

# Studying the Relationship between Learning Styles and Progressive Teaching Methods among High Schools Students in the city of Isfahan

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## Abstract

The purpose of this study is to investigate the relationship between learning styles and progressive teaching methods among high schools students in the city of Isfahan. This study is a practical research from purpose view and is a descriptive-correlation one from research methodology perspective. The statistical population of this study includes all of the male and female students of high schools in the city of Isfahan in 2010-2011 academic year. This population consists of 86142 students. A sample of 150 students has been selected from this population through multi-stages cluster sampling. This sample consists of 79 female students and 71 male ones. In order to collect the research data, a standard questionnaire and a self-administrated questionnaire has been used. The first questionnaire that has been developed by Reid was used for examining learning styles among students and the second self-administrated one has been used for investigating the teaching methods. The reliability of the questionnaires has been examined through Cronbachs' Alpha Coefficient. The coefficient was 0.68 and 0.94 for our questionnaire and confirms reliability of the questionnaires. Also the supervisor and other professors have been asked to review and modify the questionnaire and thereby its face validity has been examined and confirmed. The results of this study revealed that there is not any significant relationship between individual learning style and students' preferred teaching methods. Also the results indicated that there is not any significant relationship between collective learning styles and students' preferred teaching methods. Another part of the results showed that the relationship between project learning style and students' preferred teaching methods is significant. Finally, the observed difference between students' average of learning styles and their preferred teaching methods in terms of gender was significant.

**Keywords:** Learning, Learning Styles, Teaching Methods

## 1. Introduction

The purpose of education is not transmitting the cultural heritages and human experiences to the new generations, but its main mission is creating desirable changes in the students' attitudes, cognitions, and behaviors (Mohamadi, 2009). Undoubtedly, education and cultivation is very important in every society and also human's excellence will be emerged through sound education and learning. Indeed, teaching is a complex process that every simple look at it can waste its strengths and facilities and results in its failure. Therefore, expansion of education and its revolutions requires recognizing education process and knowing its modern methods (Chen and Tsai, 2008).

Learning is the basis of human behaviors and is considered as an ongoing process in the life time (Maanavi, 2004). Indeed, learning is a cognitive process that includes receiving, processing, organizing, and saving information so exactly that they can be recalled when is needed (Akdemir, 2007). There are several effective factors on the learning and recognition of these factors that can be beneficial in identifying and eliminating its weaknesses. In this regard, Skinner believes that an effective and actual educational system cannot be created unless learning and teaching are recognized and understood (Meeyari et al., 2009).

The personal characteristics are one of the main effective factors on the learning process. Indeed, there is a significant difference between learners from preparation, competency, and other characteristics perspective. Every learner has his/her own preferences in terms of how receive, process, and learn the information during learning process (Akdemir, 2007). This is why that the schools cannot provide the necessary educational facilities and equipment without considering students differences. Learning style is a part of individual differences concept that can be considered as a combination of learners' motivation and information processing methods (Akdemir, 2007). Hunt believes that learning style refers to the methods of learning not its quiddity. According to Dunn and Griggs, learning style can be defined as a set of biological characteristics that make a teaching method desirable or undesirable for students (Nejati, 2010). There are different types of learning styles

that can be divided into listening, reading, and writing styles; diverging, assimilating, converging, and conforming styles; individual, collective, and project styles. Indeed, learning styles are a part of individuals' personality. In other words, preferring a learning style by every person refers to his/her desire to an especial learning method in a certain condition. A person may prefer a learning style to others (Wintergerst et al., 2003).

Because the students have different learning styles and they influence the students' learning and educational progress, it is necessary that the teachers know to how educate their students effectively and know their different styles so that they are able to help the students in using different learning styles (Seyf, 2006).

On the other hand, learning styles have relationship with different factors such as educational progress, personality traits, and selection of educational field. The students' preferred teaching methods are one of the main factors in terms of learning style that has been examined in this study. Obviously, teachers play an important role in the teaching process. The reason is that the teachers not only play an important directive, supportive, and confirmatory role, but also they organize the students' learning activities and develop their different aspects in learning. The teachers face two main paths for achieving their educational goals. The first is using the inactive and traditional methods and the second is using active and practical teaching methods (Mohamadi, 2009).

