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# A Review of Multiple Intelligence Theory

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**ABSTRACT**
MI theory was originally only aimed at cultivating language and mathematics until Gardner put forward the MI theory of eight comprehensive qualities: visual, linguistic, mathematical, musical, bodily-kinesthetic, interpersonal, intrapersonal, and naturalistic intelligences, which made MI theory more comprehensive and rigorous. This article made a brief comparison between the traditional MI theory and the modern MI theory proposed by Howard Gardner; As well as the application of MI in different fields, such as mathematics, foreign language learning, genius education, and internet teaching, and the difficulties of the globalization of MI theory. This article, through the overview of the definition of MI theory and the analysis of the current situation of the application of MI theory, promotes the more extensive use of MI theory in education and other fields.

***Keywords:*** *Multiple Intelligence, Foreign Language Learning, Mathematics Learning, Gifted Education, Web-Based Learning.*

## 1. INTRODUCTION

Here was a general agreement among science educators that students' preconceptions generally hinder their achievement in science [1]. Also, some results are related to the neuropsychological model of dyslexia and the theory of language and development. Children with strong verbal skills tended to achieve better results than what was expected by their average level of intelligence. However, it was showed that spatially oriented children did not do very well in basic academic skills [2]. Therefore, the traditional intelligence theory only focuses on two aspects (verbal and computational intelligence). The theory before, which only admitted two intelligence (verbal and computational), was narrow and unilateral compared with the modern one. However, the definition of people's intelligence is comprehensive and complexed. Gardner believed that traditional IQ students defined this topic too superficially, as the analysis of the behavior shown in the Drop in From the Sky "DIFS" test [3]. He admits that psychometrists do a pretty good job of explaining these behaviors. His criticism of psychometrists is that the definition of behavior study is too narrow to be called human intelligence.

Howard Gardner, a renowned psychologist from Howard University, has developed Multiple intelligence theories, which noted that many kinds of talents could enrich people's lives. Those can also help them deal with the problems efficiently in a specific environment [4].

Based on the first edition of Gardner's book "Frames of Mind"(1983), seven different kinds of intelligence are introduced, namely logical-mathematical, verbal-linguistic, visual-spatial, musical, bodily kinesthetic, interpersonal, and intrapersonal. In the second edition of this book, two more types of intelligence-naturalistic and existential intelligences were added. However, existential intelligence has not attracted much attention [5].

There are eight intelligences: 1) Visual-spatial intelligence, to perceive the visual-spatial world and manipulate visual domains to solve the problems. 2) Linguistic intelligence, the ability to understand the meaning of words and use different functions of language the express effectively. 3) Logical-mathematical intelligence, the ability to understand the long chains of reasons and mathematical patterns. 4) Musical-rhythmical intelligence, to recognize the appreciate pitches, tones, and rhythms. 5) Bodily-kinesthetic intelligence, the ability to coordinate one's movements skillfully. 6) Interpersonal intelligence, the ability to react appropriately to other's moods, tempers, motivations,

 

and desires. 7) Intrapersonal intelligence: understanding other people's feelings, strengths, and weaknesses and using that knowledge to adjust themselves. 8) Naturalistic intelligence discriminates the living things like plants or animals in the natural world based on their characteristics [6].

MI theory stated that all eight intelligences are necessary to create an effective function society. Therefore, teachers are supposed to think that all intelligences are equally important, while traditional teaching systems attach much more importance to the use of mathematical and verbal skills. Thus, according to the MI theory, educators should recognize and impart a wider range of knowledge and skills to the students [7]. Everyone is born possessing the seven intelligences. Nevertheless, all students come into the classroom with different sets of developed intelligences. This means that each child has his/her 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 [8]. Nevertheless, teachers can teach students how to use their more developed intelligence to help them understand a subject that usually uses their weaker intelligence. For example, a teacher can suggest that a very clever child in mathematics learn about revolutionary wars by calculating historical years. Because every child has a different learning style, he or she cannot be evaluated in a unified way.

Therefore, teachers need to create an "intelligence file" for each student. Understanding the learning situation of each student can help teachers correctly evaluate more suitable and efficient teaching methods for children. For students themselves, classes are full of different experiences that reflect the character of many fields. For example, in the English composition classes, they may be asked to understand a novel by role play or composing a song that can show characters' personalities.

Since Gardner's theory was published, other theories of MI have emerged. For example, another scholar called Daniel Goleman expanded his emotional intelligence (EI) theory into consideration of social and emotional intelligence [9]. Following this look, since the MI theory was introduced, it has played a significant role in the educational system and the enlightenment in other fields and has been accepted more by society. In the next part, the application of MI theory in different fields will be analyzed respectively.

## 2. MI THEORIES FOR DIFFERENT AREAS

### *2.1. MI for Foreign Language Learning*

All seven aspects of MI theory, including musical, mathematical intelligences can be useful for foreign language learning as they build different frames for working on the same contents. MI is helpful for students, educators, and teachers. For example, music rhythm causes changes in speech speed and therefore makes the pauses between though groups more obvious. Therefore, students can convert their thoughts to sentences more clearly and effectively with music. It is undeniable that the frequent going back over the same material is an integral part of learning a second language to produce sustained deep learning. So, this variety of presentations can make it a less monotonous and boring process and allow students to find the most appropriate ways to learn and fulfill their potentials [10]. Second, it is a good choice for educators to encourage students to have a role play in foreign language classes that also involved intrapersonal and bodily-kinesthetic intelligence. It provides great opportunities for them to integrate their emotions into words and understand deeply how it feels when using those languages to communicate. For teachers, it is much easier for them to perceive and tap into the fields of personal meaningfulness of the learners with multiple intelligence theories applied in the classroom as they are learning the differences inherent in their students and guiding them with their different learning styles to where they belong [11].

