

# Investigating the Relationship Between Learning Styles and Educational Achievement of the Elementary School Students

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## Abstract

The purpose of this study is to investigate the relationship between learning styles and educational achievement of the elementary school students in the city of Gilan-e-Gharb. The research is performed through descriptive method with a correlation design, which follows a functional purpose. The statistical population consists of all the elementary school students in Gilan-e-Gharb city in 2014, which 265 subjects were randomly selected as the statistical sample due to Krejcie's and Morgan's Table. Learning styles questionnaire of Kolb (1985) and the students' average of the previous semester (January, 2014) as a measure for assessing educational achievement is used to assess the students' learning styles. In this study, Cronbach's alpha coefficient for Kolb's learning styles test was estimated 0.890. Descriptive statistics and inferential statistics including Kolmogorov-Smirnov test, correlation and regression coefficients were performed using software SPSS 21 to analyze data. The findings showed that there is not a significant relationship between convergent learning style ( $r=-0.381$  &  $p=0.651$ ) and assimilating learning style ( $r=-0.412$  &  $p=0.780$ ) with educational achievement. But, there is a significant relationship between divergent learning style ( $r=-0.329$  &  $p=0.000$ ) and adapting learning style ( $r=-0.451$  &  $p=0.003$ ) and educational achievement of the elementary school students in Gilan-e-Gharb city. The results of regression analysis revealed that 18 percent of learning styles can predict the variance of the students' educational achievement.

## Keywords

Learning Styles, Educational Achievement, Elementary School Students

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## 1. Introduction

Studying the factors affecting educational achievement or performance is fairly complex, because the concept has broad dimensions that both environmental and personal factors can affect it (Sharifi, Ganji & Najafi, 2011). Educational achievement in different periods of life is the result of mutual effect of three biological (physical), psychological and social factors. A group of educational researchers seeks to investigate and analyze the impact of various factors on educational achievement (Zaki, 2010). Ladine (1967, quoting

from Raeis Saadi, 2007) and Reber (1985, quoting from Raeis Saadi, 2007) have defined educational attainment as follow: "the word of educational achievement refers to an image for students' educational position. The image may indicate scores for a course or scores average in the courses related to this subject or scores average of different courses" (Laydra et al. 2008).

Various criteria can be considered for educational achievement, of which the most famous is the average score of class. Rading (2001, quoting from Raeis Saadi, 2007) suggests that educational achievement is an amount of

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learning that is usually revealed in tests and exams and in-class discussions and group works. Many researchers have investigated the role of important and predictive variables unrelated to abilities or factors for educational achievement on educational achievement in their research activities. Among the factors associated with educational achievement, personal characteristics and learning styles can be pointed out (Sternberg, 1999; quoted from Kadivar, Farzad, Kavosiyan and Nikdel, 2009). Learning styles refers to learning how to deal with others and what they want to learn, which includes deep and superficial study. Deep study refers to learners' behavior in facing with learning contents and is associated with what they have already learned. In contrast, if the student is only to protect the content, the method is called superficial (Saif, 2007). Learning style refers to a specific structure and stability of individuals, with which people identify process and correct simulators (Simsac, 2004; cited from Altun & Yazici, 2010).

Learning style is a part of individual differences (Sahebi & Hamid Poor, 2004). Learning styles considered as individuals' data-processor are one of the affective factors for learning (Bastable, 2003).

Researchers believe each learner has some preferred methods to understand, organize and store information that are identifiable and relatively stable (Vali Zadeh, 2006). In a division, learning styles are divided into four categories:

1. *Convergent learning style*; the style is composed of two learning methods including abstract conceptualization and active experimentation. People with this learning style are efficient in finding practical uses for ideas and theories. And prefer to deal with technical rather than social and interpersonal issues (Kolb and Fry, 1975; quoted from Saif al at. 2011).
2. *Divergent learning style*; divergent learning style is composed of concrete experience and reflective observation. People having this learning style see objective situations from different angles. Their approach to situations is observation rather than action. These people prefer situations needing to express different ideas and are interested in different cultural attractions and gathering information (Kolb and Fry, 1975; quoted from Saif al at. 2011).
3. *Assimilating learning styles*; this style consists of a combination of abstract conceptualization and reflective observation. People with this learning style are reasonably accurate and capable of understanding extensive information and converting them into a concise summary. These people rely mainly on abstract ideas and concepts. From the viewpoint of these individuals, theories that are logically true are preferred to practical application

functionality. These people are successful in informative and scientific jobs and capable of organizing different information. That is why it is called assimilating learning style (Kolb and Fry, 1975; quoted from Saif al at. 2011).

4. *Adapting learning style*; this style is composed of concrete experience and active experimentation. People with this learning style learn from first-hand experiences and enjoy engaging with plans and challenging exercises. These people prefer tangible things rather than logical analyses. They are capable of adapting to new situations. That is why it is called assimilating style. These people are more successful in marketing and sales jobs than others (Kolb and Fry, 1975; quoted from Saif al at. 2011).

