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Examining the relation between the Gardner intelligence components and selecting the field of study of high school students of Marand city semester 2013-2014

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ABSTRACT

We aimed to investigate the relationship between selecting the field of senior high school students in Marand city in2013-2014 semesterandGarner intelligence components. Specific objectives: To determine the relationship between the components of Garner intelligence components and selecting the field of senior high school students in Marand city. Senior high school students of Marand make the statistical population of this research. In line with research, 9 hypothesis were formulated. In order to analyze data, we have used inferential statistics including independent T-test to differentiate between genders and one way analysis of variance and follow-up Tukey tests in case of approval.

The results showed that there is a significant difference between Garner's multiple intelligences and students' gender (since significance level in t-test is smaller than 0.05). Female students were more intelligent than male students in verbal/linguistic, bodily/kinesthetic, intrapersonal, interpersonal, visual/spatial and musical intelligences. In addition, students who were studying mathematics were better than students in other fields in verbal/linguistic and naturalistic intelligences (since significance level in ANOVA test is smaller than 0.05 and according to the results of Tukey Test and the classification of courses in intelligence attitude), the rest of the students selected experimental, humanistic, technical and professional fields respectively. In other multiple intelligences with very small differences, students selected mathematical, experimental, humanistic, technical and professional fields respectively. According to Gardner's theory of multiple intelligences, only math students were well placed in their own field of study in accordance with their intelligence attitude, and others have not selected their own desired fields in compatible with their intelligence attitude. Therefore, other factors were involved in selecting field of study. Perhaps the appropriate criteria and tools have not been used for selecting study field during the presentation of study guidance to students.

Keywords: Gardner's multiple intelligences, field of study selection.

INTRODUCTION

Undoubtedly, secondary education is one of the most important and sensitive levels of formal education. Because a large proportion of talents of the young and adolescents is updated and field selection, career and choice, running the family and some other problems like occupy their minds completely.[12]One of the important factors that plays a significant role in the selection of our field isthe talent. The aptitudeis the inherent ability of a person that accelerates his learning. The matter of intelligence and the levels of intelligence that provide higher intelligence are also important in selecting the field.[9]Gardner is the first psychologist that has distributed the meaning of intelligence and also has classified the human's talents in this way.[5]Gardner (1983) has categorized eight different types of intelligence. These components include: (visual – spatial intelligence) (logical - mathematical intelligence) (verbal –linguistic intelligence) (musical intelligence) (bodily kinesthetic intelligence) (interpersonal intelligence) (Intrapersonal Intelligence) (naturalistic intelligence). In the theory of multiple intelligences, Gardner has tried to extend the borders of human talents beyond the limits of 10IQ and to show that the intelligence has a close relation with the ability to analyze problems and achieving efficiency in environment. According to Gardner's theory of multiple intelligences humans in terms of intelligence and the ability to use multiple intelligences are different. [10]

2 - Theoretical Foundations:

Sincefield selection as one of the important issues in education programs effects on various social, economic, political and cultural features and supplies the specialist and skilled human resources in society, it is necessary to be done withgreat precision and in a far more reasonable way. Based on theoretical foundations, one of the main factors involved in the field selection and future skills of students, can be the

individual powers in each of the categories specified by the commentators like Gardner.[7]Gardner after classifying the intelligence in eight main components, presents different definitions for each of the eight categories while mentioning the career and technical skills appropriate to each of them.[17]For example, for logical intelligence, the ability to use the numbers accurately (e.g. the mathematician, accountant, financial or statisticians) and expressing logical and accurate reasoning (e.g. the scientist, computer programmer or logician). This intelligence requires recognition of pattern and logical relations, propositions, theorems, functions and other related abstractions. Different methods that are used in this mental category, include classification, categorization, inference, generalization, calculation, and hypotheses testing. [15] Thus, by using methods based on Gardner's theory, the person succeeds in choosing a good field and job and pays attention to how to use his skills. [17]Here, the individual's belief in his abilities can job make his success in the future foreseeable. [18]

