

# **The Introductory study of Gardner's multiple intelligence theory, in the field of lesson subjects and the students' compatibility**

**Hassan-Pasha Sharifi (Ph. D.)<sup>1</sup>**

## **Abstract**

**This investigation was conducted as a Preliminary Study on Gardner's multiple intelligence theory. Participants were a sample group of 120 secondary school students in different branches of study. The data was gathered by administering the Multiple Intelligence Questionnaire adapted from Douglas and Harms' questionnaires, Bell Adjustment Questionnaire, and a researcher – made questionnaire on the sample group. The following results were obtained:**

- It was shown that there was low to moderate but significant correlation among different kinds of intelligence and related school subject scores.**
- Interpersonal and intrapersonal intelligence scores accounts for 22 percent of the total variance of social adjustment.**
- Different kinds of intelligence are not totally independent from each other. There were low to moderate but significant**

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1. Associate Professor of Psychological-assessment of Free Islamic (Azad-e Eslami) University, Rud-e-hen Branch, Rud-e-hen, Iran

correlations among some of them. 33 percent of the common variance among different kinds of intelligence suggests Spearman's «g» factor.

- The greatest variance of educational achievement can be accounted for by verbal – linguistic and logistic – mathematical intelligence.

- In regards to intrapersonal intelligence, girls are superior to boys, but boys are superior to girls in regards to visual – spatial intelligence. There was no significant difference between the two genders in other kinds of intelligence.

**Key Words:** multiple intelligence, school subject scores, social adjustment, Douglas and Harms' Questionnaires, Bell Adjustment Questionnaire

## **Introduction**

By the decline of behaviorist psychology and the appearance of cognitive psychology, especially the constructivist approach, the student is being considered not as the absolute receiver of information but rather the creator of his cognitive structures. While receiving data, he is now required to process it, relate it to his previous experiences, organize his learning, and use them to solve real life issues and various complex problems in new circumstances (Prawat, & Folden, 1994).

The future generation will live in a world which will need a precise and more complex method of thinking so that it can adjust itself with the ever-changing conditions of time through fluent thought and fundamental skills.

The recent studies have shown that not only intelligence and cognitive talents, but also emotional characteristics (especially emotional intelligence) and social skills have a fundamental role in organizing the learning process (Klenowski, 2002). Characteristics such as having skill for social relationships or correctly

understanding others' feelings and accepting them is in tight relationship with how one learns.

In order for the educational goals to be fulfilled, the following points that are derived from Gardner's theory (2004) should be considered:

- In contrast with the traditional attitude about intelligence, learning is not gained through utilizing cognitive abilities only, but other types of intelligence, which will be discussed as follows, also have a fundamental role in the learning process.
- In the learning process the individuals use different strategies to process information and problem-solving depending on the type and level of their intelligence abilities.
- For the teacher to be able to provide suitable learning experiences for the students, he needs to assess the students' talents correctly, then guide them to utilize the maximum capacity of their intelligence and talent in the direction of the educational goals.

Reaching the above principles requires that the assessment of the students' educational achievement and performance to consider the students' needs, intelligence models, and strategies of learning based on the theory of multiple-intelligence instead of strict emphasis on verbal-lingual and mathematical-logical intelligence – which is unfair due to the students' individual and group differences in Gardner's different models of multiple intelligence (Lazear 1991; 1992).

The traditional intelligence tests mostly evaluate the verbal ability, the relationships between verbal concepts and mathematical-logical thought. These tests do not assess skills such as new information analysis, modern problem-solving, and creative and abstract thinking. As Vygotsky mentions, the traditional tests do not give much information about the “human's potential development span”. (Gardner, 2004).

Following these critical notes on intelligence tests, Piaget stated a completely different cognitive viewpoint. According to his view, in order to study the human thought we should accept this principle that the individual is always trying to know and understand his surrounding world.

In cognitive psychology and information-processing approach, the relationship of intelligence with learning, thought, problem-solving, and other cognitive processes is studied. As Sternberg says, “intelligence is consisted of thinking and learning skills which are used in solving education issues and life problems (Aiken, 1985, p. 219).

In the recent decades, philosophers such as Ernest Cassirer and Susanne Langer have considered the human symbolizing abilities. In their opinion the human ability in utilizing various symbolizing strategies for expressing and exchanging meanings have distinguished him from other living creatures (Gardner, 2004).

Today psychologists have become interested in studying the strategies of making thought symbolized; thoughts such as language, mathematics, portrayal arts, gestures, and other symbols.

### **Gardner's theory about intelligence**

According to Gardner, the mental processes in a symbolizing system such as the language is different from symbolizing processes in music, gestures, mathematics, and images. Therefore, to process cognitive information, lingual and mathematical symbols – as it is in the traditional tests – would not satisfy. Having this belief that reasoning, intelligence, logic, and knowledge do not have equal meaning, Gardner (1983) offered a new viewpoint for intelligence which many of the educational planners quickly accepted. He expanded the concept of intelligence beyond the verbal and mathematical abilities to talents in music, spatial relationship, interpersonal and intrapersonal knowledge. According

to Gardner, intelligence is “the talent to solve problems or produce products that are considered valuable in one or several cultures.” (Gardner & Hatch, 1989). After conducting expanded researches about biological and cultural issues that relate to mental processes, he suggested seven types of intelligence, which are different from the traditional viewpoints on intelligence that are founded more on lingual and mathematical abilities. (Marnat, 2003)

