The Introductory Study of Gardner's Multiple Intelligence Theory, in the Field of Lesson Subjects and the Students' Compatibility

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Introduction

By the decline of behaviorism 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 needed to process it, relate it to his previous experiences, organize his learnings, and use it 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 skills for social relationships or correctly understanding others' feelings and accepting them are in tight relationship with how one learns.

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

- In contrast with the traditional attitude about intelligence, learning is not gained through utilization of cognitive abilities only, but other types of intelligence, which will be discussed as follows, which also have a fundamental role in the learning process.
- In the learning process the individuals use different policies to process information and problem-solve 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 advancement and functionality to consider the students' needs, intelligence models, and policies 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 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 him, 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 Stenber says, “intelligence is consisted of thiking 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 considered the human symbolizing abilities. In their opinion the human ability in utilizing various symbolizing policies for expressing and exchaning meanings have distinguished him from other living creatures (Gardner, 2004).

Today psychologists have become interested in studying the policies of making thought symbolized, that is, 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 are 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 intelligce beyond the verbal and mathematical abilities to talens in music, spatial relationship, and intra personal knowledge. According to Gardner, intelligence is “the talent to solve problems or produce products that are considered valueable in one or several cultures.” (Gardner & Hatch, 1989). After conducting expanded researches about bilogical and cultureal 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 toward 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 – movement 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 between the eye and the hand, and other psycho-motor skills.
6. Interpersonal intelligence meaning that the person has talent to understand purposes, others' motives and feelings 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 to different ratios 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. Neurologic researches have shown that learning is the result of change in synaptic relationship between 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, meaning 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 relationship 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. These are used in the education process. From among

these tools we can refer to the multiple intelligence test for children by Nancy Fairs, multiple intelligence in year 1999 compiled by Mckenzie, 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 about the students of Tehran high school students through conducting an introductory study. To reach this goal, the following investigations took place:

- Investigating the co-relation between the results of each of the various kinds of intelligences suggested by Gardner with the scores mean in 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 advancement;
- Comparison of the possible difference between girls and boys through Gardner's various multiple intelligences.

Method

1. **Cases:** The individuals under study in this research were 120 girl and boy students of grade 10 and 11 in high school in the subject fields of theory, thenical in the school year 2004-2005

which were selected from high schools of Tehran education districts through cluster random sampling method.

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

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

Furthermore, through a researcher-made questionnaire it was asked from the individuals to identify 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 this was through yes/no questions. Finally, the scores of students being studied in some of the lesson subjects related with various multiple intelligence items were derived. All 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 medium significant co-relation between the various types of multiple intelligence and lesson subjects related to

each of the intelligence types.

- By taking advantage of intra-personal and inter-personal intelligence scores, it is possible to predict the overall 22 percent compatibility.
- The various intelligences stated by Gardner are not completely independent from each other. There is weak to medium level co-relation between some of them. 33 percent common variation of these eight types of intelligences show the probable element of g.
- The most amount of variation of students educational advancement can be explained by noting the 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.

Resources

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