Paying attention to individuals' differences by teacher such as individuals' preferences for learning is very effective to improve the quality of learning and increases the level of achievement (Jeffrey, 2002, quoted from Sahebi and Hamidpour, 2004). Learning styles are very different; however, they can be divided into three categories: cognitive, emotional and physiological branches. Learning styles effecting on learning process such as teaching strategies, educational activities related to learning style, intelligence, motivation and variables should be identified to improve the quality of teaching and learning. Moreover, the relationships between these variables should also be identified to improve learning process (Saif, 2007). Currently, in the Iranian society, educational achievement and progress has a high-ranked importance for families, students and society. Understanding the psychological aspects of students and their reactions in certain circumstances can act as a powerful educational tool increasing the impact of educational tools. Thus, it can be economically beneficial for students, teachers and education system (Atash Rooz, Pakdaman & Askari, 2008). Researchers have stressed the importance of the impact of learning styles on learner progress and believed that people in proportion to their individual differences use different styles for learning (Ismail et al., 2010; Komarajov et al., 2011; Bordbar, 2012; Izadi & Mohammad Zadeh, 2008; Mansouri, 2000; Mohammad Zadeh Admolaei, 2005). Therefore, the basic question of this study is that what is the relationship between learning styles and educational achievement of students, and if learning styles can predict student achievement?

## 2. Research Methodology

The research is performed through descriptive method with correlation design following a functional purpose. The statistical population consists of all the elementary school students in Gilan-e-Gharb city in 2014, which 265 subjects were randomly selected as statistical sample due to Krejcie's

and Morgan's Table. Learning styles questionnaire of Kolb (1985) and the students' average of the previous semester (January, 2014) as a measure for assessing educational achievement is used to assess the students' learning styles. The questionnaire includes 12 questions, each one has four sentences, which each question's quadric sentences assesses concrete experience, reflective observation, abstract conceptualization and active experimentation. The examinee should answer the questions in 15 minutes. The proposed responses are ranked from 1 to 4. Kolb in 1985 reported the reliability coefficient of the questionnaire by using Cronbach's alpha: Active experimentation (0.78), abstract conceptualization (0.83), reflective observation (0.73), and concrete experience (0.82). Hosseini Lorgani(1998) has reported the reliability of the test by using Cronbach's alpha as follow: active experimentation (0.72), abstract conceptualization (0.76), reflective observation (0.64), and concrete experience (0.68). In this study, Cronbach's alpha coefficient calculated was 0.890 in order to examine the styles of Kolb. Descriptive statistics and inferential statistics including Kolmogorov-Smirnov test, correlation and regression coefficients were performed using software SPSS 21 to analyze the data.

### 3. Findings

Based on descriptive statistics parameters, 155 subjects in the sample were male and 110 were female students, 60% of

which were studying in schools in the city. 30% of them were in the first grade, 25% in the second grade, 15% in the third grade, 10% in the fourth grade, and 20% were in the fifth and sixth grade in elementary schools. Pearson's correlation coefficient was used to investigate the relationship between learning styles and educational achievement among the elementary school students of Gilan-e-Gharb city. The results can be seen in Table 1 and 2.

**Table 1.** The relationship between learning styles and the students' educational achievement.

Independent Variable	Independent Variable (educational achievement)		
	N	R	Sig
Dependent Variable	265	0.380	0.002

As can be seen in Table 1, according to Pearson correlation coefficients at the significance level ( $p \leq 0.005$ ), there is a direct and significant relationship between learning styles and educational achievement among the elementary school students of Gilan-e-Gharb city.

As can be seen in Table 2, there is not a significant relationship between convergent learning style ( $P=0.651$  &  $r=0.381$ ) and assimilating learning style ( $p=0.780$  &  $r=0.412$ ) with educational achievement, but there is a significant relationship between divergent learning style ( $p=0.000$  &  $r=0.329$ ) and adapting ( $p=0.003$  &  $r=0.451$ ) and educational achievement of the elementary school students in the city of Gilan-e-Gharb.

**Table 2.** Correlation coefficients between learning styles and educational achievement of the students.

Dependent Variable	Educational Achievement		
Dimensions of learning styles	Sig level	Correlation coefficient	Number
Adapting learning styles	0.003	0.451	265
Divergent learning styles	0.000	0.329	265
Convergent learning styles	0.651	-0.381	265
Assimilating learning styles	0.780	-0.412	265

In addition, regression was used to predict students' educational progress by learning styles. The summary for the regression model can be seen in Table 3.

**Table 3.** The summary for the regression model.

Parameters	Standard Error	R <sup>2</sup>	R
Value	0.106	0.184	0.429

Table 3 shows the summary for the regression model. According to the table, it becomes clear that the correlation coefficient between the multiple dimensions of learning style and educational achievement is  $R^2=0.184$ . This reflects the fact that learning style dimensions have been able to predict about 18 percent of the variance in educational achievement. Table 4 should be referred to evaluate the significance of the value.

