

## Finding aptitude in post-graduates in educational management course in statistics by the means of evaluating the multiple intelligence factors (Case study of Azad university- GARMSAR branch)

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### Abstract

Contrary to dominant point of view in respect of intelligence, Gardner states that the existence of multiple intelligence which every aspect of it equal with each other can be seen in every normal person. He believed that enforcing intelligence of people is the ultimate goal of education. This study is applicable in purpose and survey and integrative from approach point of view. This study has been implemented on 298 subjects from the students of post-graduation of Islamic Azad University (Garmsar Unit) who are studying Educational Management during 2009-2011. According to Morgan table, 155 of the /above mentioned subjects has been selected as the study sample. In order to implement the study we have used a questionnaire consisting of 53 questions created by Gardner named "the 8 Intelligent". The final grades of the students in the course of descriptive and interpretive statistics in first and second semester of the educational year of 2010-2011 have been also utilized for the purpose of this survey. The result showed that the surveyed students have a satisfying level of multiple intelligences in general. In the meantime the factors related to math, music, spatial intelligence of Gardner have been analyzed step by step with Regression approach. The results also showed that these factors in a meaningful way can predict the effectiveness of educational variable ( $P < /01$ ). The meaningfulness ratio of F shows the meaningful relation of this variable with the educational effectiveness variable in statistics course.

**Keywords:** Intelligence, Multiple Intelligence, Gardner, Educational Effectiveness, Statistics Course, Islamic Azad University.

### Introduction

Multiple intelligence has been considered as the most important parameter of measuring people level of intelligence (Kadivar, 1997).

#### *Characteristics of multiple aspects of Intelligence*

*All people have all the aspect of intelligence mentioned in Gardner theory:* The theory of multiple intelligences is a cognitive theory and states that all the people have all the abilities in all aspects of all kinds of intelligences. However, these aspects of intelligence may emerge in different ways in different persons. Sometimes in some people all or almost all of these aspects have been developed such as Guteh (German poet, politician, scholar, and philosopher). On the other hand some people lack almost all these aspects. It means that in some people these aspects have been developed completely, in some others it has almost not developed at all (Haji Hosseini Nejad & Baleghi zadeh, 2002).

*All people have the capability to develop each of these aspects to a proper level:* According to Gardner if proper and enough education and encouragement are given then a person will be able to develop all the aspects of their intelligence to a high level.

*All the aspects of intelligence are usually interconnected in a complicated way:* Gardner believes that none of the subjects of the intelligence can exist alone and they always have effect on each other. In a scenario, wherein a kid is playing with a ball, he/she needs to have physical-movement intelligence in order to kick the ball (also for running, catching, kicking the ball), locating intelligence (for determining the direction and predicting the place the

ball lands on) and verbal and inter-person intelligence (for succeeding in the conflicts which normally occurs between the kids while playing) (Spalding, 1997).

*In order to be intelligent in a subject there are always multiple approaches:* In order for a person to be called intelligent in a specific area there are no standard specifications therefore it is possible that a person will not be able to read but has a high level of intelligence in verbal subjects: like he/she will be able to tell scary stories or know so many words. In the same way it is possible that a person will be considered clumsy in playing field like football and etc... but he/she will have a high level of intelligence in physical-movement aspects which makes him/her a skillful carpet maker (Eshaghnia, 2007).

One of the most important aspects in this regard is to consider intelligence as multiple. Gardner's model considers IQ as a separate and unchangeable factor and goes much more beyond it. As per his belief examinations which are ruling us in a cruel way ever since we have entered our school have a limited view on intelligence. This view is so much far away from the spectrum of real skills and capabilities which play an important role in our life.

Gardner accepts that the number 8 is an optional number for counting the different aspects of intelligence: for expressing the multiplexes of intelligence and the aptitude of human beings there is no magical number. The point of view of the multiplexes of the aptitude, in comparison to standard IQ, provides a richer image of the aptitude and the potential of a kid in achieving success.



This approach guides parents, teachers and advisers to know the areas has spontaneous interest in them and help them to find out how to go beyond developing their interest and the level of their skills and achieve command in that specific area. In the beginning Gardner considered that each normal person at least has 7 kinds of intelligence which include: verbal intelligence, mathematics & logical intelligence, location intelligence, physical intelligence, inter-person intelligence and music intelligence. Later he introduced 8<sup>th</sup> kind of intelligence named naturalistic intelligence and recently he has done some arguments and studies about the probability of the existence of the 9<sup>th</sup> kind of intelligence named spiritual intelligence but he hasn't yet said anything about this intelligence with absoluteness and he has tried to be cautious about it (Pasha Sharifi, 2000). In the following sections we will explain each of the above mentioned Gardner's intelligence in detail:

#### *Different types of intelligence according to Gardner's theory*

**Verbal intelligence:** This intelligence is related to the ability to utilized words correctly, both verbal and written. This type in intelligence includes the ability to use syntax, phonetics, semantics and other applied aspects of language. Some of these usages includes: meaning of words and using them, ability to remember words<sup>4</sup>, explaining and beyond language (Amir Temouri, 2003).

