majors and between male and female majors. The findings supported the belief that there is a significant difference in the intelligence profile of teachers from primary and secondary schools.

Based on the researches that had been conducted, it can be concluded that there is a significant relationship between an individual's multiple intelligence profile, learning styles and teaching styles. This can be further supported by the study conducted by Nergüz Bulut Serin et al. (2009). The objective of the study was to examine the relationship between teaching styles and the multiple intelligence types of primary school teachers in Izmir and Lefkosa. A questionnaire was used to determine the teaching styles and multiple intelligence of the teachers. Based on the findings, variables including the spatial/visual, naturalistic and interpersonal intelligences play a predictive role on the teaching strategies of teachings. This implied that teachers with spatial/visual, naturalistic and interpersonal intelligences tend to teach using their dominant intelligences depicted through their teaching styles.

Sample

The respondents in this study consisted of 577 randomly selected teachers who teach at secondary schools. The sample therefore was randomly selected by using the stratified random sampling. Through proper sampling technique, this number of teachers was selected.

Research Results

Table 1: Frequency and Percentage distribution by Gender

Gender	Frequency	Percentage (%)
Male	106	18.4
Female	471	81.6
Total	**577**	**100**

Table 1 shows the distribution of teachers in this study based on their gender. There were 106 (18.4%) male teachers and 471 (81.6%) female teachers participated in this study.

Table 2: Frequency and Percentage of Teaching Experience

Teaching experience	Frequency	Percentage (%)	Mean	Standard deviation
Less than 5 years	129	22.4	11.52	7.376
5.1 – 10 years	151	26.1		
10.1 – 15 years	140	24.3		
15.1 - 20 years	98	17.0		
More than 20 years	59	10.2		
Total	**577**	**100**		

Table 2 shows the frequency and percentage of teachers' teaching experience. There were 22.4% teachers with teaching experience less than 5 years. Teachers with teaching experience from 5.1- 10 years were 26.1%.

Teachers with teaching experience from 10.1 – 15 years were 24.3% and the teachers with teaching experience from 15.1 – 20 years were 17%. There were 10.2% teachers with teaching experience more than 20 years.

Table 3: Level of Multiple Intelligences of the Teachers

Intelligences	n	Mean	Standard deviation
Visual spatial	577	2.807	.635
Linguistic	577	2.962	.634
Naturalistic	577	3.254	.747
Logical-math	577	3.358	.621
Intrapersonal	577	3.976	.467
Interpersonal	577	3.853	.499
Musical	577	2.854	.919
Kinesthetic	577	2.964	.669

Table 3 shows level of multiple intelligences of the teachers in this study. The findings show that teachers were most intelligent in intrapersonal (M=3.976, SD=0.467), followed by interpersonal (M= 3.853, SD=0.499) and logical-math (M=3.358, SD=0.621).

Table 4: Level of Teaching Strategies based on Multiple Intelligences

Intelligences	n	Mean	Standard deviation
Visual spatial	577	3.230	.658
Linguistic	577	3.025	.762
Naturalistic	577	3.075	.768
Logical-math	577	3.671	.578
Intrapersonal	577	3.769	.624
Interpersonal	577	3.627	.640
Musical	577	2.339	.882
Kinesthetic	577	3.214	.634

Table 4 shows level of teaching strategies based on multiple intelligences theory. The study shows that intrapersonal intelligence (M=3.769, SD=0.624) was ranked the highest, followed by logic-math intelligences (M=3. 671, SD=0.578) and interpersonal intelligence (M=3.627, SD=0.64).

Table 5: Correlation between Multiple Intelligences and Teaching Strategies

Teaching strategies / Intelligence	Visual spatial	Linguistic	Naturalistic	Logical-math	Intrapersonal	Interpersonal	Musical	Kinesthetic
Visual spatial	.380**	.224**	.338**	.326**	.219**	.324**	.355**	.344**
Linguistic	.451**	.556**	.453**	.402**	.374**	.466**	.475**	.481**
	.278**	.227**	.348**	.314**	.226**	.297**	.175**	.221**
Naturalistic	.300**	.064	.200**	.406**	.272**	.258**	.192**	.264**
	.169**	.211**	.234**	.345**	.409**	.353**	.062	.224**
Logical-math	.312**	.384**	.344**	.373**	.398**	.396**	.221**	.342**
Intrapersonal	.351**	.238**	.248**	.213**	.151**	.204**	.507**	.282**
	.377**	.269**	.343**	.296**	.229**	.334**	.383**	.414**
Interpersonal								
Musical								
Kinesthetic								

**. Correlation is significant at the 0.01 level (2-tailed)

Table 5 shows the correlation between multiple intelligences and teaching strategies. The table shows that there are strong correlations between linguistic intelligence with linguistic teaching strategies (r=0.556), followed by kinesthetic teaching strategies (r=0.481), teaching strategies based on musical (r=0.475), interpersonal (r=0.466), naturalistic (r=0.453), visual spatial (r=0.451) and logical-math (r=0.402). The findings also shows that there is a strong and positive relationship between musical intelligence and musical teaching strategies (r=0.507). Kinesthetic intelligence is positively correlated with kinesthetic teaching strategies (r=0.414) and intrapersonal intelligence is positively correlated with intrapersonal teaching strategies (r=0.409). There is a significant and positive relationship between logical-math intelligence and logical-math teaching strategies (r=0.406).

Conclusion

Teacher's quality has been identified as a major factor in enhancing students' learning (Ball & Perry, 2009). Teachers should realize that it is insufficient to use only one single type of teaching method (Suriati Sulaiman & Tajularipin Sulaiman, 2010). To ensure the effectiveness of teaching and learning process, appropriate teaching strategies should be used. With effective teaching strategies recognized and teachers feeling comfortable in their teaching, it creates a joyful learning environment for the students. Each teacher has their preferred methods of perceiving and processing information. Thus, teachers usually conduct the lessons with strategies that are compatible with their learning style (Heikkinen, Pettigrew & Zakrajsek, 1985). The findings from this research indicated that most teachers were intelligent in intrapersonal, logic-math and interpersonal. To deliver knowledge, teachers as well used strategies that were mostly based on these three intelligences: intrapersonal, interpersonal and logic-math. These findings are consistent with past research which shows that most teachers have higher intelligence in intrapersonal, interpersonal and logic-math, and they mostly use teaching strategies based on intrapersonal, logic-math and interpersonal intelligences (Tajularipin, Raub, Syrene, 2010). With teachers' teaching strategies identified, the effectiveness of these teaching strategies can be assessed. Then, innovative ways can be considered and developed to improve the teaching strategies. This is important to enhance students' learning (Delaney & Shafer, 2007).

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