**Table 4.** And the summary of variance analysis.

Model	Squares	Degree of Freedom	MS	sig	F
Regression	0.318	4	0.079	0.000	7.061
Rest	1.407	125	0.011		
Total	0.800	129			

Tables 3-4 indicate that the total amount of squares of students' educational achievement is 1.725, which 0.318 amount with degrees of freedom 125 can be predicted by learning style dimensions. The value obtained for this hypothesis achieved at the significant level of 0.05. It means that critical value is significant at the significant level of 0.05 regarding to the value of "F". Therefore, we can say that learning styles have a total of 18% of the variance in students' achievement.

Table 5 shows regression coefficients of learning styles and

educational achievement. According to the table, it becomes clear that among the variety of learning styles, only adapting

learning style with Beta values of 0.854 significantly predicts students' educational achievement.

**Table 5.** Regression coefficients for learning styles and educational achievement.

Learning styles	Non-standard coefficients		Standard coefficients	t	Sig.
	B	Std. Error	Beta		
Constant value	5.347	0.287		18.618	0.000
Assimilating style	0.094	0.060	0.087	1.582	0.116
Convergent style	0.429	0.103	0.952	9.155	0.250
Adapting style	-0.495	0.100	0.854	4.976	0.000
Divergent style	-0.296	0.090	-0.323	3.272	0.000

## 4. Discussion and Conclusion

Students in mental abilities, learning methods, style and pace of learning, preparation, talent, personality, interest and motivation toward knowledge and education activities are different. Therefore, taking into account the individual differences of students in education and treatment tailored to their specific characteristics are the main tasks of teachers and educational centers. The aim of this study was to investigate the relationship between learning styles and educational achievement of elementary school students in the city of Gilan-e-Gharb. The results of the analysis indicated that the convergent learning style ( $p=0.651$  &  $r=-0.381$ ) and assimilating learning style ( $p=0.780$  &  $r=-0.412$ ) have no significant relationship with educational achievement. The results of this research are consistent with the results of Bagher Zadeh (2006), Sarchami and Hosseini (2004) and Husseini Lorgani and Saif (2001), in which there was not statistically a significant relationship between Kolb's quadric learning styles and educational achievement. From the results can be deduced that the learning styles are specified to each student's individual specifications and each one follows a particular learning style. Therefore, we cannot expect that there always be a relationship between a particular learning style and educational achievement. The relationship between these two variables may be positive and negative for some styles and in some cases have no relationship. Therefore, in this study the relationship between assimilating learning style and educational achievement is not significant. Different results can be achieved if the type of learning style and the theoretical and practical courses are separately assessed, because people having assimilating learning styles are more interested in practical than theoretical concepts. Basically, these people are less interested in the subjects that involve working with people. This characteristic can prevent those people having this style from participating in educational groups. Consequently, it can decrease their educational performance (Sarchami & Hosseini, 2004).

The results form Pearson's correlation coefficient also showed that there is a significant relationship between

divergent learning style ( $p=0.000$  &  $r=-0.329$ ) and adapting learning style ( $p=0.003$  &  $r=-0.451$ ) with educational achievement of elementary school students in Gilan-e-Gharb city. The results of this research are consistent with the results of Bagher Zadeh (2006), Sarchami and Hosseini (2004) and Husseini Lorgani and Saif (2001), in which there was not statistically a significant relationship between Kolb's quadric learning styles and educational achievement. In explaining the results we can say that people in proportion to their individual differences use different styles for learning. Adapting learning style is composed of two learning styles of concrete experience and active experimentation. People with this learning style learn from first-hand experiences and enjoy challenging exercises. These people prefer tangible issues than reasonable analyzes. Therefore, students with this learning style are more relevant with educational supplies leading to the correlation between learning style and educational performance.

The results of the regression analysis revealed that learning style dimensions have been able to predict about 18% of the variance of educational achievement. among the variety of learning styles, only adapting learning style with Beta values of 0.854 significantly predicts students' educational achievement. Therefore, Adapting learning style is composed of two learning styles of concrete experience and active experimentation. People with this learning style learn from first-hand experiences and enjoy challenging exercises. These people prefer tangible issues than reasonable analyzes. Also, these people rely on the information obtained from others than the information they earn through technical analysis. The people with this style are capable of adapting to new situations. That is why the style is called adapting. People with this learning style are more successful in marketing and sales jobs than others. In the end we can say that learning style refers to a specific structure and stability of individuals, with which people identify process and correct simulators. Regarding to individuals' differences by teacher such as individuals' preferences for learning is very effective to improve the quality of learning and increases the level of achievement. Therefore it is recommended:

1. Teachers should pay attention to individual differences

especially learning styles of students and use different methods of teaching in order to provide learning experiences for all students in a classroom.

2. It should provide various learning situations and different teaching methods for students in order for students to choose learning styles according to their level of abilities.
3. Synchronizing teachers' and students' learning styles can shape the process of teaching and learning in such a way that is stimulating for the both sides.

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