1-2Gardner's multiple intelligences:Gardner has developed a theory that includes eight different intelligences are independent of each other, which are described below briefly:

1. Linguistic (verbal) Intelligence: the ability to use language effectively (poets, journalists).
2. Musical (rhythmic) Intelligence: the ability to create, understand, and appreciate the music (composer, pianist).
3. Logical-Mathematical Intelligence: the ability to logical reasoning, particularly in mathematics (scientists, mathematicians).
4. Spatial-Visual Intelligence: The ability to recognize the details of things and visualize and change objects intellectually (sailors, pilots).
5. Bodily-Kinesthetic Intelligence: The ability to use body movements and visualize and work with objects (athletes, actors).
6. Interpersonal Intelligence: the ability to detect subtle aspects of the behaviors of others (physicians, vendors).
7. Intrapersonal Intelligence: The ability to become aware of his feelings, motives and desires (Person has the knowledge of detailed and accurate detection).
8. Naturalistic Intelligence: The skill of recognition and classification of various species such as plants, animals and personal environment.[13]

2.2 choosing the field:Field of study means the fields in high schools, Technical and Vocational Schools,Occupational Schools which make the first choice of students or their parents. [1]

Evaluation of previous findings (scientific researches):

Eshaghnia (2006) has achieved these results that there is a meaningful relationship between logical/mathematical intelligence and Mathematics/Physics field of study, but norelationship found between the linguistic intelligence and Humanities. [3] Hood (2000) achieved these results: There is a meaningful relationship among visual/spatial and logical/mathematical and verbal/linguistic intelligences. (Quoted byHashemi (2004))[6]Furnhumet al (2002) reached the conclusion that men are superior to women in verbal, logical, spatial and spiritual intelligence. Also, using multiple regression, they showed that logical, verbal, ontological, spatial intelligence are the best predictor variables.[16]Furnhum&Akand(2004), Furnhum&Pramuzik (2005), Furnhumet al (2002), Furnhum&Mutabo(2012) and Bernardo &Elivaz(2007) in their researches showed that multiple intelligences in male is different than female (Quoted byEbrahimi, 2012)[2]Ikinz&Chakar(2010) achieved these results: There is a meaningful difference between verbal/linguisticand musical intelligencein male/female sexuality and girls get better marks than boys in these intelligences(Quoted by Ebrahimi, 2012)[2], also the common intelligences between students are: verbal/linguistic intelligence, interpersonal intelligence and logical/mathematical intelligence. [19]

Testing Hypothesis:

Hypothesis 1: between attitudes of Gardner's components of intelligence and students' sex.

Independent t-test to significancetest of the difference of Gardner's intelligence with regard to sex.

Variable	Degrees of freedom	Average of Boys	Average of Girls	Differences in Average	Magnitude of t	Significance Level (0.05 ≥ P)	The Research Hypothesis
Interpersonal Intelligence Attitude	333	31	33.5	-2.5	4.02	000	The difference is meaningful
Intrapersonal Intelligence Attitude	333	32.3	34.2	-1.9	2.8	0.005	The difference is meaningful
Linguistic Intelligence Attitude	333	28.2	30	-1.5	2.7	0.006	The difference is meaningful
Logical Intelligence Attitude	333	30.1	31.06	-0.89	1.18	0.23	The difference is not meaningful
Visual Intelligence Attitude	333	31.1	32.7	-1.6	2.5	0.012	The difference is meaningful

Bodily Intelligence Attitude	333	32.8	34.4	-1.6	2.3	0.019	The difference is meaningful
Musical Intelligence Attitude	333	30	6.23	-2.6	3.2	0.002	The difference is meaningful
Naturalistic Intelligence Attitude	333	31.6	32.3	-0.7	1.01	0.3	The difference is not meaningful
Gardner Intelligence's Attitude	333	247.5	260.9	-13.4	3.38	0.001	The difference is meaningful

As can be seen in the table, independent t-test result shows that only components of logical intelligence attitude and naturalistic intelligence attitude are not different according to gender, because the significance level of independent t-tests are smaller than 0.05. And considering the averages, the level of Gardner's intelligence components in girls is more than boys.