**Mathematics and logical intelligence:** This type of intelligence develops together with the development of the world around. This intelligence is the ability to use numbers correctly, expressing logical reasoning. This intelligence requires indentifying patterns and relations between logics, equations and other abstract issues. This type of intelligence also includes the ability to make logical reasoning especially in mathematics and different sciences (Amir Temouri, 2003).

**Music Intelligence:** This type of intelligence requires the ability to understand, distinguish, convey and implement the images of music. Using this type of intelligent requires identifying rhythm, Melody of a piece of music and the person can have the ability to perceive metaphor or ascending, descending (internal, external) or perceive normal or descending-ascending (analytic - technical) or both of them from a piece of music (Pasha Sharifi, 2000).

**Physical-movement Intelligence:** The ability to use body as intelligence may appear so much strange in the beginning and in traditional culture there is a big gap and difference between mental and physical activities. The difference between mind and body may suggest that the activities we do with our body comparing to those we do with our mind are far less important (like solving a problem, using language, abstract thinking and symbolic systems) (Arjoman, 2008).

**Intelligence between people:** This type of intelligence is the ability to understand the feelings, purpose, and motivation of other people. Intelligence between people is the ability to understand other people and creating a kind

of cooperation with them in an effective way. Such as impressing a group of people and persuading them to follow a specific pattern. This is required by all the people such as teachers, doctors, managers, politicians and sales persons and all the people who are dealing with other people in one way or another they should have this intelligence (Arjoman, 2008).

**Intelligence within a person:** This type of intelligence is the ability to understand one (needs, fears, abilities) and using them for managing one's life. This kind of intelligence requires having a clear image of abilities, individual limitations, awareness of internal feelings, goals, motivations, tempers, inclinations, ability to control you, self-esteem and understanding. Characteristics of this type of intelligence includes: immediate self-awareness to calm you in stressful situations for making wise decisions. Gardner believes that these aspects o the intelligence within a person determines almost 80% of one's success (Feizabadi, 2004).

**Location (spatial) Intelligence:** Imagine a kid who is interested in drawings. He /she is so much good in tracing drawings and making puzzles and he / she is able to create amazing structures with blocks. He / she have clear and happy dreams and is able to create images in his/her mind. He/she prefers to read books with so many images and illustrations. Then we would say that this kid has a high level of spatial intelligence. You also have used your spatial intelligence to create the image of the mentioned kid in your mind.

**Naturalistic Intelligence:** This type of intelligence includes the aptitude of a person in perceiving the nature and the world around us. Characteristics and skills involved in this type of intelligence includes: distinguishing plants, animals, categorizing them, perceiving the world and nature, caring for the nature, working and learning in outdoors environments, put importance on keeping pets, growing plants, vegetables and fruits , awareness of the nature. The jobs which need a higher level of this type of intelligence includes: biologist, zoologist, aerologist, forester, gardener and keeping bees. This type of intelligence also is the ability to perceive the variety of things in nature, feeling close to them. Using this kind of understandings is another characteristic of this type of intelligence (Feizabadi 2004).

**Educational use of Multiple Intelligence theories:** Gardner believes that the aim and goal of education is not using the basic skills, learning the truth or achieving command in thinking. He states all we learn should be considered as a mean not as a goal. Learnings, knowledge, skills and principals should be used as a mean to allow us to increase our knowledge (Eshaghnia, 2007).

Some researchers believe that "the proper learning occurs in Flow condition (full concentration on learning)". Bing in Flow condition (like when we are interested in doing something that we forget about the time and place ) cause us to feel relaxed together with challenging the

mind and it is a very ice experience and in these cases we say that the person has been draw in that activity. Students will experience such a feeling when teacher pay proper attention to their ways and intelligence. If education will last for weeks and months but will involve every 8 types of intelligence students will never get bored. But since the courses are usually so much complicated and superficial they make the student bored.