The active teaching methods refer to different teaching and educating methods that the students play active role in its process. Indeed, the teacher is a director and advisor and there is a two-way interaction between teacher and student. On the other hand, the students' interests and competences are considered in the plan designing and implementing. Also the active and practical teaching methods, which focus on the student-based methods, educate students' though and creativity capability. The use of active teaching methods can be helpful for learners to understand the course subject so exactly that communicate its concept and meaning to self, life, and society. As a result, not only the student does not forget the course contents, but also he/she has more interest for learning. On the other hand, the student learns the course content so exactly that reaches the deepest learning and believes level. The inactive teaching methods include methods in which the information is transmitted to the students through text books or lecture-based methods. In such methods, the teacher offers the principles and solutions of problems and also offers all of the course contents. One of the most important characteristics of this method is that the teacher is the only speaker and the students are mere listeners. The traditional and inactive teaching methods that are known as teacher-based methods cannot encourage and reinforce though in the students. In other words, this method is an inactive method that the student has not any role in the learning process. This means that the student memorizes the educational contents and then answers some questions in the final test. Inactive teaching methods discourage the potential creativity in the mankind and do not create any motivation for learning in the student. This is why that the students' positive and negative characteristics are not recognized by teacher. As a result, the teacher cannot consider the students' individual differences. Selection of the teaching method is the main aspect in developing, designing, and offering educational contents. On the other hand, the frequency of teaching methods depends on the teachers' own interest. Although developed countries use different active teaching methods that are suitable with especial learning conditions of students, but our educational system use the traditional and inactive teaching methods that have their own weaknesses. As a result, the educational system losses its quality and will be a poor system (Khosravi, 2007). Now, it is an important question for teachers and educational planners that "how are learning styles and students' preferred teaching methods related to each other?" (Smith and Riding, 1999). Attending the methods of learning is the most important factor that attracts much attention to itself. Indeed, students understand different methods through their own learning styles and attempt to solve them through different methods. This is why that the teachers may adapt their educational and communicational methods with students' learning methods. As Wolfolk indicates, it is an unexpected want from teachers that they should customize their educational systems with student's own interests and preferred leaning methods (Seyf, 2006). Yet, the teachers will have more knowledge for their students if they have more educational strategies and use them in practice (Khosravi, 2007).

Another important question that can be asked here is that "what will happen if there is not any consistence between teaching styles and learning methods?". Undoubtedly, such an inconsistency results in the failure of learning system and students' prevention from learning and disinterest toward learning (Lavelace, 2005). Lack of attention to the students' expectations and preferences can result in the ineffective learning styles among students (William, 2007). The reason is that the teachers' inattention to the progressive teaching methods leads that the students have limited and ineffective perceptions from teaching methods and learning styles (Kasaeian and Ayatollahi, 2010). Examining the students' learning styles can be effective in their awareness from teaching methods that are used by them. Indeed, the report of students' learning style is valuable information for them in terms of students' actual needs and abilities (Prashing, 2002). On the other hand, attending these results can be

helpful for both teachers and students in whole teaching process stages (Curry, 1999). Meng (2000) believes that lack of recognition of students' learning style can lead to several problems and difficulties for both teachers and students. While recognition of differences in learning styles can be helpful for teachers and students for using the most effective styles in their courses (Curry, 1999).

Review of the past studies revealed that recognition of the students' learning styles and development of educational structure that is suitable with its style results in better and more effective learning. If this happens then the students have good directions for solving their educational problems and difficulties. This also can be helpful for students in understanding their preferences and strengths in the learning process (Claxton, 1998). For example, Shahnoshi (1998) studied the relationship between learning styles and the students' preferred teaching methods in Isfahan University of medical sciences. The results of this study revealed that nursing students' learning style is divergent. Another part of the results of this study revealed that pre-organizer educational methods, scientific visits, and receiving the concepts are the main educational methods that are preferred by the students in the scientific courses. Also findings of this study revealed that there is a significant relationship between learning styles with project educational, problem-solving, and role playing methods. The results also revealed that although there is not any significant relationship between learning style and students' demographic characteristics, but the relationship between some of the preferred educational methods in the theoretical and practical courses with students' gender, past experiences of nursing, marital status, and wish to study in different academic fields.

Najafi Kiani et al. (2009) studied the comparison of learning styles and students' preferred teaching methods in Fasa University of medical sciences. They found that the main teaching methods of their students are convergent and attractive teaching methods. Also the results showed that collective discussion is the most attractive teaching method from students' perspective. Finally, the results revealed that there is a significant relationship between academic field and learning style.

Smith and Riding (1999) studied the cognitive style and educational preferences. The results of their study revealed that the holistic-analytical style influences cooperative methods preference (role playing and collective discussion) and non-print media preferences (video and slide show) significantly. Also the results revealed that there is a significant relationship between styles and gender influence evaluation methods preferences (individual and collective homework and short-answer and multiple-choice questions).

Abdullatif Ismail (2010) evaluates the students' learning styles preferences in Tishreen University. The results of his study revealed that the students prefer the following styles: visual-verbal, auditory-verbal and visual-non-verbal styles. The results revealed that there is a significant difference between different departments of the faculty and between male and female students. The results revealed that the students prefer visual-verbal teaching styles more than others. Also the results revealed that the visual style was observed among students. The results also revealed that there is a significant difference between male and female students in terms of their interest in different departments of the faculty. The difference is so that the female students had more interest than male ones in terms of learning style preferences in a department and also between different departments of the faculty.