Hypothesis 2: There is a meaningful relationship between verbal/linguistic intelligence of students and choosing their field of study.

One way analysis of variance of mean "verbal/linguistic intelligence attitude" depending on the field

Source of Variations	The sum of Squares	Degrees of Freedom	The Mean of Squares	Magnitude of F	Significance level
Intergroup	2912.2	4	728.05	27.74	0.000
Intragroup	8659.72	330	26.24		
Sum	11571.92	334	---		

As can be seen in the table, there is a meaningful relationship between the amounts of verbal/linguistic intelligence attitude of students and choosing the field (Mathematics, Experimental sciences, humanities, Technic&Vocation, and Kardanesh). Because significance level of ANOVA test is smaller than 0.05.

The Comparison of Students	Difference of Mean	Significance Level	Considerations
Mathematics with Experimental sciences	2.9	0.01	The difference is meaningful
Mathematics with Humanities	3.2	0.002	The difference is meaningful
Mathematics with Technics & Vocation	4.4	000	The difference is meaningful
Mathematics with Kardanesh	9.2	000	The difference is meaningful
Experimental sciences with Humanities	0.3	0.99	The difference is not meaningful
Experimental sciences with Technics & Vocation	1.4	0.37	The difference is not meaningful
Experimental sciences with Kardanesh	6.2	000	The difference is meaningful
Humanities with Technics & Vocation	1.1	0.77	The difference is not meaningful
Humanities with Kadansh	5.9	000	The difference is meaningful
Technics & Vocation withKardansh	4.8	000	The difference is meaningful

According to follow-up Tukey test results, students with more linguistic intelligence attitude have chosen mathematics field, students with average linguistic intelligence attitude have chosen Experimental Sciences and Humanities and Technics & Vocation, and students with less linguistic intelligence attitude have decided to study Kardanesh field.

Hypothesis 3: There is a meaningful relationship between logical/mathematical intelligence of students and choosing their field of study.

Like the previous hypothesis, at first, one way analysis of variance (ANOVA) and the Tukey test, in case of meaningfulness, were conducted and according to the results of f test, there is a meaningful relationship between logical/mathematical intelligence of students and choosing their field of study(Mathematics, Experimental sciences, humanities, Technic & Vocation, and Kardanesh) and according to follow-up Tukey test, students with more logicalintelligence attitude have chosen mathematics and Experimental Sciences fields respectively, students with average logical intelligence attitude have chosen Humanities and Technics & Vocation, and students with less linguistic intelligence attitude have decided to study Kardanesh field.

Hypothesis 4: There is a meaningful relationship between visual/spatial intelligence attitude of students and choosing their field of study.

According to the results of f test, there is a meaningful relationship between visual/spatial intelligence attitude of students and choosing their field of study (Mathematics, Experimental sciences, humanities, Technic & Vocation, and Kardanesh) and according to Tukey test of means, students with more visual/spatial intelligence attitude have chosen mathematics, Experimental Sciences, Humanities, and