Implementing activities involve all types of intelligence guide the student to have a deeper and more active learning. Using multiple intelligence, in different ways, helps teachers to create an environment in which the students can identify their aptitude and interests. And this will help them to grow their self-esteem. In multiple intelligence theory, a teacher can use it to make a connection between their educational experience and their real life. If the teacher will use 5 to 8 types of the intelligence in his teaching approach he can have a creative teaching. Therefore using multiple types of intelligence not only help the teacher to be creative but also influence both the teacher and student learning (Arjoman, 2008). In this approach of teaching, the teacher constantly changes his approach. It is possible that he will use some of the class time for lecturing or writing things on the board but can also use the board or showing a movie to make a clear image of the subject being taught. Sometimes he uses music also for this purpose to prepare the environment for better learning. He provides such opportunities for the student so they can show and express their thoughts and spend their time in intelligent activities or connect their experience with the subject they are learning (Haji Hosseini Nejad & Baleghi zadeh, 2002).

Multiple intelligence theory opens a door to different teaching approaches which can be easily implemented in classrooms. In most of the cases these approaches are the areas being used by experiences teachers for so many years and in other cases multiple intelligence theory provides teachers with the opportunities to implement approaches which are rather new. Multiple intelligence states that none of the approaches can be used on students constantly. Each person has different abilities. Therefore, we cannot say that these approaches are so much successful on some and without any effect on some others. For instance, using images and drawing in teaching is proper for those who have high level of spatial intelligence and it is possible that the same approach will have a

totally different effect on others (Feizabadi, 2004).

In this survey we have tried to evaluate the relation between multiple intelligence and progresses made in education in statistics course among post-graduate students of Islamic Azad University, GARMSAR branch.

**Method**

The survey is applicable in purpose and integrative in approach. The subjects used in this survey includes 289 student studying in post - graduate of education management in Islamic Azad University in 2009-2011 by Morgan table 155 of them have been selected randomly as the sample of this survey. For surveying we have used a questionnaire with 53 questions which have been prepared by Gardner 8 type of intelligence and we have also used the student's final grades in analytic and descriptive statistics course in first and second semester of the 2010-2011.

**The final result of the questionnaire**

Table 1. Case processing summary

		N	%
Cases	Valid	155	100.0
	Excluded <sup>a</sup>	0	0.0
	Total	155	100.0

<sup>a</sup>List wise deletion based on all variables in the procedures

Table 2. Reliability statistics

Cronbach's Alpha	N of Items
0.907	53

Table 3

	N	Mean	Std. deviation	Std. Error Mean		
Hypothesis	155	129.74	23.638	1.889		
	t	df	Sig.(2-tailed)	Mean Differences	95% confidence interval of the Difference	
					Lower	Upper
Hypothesis	40.419	154	.000	76.742	72.99	80.49

The results show that the final coefficient for the 53 questions of the Gardner is 0.907 which is acceptable (Table 1, 2 and 2).  
*Questionnaire of the survey Hypothesis: The statues of the*

*MI in students under the survey are satisfactory?*

Analysis:

Considering the calculated t and the level of meaning (sig.0.000) in the level of confidence of 95% we can conclude that in general the student in this survey are having proper and satisfying level of MI (Table 3).

*There is a relation between Gardner's math-logical intelligence with educational competency of the students in statistics course.*

The result of the analysis of the regression of the student educational competency in statistics course on the Gardner's math - logic intelligent factors (Table 4).

Considering the fact that the goal of this survey is to predict educational growth in statistics course this

Table 4

Regression	Beta	Meaning Level	R	( R ) 2	F	Meaning Level
Gardner Math-Logic Intelligence	0.311	0.001	0.311	0.126	10.107	0.003

variable has been analyzed on Gardner's Math-logic intelligence with regression approach. As you can see in the above table



Table 5.

Regression	Beta	Meaning Level	R	( R ) 2	F	Meaning Level
Music Intelligence	0.299	0.001	0.132	0.126	12.173	0.001

the variable of math-logic intelligence has been predicted the variable of the competency in statistics course in a meaningful way ( $P < 0.01$ ). The ratio of meaningful F shows a meaningful relation between this variable and educational competency.

*There is relation between music intelligence of Gardner and Educational competency.*

The results of the educational competency regression on analysis in statistics course on Gardner's Music intelligence factors.

Considering the fact that the goal of this survey is to predict educational growth in statistics course this variable has been analyzed on Gardner's Music intelligence with **regression** approach. As you can see in the above table the variable of Music intelligence has been predicted the variable of the competency in statistics course in a meaningful way ( $P < 0.01$ ).

The ratio of meaningful F shows a meaningful relation between this variable and educational competency.

*There is a relation between spatial intelligence of Gardner and educational competency in Statistics course.*

Table 6.

Regression	Beta	Meaning Level	R	( R ) 2	F	Meaning Level
Spatial Intelligence	0.421	0.001	0.421	0.227	11.009	0.001

The results of the educational competency regression on analysis in statistics course on Gardner's spatial intelligence factors (Table 6).