MIT provides a foundation for students to become better communicators by connecting learners with the abundance of activities and activating linguistic information stored in mind [4].

### *2.2. MI for Mathematics Learning*

To apply multiple intelligence in mathematics classes, students should be engaged in activities like completing logic problems, building models, playing a board game to clarify learned material, creating rhymes of memorizing mathematical concepts, and performing a presentation showing their intelligence [4]. The previous study has indicated that MI theory can contribute to the improvement of mathematics academic performance. Dramatic differences have been demonstrated between MI teaching strategy and traditional instruction Mathematics post test results for students from two ethnic groups. African American students taught by MI theory significantly performed better than traditional theory students [12]. Similarly, Latino students in MI did much better than Latino students in the traditional instruction condition. Moreover, Latino students have shown the strongest progress from pre to post test. The post-test marks of Latino students were about four times higher than their pre-test marks, 4.83 and 15.30, respectively [12]. Although African American students did not achieve as notable progress as Latino students, their gains were significant as well, which increased from 5.77 to 14.11 [12].

### *2.3. MI for Gifted Education*

This paper expounds on the application of the theory of multiple intelligence in gifted learners. When gifted students are mixed with ordinary students, most of their school time is wasted because they are gifted beyond ordinary people and have mastered many subjects taught in class before. The role of MI, or academic competition, is so important for students with special skills, such as the Olympiad in the field of mathematics. Because of MI's strong points, which provide the gifted children correct learning direction to develop their general or special potential, they can enter the new subject field of archives. It is confirmed that when highly gifted and talented students are given appropriately stimulating educational experiences and practices, they begin to learn to determine higher educational goals for themselves [13].

Shortly, the process of identifying a talented individual is a critical part of MI's application so that effective support can be provided to their abilities [14]. Some gifted children might appear some symptoms of autism. MI can guide them to interact with other students to get more beneficial courses. They have more abstraction than others. Guides can use MI's comprehensive method to lead gifted students to find answers to expansibility issues. The theory of MI can also be applied in the curriculum content, teaching activities, general communication, and discourse of talent education and can also enhance the interaction of participants. Many gifted children have different views on the world, so they need more advanced technology and ideas in the teaching design and teaching process. Even small precious support can enhance their self-motivation and skills [15]. In this case, innovation of MI in children's teaching design is essential.

### *2.4. MI on Web-Based Learning*

Distance education is a growing educational opportunity for many students. To meet and go beyond the expectations of students, one of the helpful tools for the instructional designer is the application of MI to online learning, such as web-based instruction, because this system can lead opportunities for activities that address eight intelligences regardless of the physical location of them [16]. Curriculum design should allow the creation of learning communities through the formation of effective communication between primary school students and teachers [17]. Changes in web-based assignments should reflect the more relevant nature of online learning [18]. Greene and land found that MI theory's instructional questions and procedural scaffolding increased students' attention and encouraged project development [17].

The application of MI on the web education is valuable to both teachers and learners. In the network environment, teachers and learners have more equal responsibilities for educational achievements. Students may be required to develop mental retardation to meet the class requirements and implement appropriate time management [15].

## 3. CRITICISM OF MI THEORY

The MI theory has indeed earned many supporters since it was introduced. However, some argue that it was problematic as there was less sufficient empirical evidence to support his theories derived mainly from Gardner's own intuitions rather than comprehensive empirical research. Yet, there is not a clear set of tests to identify different intelligences [19]. On the other hand, some statements in MI theory have been disagreed with by other scholars. First, as the MI theory emphasizes the uniqueness of each child, thus individualism is the core of theory instead of socialism, and it prevents learners from exploring various fields while encouraging them to be experts in only one field [20]. Second, it was stated that the intelligences are not interchangeable. For example, a person with poor mathematics skills but is talented in music cannot substitute music skills for the mathematics ability or use music theory to understand the math process. Still, it can be a good way for the musically minded student to use suitable representation to understand math patterns [21].

The theory of multiple intelligences contributes to the innovation of curriculum content and strategy formulation [22]. However, many schools lack important materials and technical means, which hinders the implementation of this theory [22]. In addition to this, it was mentioned that the implementation of MI theory in Turkey is impossible because too much material is needed to distinguish students' intelligences [20]. Even if the shortage of materials and technical equipment is solved to a certain extent, time is a key problem for both teachers and students. Because the time required to complete the course or create an appropriate learning environment for each subject may not be enough to meet the requirements of MI, especially in a crowded classroom. [23] Besides the advantages of student's attitude and achievement theory [24].

The results show that due to the application of multiple intelligences theory in the classrooms, students' logical, critical and creative thinking have developed high-level thinking skills [25]. However, some problems and limitations still need to be solved and noticed. Especially before making suggestions, people should fully understand this theory and then popularize it as an educational strategy.

## 4. CONCLUSION

The paper reviews the basic information of Multiple Intelligence Theory compared to traditional teaching strategy and how it contributes to the learning of different

areas, as well as some criticisms. In summary, this paper argues that:1) Gardner's MI theory emphasizes the uniqueness of each child and encourages students to find their own learning style based on their different talents. 2) MI theory can help learn efficiently and improve academic performance. 3) Some controversies of MI theory also exist because of its' lack of empirical evidence and insufficient materials and technical equipment in many schools.

This is very much key components in an attempt to explain how MI theory contributes to the development of the educational system and overcome the difficulties in applying it more in the classrooms.

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