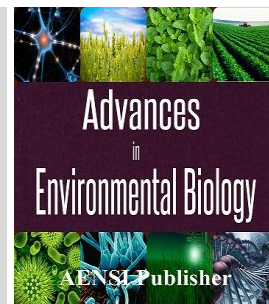




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The Investigation of the Mnemonic Skills and Educational Success in the Mathematics Sciences Fields

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ABSTRACT

In this study the degree of the mnemonic skills and educational success of the mathematics sciences has been carried out to analyze the relationship between these groups. For the statistical population of the related study, the graduates of the pure mathematic field of Tabriz Azad University were taken up in this study. The diagrams, correlation and categorization difference methods were taken to analysis of the study.

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INTRODUCTION

Since there is a Prejudge which implies the mnemonic skills and mathematics or computational skills apparently are distinct and this may be affecting the educational continuation, it is decided to carry out a non-experimental study in this field. The students of pure mathematic at undergraduate to pass general courses such as Persian literature, English literature, Arabic literature, history and so, in this study we considered the scores of these courses as a criterion for mnemonic skills. We want to respond to the question whether there is a correlation between the total score of educational success and the mnemonic skills? Is there a difference between the total score and the scores of mnemonic courses; is it a logical difference (one class) or a one mutating difference between two or more categories? By responding to these questions, we can judge scientifically. Shirin Soltani and A. Baki [1] *et al* carried out a study regarding to the degree of students' understanding in the relationship between the mathematics and the real life of three fields of mathematics, natural sciences and humanistic sciences.

METHODS AND MATERIALS

In this study the statistical population of the research includes the whole pure mathematic graduates of Tabriz Azad University. According to the statistics of the same university, the research population is about 125 people. By studying the background of these 125 students and measurement of their scores, the following categorization has been carried out as following:

Table 1: Categorization of the total score.

Rating	VL	L	M	H	VH
interval	[10, 12)	[12, 14)	[14, 16)	[16, 18)	[18, 20)

The distribution table of these total scores of the related study is accordance with table 2. 50 people are considered for the volume of the sample and the categorization accidental sampling method is also used in this regard. But due to the number of the categorizations of VL and VH, the whole recent populations were taken up into these two levels and the volume of other categorizations has been specified as following:

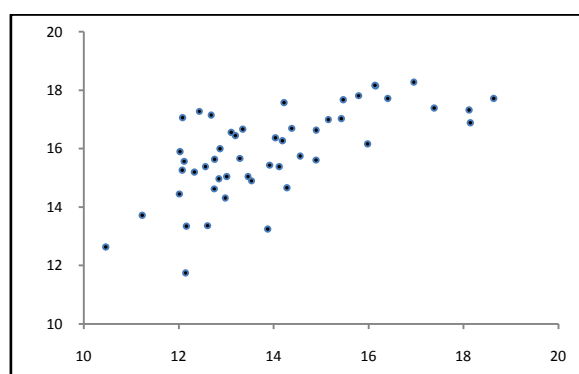
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Table 2: Distribution table of total score and calculation of the sample volume.

Rating	N	PERCENT	s
VH	3		3
H	14	11.67	5
M	38	31.67	14
L	68	56.67	26
VL	2		2
	125		50

By determining the volume of the sample for the categorizations, the number is specified by the help of the relative categorization accidental sampling method [2]. By extracting the mnemonic scores of the sample, the mnemonic score of these people was calculated. The definition and extraction of the research variables have been completed by this way. The total score is variable X and the mnemonic score is called Y variable.

Diagram analysis, correlation and determination coefficient:

**Diagram 1:** Distribution of X and Y variables.

By the diagram analysis, it is observed that there is a non-linear correlation between these two variables. But this diagram does not show any information regarding to the correlation. Hence, by the use of SPSS Software, we measure the correlation between 50 data of these variables. The obtained results have been given in following table:

Table 3: Correlations.

		averag TO	average MN
average TO	Pearson Correlation	1	.672**
	Sig. (2-tailed)		.000
	N	50	50
average MN	Pearson Correlation	.672**	1
	Sig. (2-tailed)	.000	
	N	50	50

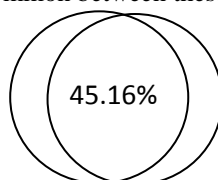
** . Correlation is significant at the 0.01 level (2-tailed).