Considering the fact that the goal of this survey is to predict educational growth in statistics course this variable has been analyzed on Gardner's spatial intelligence with **regression** approach. As you can see in the above table the variable of Spatial intelligence has been predicted the variable of the competency in statistics course in a meaningful way ( $P < 0.01$ ).

The ratio of meaningful F shows a meaningful relation between this variable and educational competency.

*There is a relation between verbal intelligence of Gardner and educational competency in Statistics course.*

Integrative results in average of statistics course with verbal intelligence (Table 7).

Table 7. The data has been gathered from 155 students

Gardner's Verbal Intelligence
Competency in Statistics -0.041

$p < 0.05$ ;  $**p < 0.01$

the results show that the relation between educational competency and verbal intelligence is not meaningful and there is no relation between them.

*There is a relation between naturalistic intelligence of Gardner and educational competency in statistic course.*

Integrative results in average of statistics course with naturalistic intelligence (Table 8).

Table 8. The data has been gathered from 155 students

Gardner's Naturalistic Intelligence
Competency in Statistics -0.027

$p < 0.05$ ;  $**p < 0.01$

the results show that the relation between educational competency and naturalistic intelligence is not meaningful and there is no relation between them.

*There is a relation between individual internal intelligence of Gardner and educational competency in statistic course.*

Integrative results in average of statistics course with individual internal intelligence (Table 9).

Table 9. The data has been gathered from 155 students

Gardner's Individual Internal Intelligence
Competency in Statistics -0.029

$p < 0.05$ ;  $**p < 0.01$

the results show that the relation between educational competency and individual internal intelligence is not meaningful and there is no relation between them.

*There is a relation between in-between people intelligence of Gardner and educational competency in statistic course.*

Integrative results in average of statistics course with in-between people intelligence (Table 10).

the results show that the relation between educational competency and in-between people intelligence is not meaningful and there is no relation between them.

Table 10. The data has been gathered from 155 students

Gardner's in-between people Intelligence
Competency in Statistics -0.034

$p < 0.05$ ;  $**p < 0.01$

*There is a relation between physical intelligence of Gardner and educational competency in statistic course.*

Integrative results in average of statistics course with physical intelligence (Table 11).

Table 11. The data has been gathered from 155 students

Gardner's physical Intelligence
Competency in Statistics -0.031

$p < 0.05$ ;  $**p < 0.01$

the results show that the relation between educational competency and physical intelligence is not meaningful and there is no relation between them.

### Results and suggestions

We have the following results from the current survey: Regarding the first hypothesis considering the calculated t and the level of meaning (sig: 0.000) in confidence level of 95% we observe that in general the condition of the students in this survey is satisfactory.

Regarding the 2<sup>nd</sup> one, considering the fact that the goal of this survey is to predict educational growth in statistics course this variable has been analyzed on Gardner's math-logic intelligence with regression approach. As shown in Table 11, the variable of math-logic intelligence has been predicted the variable of the competency in statistics course in a meaningful way ( $P < 0.01$ ).





The ratio of meaningful F shows a meaningful relation between this variable and educational competency. Regarding the 3<sup>rd</sup> one, considering the fact that the goal of this survey is to predict educational growth in statistics course this variable has been analyzed on Gardner's music intelligence with regression approach. The variable of music intelligence has been predicted the variable of the competency in statistics course in a meaningful way ( $P < 0.01$ ).

The ratio of meaningful F shows a meaningful relation between this variable and educational competency. Regarding the 4<sup>th</sup> one, considering the fact that the goal of this survey is to predict educational growth in statistics course this variable has been analyzed on Gardner's spatial intelligence with regression approach. The variable of spatial intelligence has been predicted the variable of the competency in statistics course in a meaningful way ( $P < 0.01$ ).

The ratio of meaningful F shows a meaningful relation between this variable and educational competency. Since in this survey there is a meaningful relation between math-logic, music and spatial intelligences and competency in statistics course therefore we can say that we can use the following suggestions for enforcing students in educational matters.

*Math-logic intelligence:* a). Educational activities including: puzzle, solving problems, scientific experiences, mental calculations, playing with numbers and pondering thinking can be used. b). Suggested educational sources includes: calculator, cross tables and math games. c). Educational approached includes: pondering thinking, putting an issue in a logical frame and analyzing it.

*Spatial intelligence:* a). Educational activities including: art activities, imaginary games, imagining mental drawings. b). Educational resources including: video projector, puzzle, camera, electronic library. c). Educational approaches including: seeing, drawing, imagining, coloring, mental images.

*Music intelligence:* a). Educational activities including: learning in a rhythmic way, teaching together with music. b). Educational resources: recorder, cassettes, using Power Point software in teaching statistics. c) Educational Approaches: learning in a rhythmic way and listening to it.

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