**These seven types of intelligence consist of:**

1. **Logical – mathematical intelligence** which consists of the ability to discover models, deductive reasoning, and logical thinking.
2. **Lingual – verbal intelligence** which consist of sensitivity towards language of speech and writing, and the ability to apply words and language.
3. **Visual - spatial intelligence** which consists of the ability to solve problem through the touching up and creation of mental images, and thinking through portrayal imagination.
4. **Musical intelligence** which consists of identifying musical pieces, composition of rhythmical songs, and enjoying music.
5. **Physical – kinetic intelligence** which consists of the ability to control the body movements, skillfully working with objects, using all or a part of the body limbs to solve problems, interaction with the surrounding environment for reminding-of and processing information co-ordination between the eye and the hand, and other psycho-motor skills
6. **Interpersonal intelligence** meaning that the person has talent to understand purposes, motives and feelings of others and the skill to set relationships with them.
7. **Intrapersonal intelligence** which consists of personal talent for an individual to understand himself, his emotions, fears, and

motives.

It is Gardner's viewpoint that all individuals have all the various kinds of intelligence in different levels and the various types of intelligence work as each other's complementary item in the learning process. In his opinion multiple intelligence has both biological and cultural basis. Neurological researches have shown that learning is the result of change in synaptic connections among nerve cells. In addition to biological basis, cultural elements are also influential in the development of the various intelligences. Depending on which kind of intelligence is considered valuable, in different cultures different types of intelligence are developed.

In year 1999, Gardner brought forward two other types of intelligence, that is the naturalist intelligence and the existential intelligence.

**Naturalist intelligence** enables the person to identify the natural phenomena, categorize them, and to satisfy his curiosity about the natural phenomena by observing nature and testing and to reach understanding of the relationships of natural phenomena.

**Existential intelligence** is consisted of sensitivity and talent for getting involved with deep question about the existence of human, such as the meaning of life, the concept of death and the appearance of human being in life and the reason for existence.

Gardner's theory about multiple intelligences has transformed the traditional attitude on intelligence and mental abilities in the field of education and cognitive sciences and has influenced the educational methods and programs.

Many teachers and educational curriculum planners have considered Gardner's theory in policies for compiling and planning the lesson content. They have often utilized this attitude in the teaching-learning process in an effective way. Questionnaires and tools have been prepared for assessing various types of intelligence

which are used in the education process. Among these tools we can refer to the multiple intelligence test for children by Nancy Fairs, multiple intelligence compiled by Mckenzie in 1999, as well as the multiple intelligence questionnaire by Harms and Douglas.

Considering the historical route of psychologists attitude about intelligence and the stating of Gardner's theory and the results of some related researches, it seems that it is possible to improve the teaching-learning process by using Gardner's multiple intelligence approach. Therefore the purpose of this research is to investigate Gardner's theory Tehran's high school students through conducting an introductory study. To reach this goal, the following investigations took place:

- Investigating the correlation between the results of each of the various kinds of intelligence suggested by Gardner and the mean scores of the related lessons to the various multiple intelligence types;
- Investigating the independence degree of the various intelligence suggested by Gardner;
- Studying the part each of the various types of intelligence play in predicting educational success or achievement.
- Comparison of the possible differences between girls and boys through Gardner's various multiple intelligence.

## **Method**

1. **Cases:** The individuals under study in this research were 120 high school girl and boy students of grade 10 and 11 in the academic and technical fields in the school year 2004-2005 which were selected from high schools of Tehran education districts through cluster random sampling method.

2. **Assessing the variables:** in order to assess the students' IQ, the multi-sided intelligence questionnaire was used which was based on the Farsi translation of the questionnaire by Herms and Nial Douglad. The questionnaire consisted of 8 subscales and 80 items which measured each of the intelligence types mentioned by Gardner.

The second tool used in this research was Bell's adjustment scale.

Furthermore through a researcher-made questionnaire the individuals were asked to specify their demographic characteristics, such as gender and education field, and also state whether they participate in the school group activities such as music, or are members in student associations or sport teams. They were also asked if they are interested to take part or become a member in such activities. All of these data were obtained through yes/no questions.

Finally, the scores of students being studied in some of the lesson subjects related to various multiple intelligence items were derived. All the collected information from the completed questionnaire and the students scores were put to statistical analysis. These lesson subjects were Farsi language and literature, Foreign language, Mathematics, Physics, Chemistry, Biology, and Designing and mapping (in the technical and vocational branch).

## Conclusion

The results of the data analysis showed that:

- There is weak to moderate significant correlations between the various types of multiple intelligence and lesson subjects related to each of the intelligence types.
- On the basis of intra-personal and inter-personal intelligence scores, it is possible to predict 22 percent of students' social

adjustment variance.

- The various intelligence stated by Gardner are not completely independent from each other. There is weak to moderate significant correlation between some of them. 33 percent common variance of these eight types of intelligence probably suggests Spearman's "g" factor.

- The greatest amount of variation of students educational achievement can be explained by verbal-lingual and logical-mathematical intelligence scores.

Finally, girls have superiority compared to boys in the intra-personal intelligence area, while the boys are stronger in the area of visual-spatial intelligence. Regarding other types of intelligence no significant difference was observed between the two genders.

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