Technics & Vocation fields respectively and students with less visual/spatial intelligence attitude have chosen Kardanesh field.
Hypothesis 5: There is a meaningful relationship between bodily/kinesthetic intelligence attitude of students and choosing their field of study.
According to f test, there is a meaningful relationship between bodily/kinesthetic intelligence attitude of students and choosing their field of study (Mathematics, Experimental sciences, humanities, Technic & Vocation, and Kardanesh). According to follow-up Tukey test and considering the means, students with more bodily intelligence attitude have chosen mathematics, Experimental Sciences, Humanities, and Technics & Vocation fields respectively and students with less bodily intelligence attitude have chosen Kardanesh field.
Hypothesis 6: There is a meaningful relationship between interpersonal intelligence attitude of students and choosing their field of study.
According to the results of f test, there is a meaningful relationship between interpersonal intelligence attitude of students and choosing their field of study (Mathematics, Experimental sciences, humanities, Technic & Vocation, and Kardanesh) and according to follow-up Tukey test and considering the means, students with more interpersonal intelligence attitude have chosen mathematics and Experimental Sciences fields respectively, students with average linguistic intelligence attitude have chosen Humanities and Technics & Vocation, and students with less linguistic intelligence attitude have decided to study Kardanesh field.
Sub hypothesis 7: There is a meaningful relationship between intrapersonal intelligence attitude of students and choosing their field of study.
According to the results of f test, there is a meaningful relationship between intrapersonal intelligence attitude of students and choosing their field of study (Mathematics, Experimental sciences, humanities, Technic & Vocation, and Kardanesh) and according to follow-up Tukey test and considering the means, students with more intrapersonal intelligence attitude have chosen mathematics, Experimental Sciences fields, Humanities, and Technics & Vocation respectively and students with less intrapersonalattitude have chosenKardanesh field.
Hypothesis 8: There is a meaningful relationship between musical intelligence attitude of students and choosing their field of study.
According to the results of f test, there is a meaningful relationship between musical/rhythmic intelligence attitude of students and choosing their field of study (Mathematics, Experimental sciences, humanities, Technic & Vocation, and Kardanesh). According to follow-up Tukey test, students with more musical intelligence attitude have chosen mathematics, Experimental Sciences fields, Humanities, and Technics & Vocation respectively and students with less musical intelligence attitude have chosen Kardanesh field.
Hypothesis 9: There is a meaningful relationship between naturalistic intelligence attitude of students and choosing their field of study.
According to the results of f test, there is a meaningful relationship between naturalistic intelligence attitude of students and choosing their field of study (Mathematics, Experimental sciences, humanities, Technic & Vocation, and Kardanesh). According to follow-up Tukey test, students with more naturalistic intelligence attitude have chosen mathematics, Experimental Sciences fields, Humanities, and Technics & Vocation respectively and students with less naturalistic intelligence attitude have chosen Kardanesh field.
7- Suggestion for further researches:

A. Practical:
- To conduct seminars, conferences, workshops for teachers and consultants to explain and expand the concept of multiple intelligences
- To use short-term, middle-term, and long-term programs to strengthen students' intelligence attitude using Gardner's intelligence theory and guiding them to the most appropriate field.
- It is better to use the people who have the related necessary specialty and skill in this field and know about the Gardner's intelligence theory well for schools.

B. Exploratory:
- For researchers who want to research in this field, it's recommended to study the effect of different factors on Gardner's multiple intelligence.
- For researchers who want to research in this field, it's recommended to also examine the arts.
- For researchers who want to research in this field, it's recommended to involve the factor of average of students in their research.

CONCLUSION

According to the achieved results, the students whit more linguistic intelligence attitude have chosen mathematics, the students whit more logical intelligence attitude have chosen mathematics and

Experimental Sciences respectively, the students whit more intrapersonal, spatial, musical, and bodily intelligences attitude have chosen mathematics, Experimental Sciences, Humanities, and Technic & Vocation, the students whit more interpersonal intelligence attitude have chosen mathematics and Experimental Sciences, the students whit more naturalistic intelligence attitude have chosen mathematics, so just the students of Mathematics have been placed in their accurate field well, but the students of other fields have not been placed in their appropriate fields according to their talents and abilities, so that probably we haven't used the appropriate criterions and tools in this way, and the promising results are consistent with the findings of Navidi(1997), RokhsatTalab (1996), Shokrkon et al (1999), Feizabadi (2004), andHashemi's research (2004).

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