The teachers' familiarity with learning styles is very important. Although, some of these preferences can be recognized through observation, but it is better to explore the students' viewpoints in this area. This information helps the teachers in offering new information about learning methods for students and maintains and improves their motivation (Nabizade, 2009). Therefore, the teacher should understand that every student may have his/her own interested style in doing homework and learning different subjects. As a result, the teacher should have good interaction with every student based on their preferred styles and methods (Seyf, 2006).

Because teaching method is a very important factor in the long-term success of educational processes and there is not any educational method that will be effective in any conditions, it is necessary to adapt the teaching methods and students' cognitive style (Azadi, 2008).

Although the learning styles are the main research studies in both Iran and other countries, but the authors of this study attempt to present a different categorization of learning styles based on Reid theory. He categorizes different learning styles in a new manner and believes that people have different approaches toward learning. In this regard, he categorizes the learning styles in three sets including individual, collective, and project learning styles. The teaching methods can be categorized in two sets including active and inactive methods. The authors

of this study also attempt to examine the relationship between teaching methods and students' learning styles. Therefore, the following hypotheses have been developed for this purpose.

## 2. Research Assumptions

- There is a significant relationship between individual learning and progressive teaching methods.
- There is a significant relationship between collective learning and progressive teaching methods.
- There is a significant relationship between project learning and progressive teaching methods.
- There are significant multiple relationships between combination of learning styles and progressive teaching methods.
- There is a significant difference between learning styles based on the demographic characteristics.
- There is a significant difference between preferred progressive teaching methods and demographic characteristics.

## 3. Research methodology

This study is a practical research from purpose view and is a descriptive-correlation one from research methodology perspective. Indeed, descriptive research includes a set of research methods that their purpose is to describe conditions of the under study phenomenon (Sarmad et al., 2005). On the other hand, correlation study includes all of the researches in which the authors attempt to study the relationship between two variables (Gal et al., 2005). The authors of this study are determined to study the existing realities and answer the questions about existing conditions in terms of research question. Also the authors attempt to examine the relationship between research variables through collecting the research data.

### 3.1. The statistical population and sample

The statistical population of this study includes all of the students of high schools in the city of Isfahan in 2010-2011 academic years. This population consists of 86142 students. In order to determine the sample size, the following formula has been used. This formula that has been developed by Sharifi and Sharifi (2007), suggest a sample with 150 members for this population. The sample of this study consists of 79 female students and 71 male students.

$$n = \left( \frac{N \times Z^2 \frac{\alpha}{2} \times \sigma^2}{\epsilon^2 (N - 1) + Z^2 \frac{\alpha}{2} \times \sigma^2} \right)$$

### 3.2. Data-collection instruments

In order to collect the research data, two questionnaires have been used. These have been indicated and described in the following section.

1. The first is the learning styles questionnaire that has been developed by Reid. The authors of this study used this questionnaire for collecting the research data in terms of learning styles. This questionnaire consists of 23 questions that categorizes learning styles to three sets including individual, collective, and project styles. This questionnaire has been developed in the four-point scale. The respondents were asked to indicate their responses based on their preferences. Reliability and validity of this questionnaire has been examined and confirmed by Wintergrest and DeCapua (2005) and Itzen (2001). Also the authors of the present study examine construct validity of the questionnaire through exploratory factor analysis. The results of exploratory factor analysis revealed that 69% of variance of learning styles can be explained through these questions. Also Cronbachs' Alpha Coefficient has been used for examining reliability of the questionnaire. This coefficient has been calculated for each of the learning styles separately. This coefficient was 0.85, 0.77 and 0.65 for collective, individual, and project learning styles. Because this questionnaire has not been used by previous researchers and authors in Iran, some review and modifications have been done in this questionnaire and then its reliability has been examined through 30 primary questionnaires. The primary Cronbachs' Alpha Coefficient was 0.70

and final coefficient was 0.68 for this questionnaire. In order to examine validity of the questionnaire, content validity has been used. For this purpose, the supervisors and directors of the study and other five experts have been asked to review and modify the questionnaire.

2. The second is the questionnaire of teaching methods. In order to collect the research data in terms of students' preferred teaching methods, a self-administrated questionnaire of preferred teaching methods has been developed. This consists of 26 items that has been developed in 10-point scale. The respondents were asked to indicate one of these 10 options based on their opinions and determine one of the active and inactive teaching methods.

In order to examine validity of the questionnaire, content validity has been used. For this purpose, the questionnaire has been reviewed and modified by supervisors and directors of the study and other five academic experts. Also Cronbachs' Alpha Coefficient has been used for examining reliability of the questionnaire. This coefficient was 0.93 for primary questionnaire with 30 samples and 0.90 for final questionnaire.