Thus, the degree of the correlation between the total score and mnemonic score is established in this level: $\alpha = 0.01$, $r = 0.672$

Hence, there is a significant correlation between these two variables. By calculating the determination coefficient (Delavar, 2007), we also have:

$$V = (r_{xy})^2 \times 100 = (0.672)^2 \times 100 = 45.16$$

Hence about 45.16% of the distribution is common between these two variables.



Comparison of the categorization difference:

We enter into the related details due to investigate the study establishing the total score, score changes of the mnemonic and vice versa. The two dimensional table of 4 has been designed as following for these variables:

Table 4: Two-dimensional table.

	VL	L	M	H	VH	f_x
VH	0	0	0	3	0	3
H	0	0	0	2	3	5
M	0	0	4	10	0	14
L	1	3	15	7	0	26
VL	0	2	0	0	0	2
f_y	1	5	19	22	3	50

In this phase, we are seeking to the mutating difference (two or more categories) of these categorizations between variables because if these differences are considerable, then the separation of the abilities of mathematic sciences and mnemonic skills will be accepted. First, the top category of these variables is investigated. The obtained results are given in table 5:

Table 5: Comparison of the categorization difference in the highest categorization (VH).

X→Y	f	P	Y→X	f	P
[VH, VH]	0	0	[VH, VH]	0	0
[VH, H]	3	100	[VH, H]	3	100
[VH, M]	0	0	[VH, M]	0	0
[VH, L]	0	0	[VH, L]	0	0
[VH, VL]	0	0	[VH, VL]	0	0
	3			3	

100% of people having the highest score have got high score of the mnemonic skills and vice versa. There is not mutating difference in this case. In table 6, it is observed that the total mutating difference in $X \rightarrow Y$ is null and in $Y \rightarrow X$ is 31.82%, mutating difference is stopped in the second category that it is negligible in this case.

Table 6: Comparison of the categorization difference in top category (H).

X→Y	f	P	Y→X	f	P
[H, VH]	3	60%	[H, VH]	3	13.6%
[H, H]	2	40%	[H, H]	2	9.09%
[H, M]	0	0	[H, M]	10	45.45%
[H, L]	0	0	[H, L]	7	31.82%
[H, VL]	0	0	[H, VL]	0	0
	5			22	

In the moderate category (table 7) and lowest category, as well as highest category, there is not mutating difference.

Table 7: Comparison of the categorization difference in moderate category (M).

X→Y	f	P	Y→X	f	P
[M, VH]	0	0	[M, VH]	0	0
[M, H]	10	71.42%	[M, H]	0	0
[M, M]	4	28.58%	[M, M]	4	26.66%
[M, L]	0	0	[M, L]	15	78.94%
[M, VL]	0	0	[M, VL]	0	0
	14			19	

In the low category (table 8), mutating difference in $Y \rightarrow X$ is null and in $X \rightarrow Y$ is 26.92%, mutating difference is stopped in the second category that it is negligible in this case.

Table 7: Comparison of the categorization difference in moderate category (L).

$X \rightarrow Y$	f	P
[L, VH]	0	0
[L, H]	7	26.92%
[L, M]	15	57.69%
[L, L]	3	11.54%
[L, VL]	1	3.85%
	26	

$Y \rightarrow X$	f	P
[L, VH]	0	0
[L, H]	0	0
[L, M]	0	0
[L, L]	3	60%
[L, VL]	2	40%
	5	

Conclusion:

By considering the total correlation coefficient and minor analyses and the categorization issues, it can be concluded that the degree of the mathematics sciences success have higher correlation together in compare to the mnemonic skills. The Prejudge will look at these experimental affairs suspiciously. But there are other factors such as struggle, virtue and confidence, belief and interest in target that guarantee the educational success overcoming on every pre-judgment and opening the paths of the knowledge towards the whole students potentially.

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