#### 4. Data analysis

In order to examine the relationship between learning styles and progressive teaching methods, Pearson correlation coefficient has been used.

**First hypothesis:** There is a significant relationship between individual learning and progressive teaching methods.

**Table 1: the results of examining relationship between individual learning style and progressive teaching methods**

Variable	Pearson correlation coefficient	Sig
Individual learning style	0.137	0.094

As the results of table 1 revealed, there is not any significant relationship between individual learning style and progressive teaching methods. In other words, the students who have individual learning style prefer inactive teaching methods.

**Second hypothesis:** there is a significant relationship between collective learning and progressive teaching methods.

**Table 2: the results of examining relationship between collective learning style and progressive teaching methods**

Variable	Pearson correlation coefficient	Sig
Collective learning style	0.140	0.088

As the results of table 2 revealed, there is not any significant relationship between collective learning style and progressive teaching methods. In other words, the students who have collective learning style prefer inactive teaching methods.

**Third hypothesis:** There is a significant relationship between project learning and progressive teaching methods.

**Table 3: the results of examining relationship between project learning style and progressive teaching methods**

Variable	Pearson correlation coefficient	Sig
Project learning style	0.385	0.0005

As the results of table 3 revealed, there is a significant relationship between project learning style and progressive teaching methods. In other words, the students who have project learning style prefer active teaching methods.

**Fourth hypothesis:** There are significant multiple relationships between combination of learning styles and progressive teaching methods.

In order to examine the relationship between combination of learning styles and progressive teaching methods, multiple regressions has been used. In this model, learning style is considered as independent variable and preferred teaching methods are considered as dependent variable.

**Table 4: the results of multiple regressions for examining the relationship between combination of learning styles and progressive teaching methods**

Model	Multiple correlation	Coefficient of determination	Adjusted coefficient of determination
1	0.391	0.153	0.136

Table 4 summarizes the results of multiple regressions, coefficient of determination, and adjusted coefficient of determination. As indicated in this table, multiple correlations is 0.391 and coefficient of determination is 0.153. In other words, 15.3% of the variances of dependent variable (progressive teaching methods) can be explained through independent variables (learning styles).

**Table 5: the results of multiple regressions for examining the relationship between combination of learning styles and progressive teaching methods**

Sources of variations	Square	df	Average of square	F	P
Total remained regression	67.611	3	22.537	8.806	0.0005
	373.644	146	2.559		
	441.255	149			

In table 5, the predictor variables (fixed variables) are individual, collective, and project learning styles. On the other hand, preferred progressive teaching methods are dependent variables.

As indicated in this table, the regression model of progressive teaching methods from three learning styles is significant ( $F= 8.806$ ,  $df= 146$ ,  $p\leq 0.0005$ ). In other words, there is a significant relationship between learning styles and preferred progressive teaching methods.

**Table 6: the share of independent variables (learning styles) in predicting the preferred progressive teaching methods**

	Unstandardized coefficients		Standardized coefficients	t	Sig
	B	Standard error	Beta		
Fixed value	4.119	0.787	-	5.237	0.0005
Project learning style	0.127	0.029	0.364	4.420	0.005
Collective learning style	0.015	0.053	0.023	0.286	0.775
Individual learning style	0.040	0.044	0.071	0.909	0.365

The results of table 6 revealed the unstandardized coefficient, standard error, and standardized coefficient (B), t-value, and significant level.

Based on the results of table, significant level is less than 0.05 and it confirms that the regression model is significant. On the other hand, significant level of individual and collective learning styles is more than 0.05. This refers that these variables should be excluded from regression model and eliminated from final analysis. All

in all, the project learning style is effective on the dependent variable (preferred progressive teaching methods). Therefore, the following prediction formula can be developed.

$$\text{Preferred progressive teaching methods} = 4.119 + 0.127 (\text{project learning style})$$

Based on the regression model and standardized coefficients, it can be said that there is a significant relationship between project learning style and preferred progressive teaching methods. In other words, a change in the independent variable (project learning style) results in 0.364 changes in the dependent variables (preferred progressive teaching methods).

**Fifth hypothesis:** there is a significant difference between learning styles based on the demographic characteristics.

In order to examine the difference between respondents' learning styles based on the demographic characteristics, multiple analysis of variance (MANOVA) has been used.

**Table 7: the results of MANOVA analysis about examine the difference between respondents' learning styles based on the demographic characteristics**

Variable	Test	Eigen value	F	df	Sig	Eta	Statistical power
Gender	Tris Pillai	0.047	2.414b	3	0.069	0.047	0.593
	Lambda	0.953	2.414b	3	0.069	0.047	0.593
	Tris Hotelling	0.050	2.414b	3	0.069	0.047	0.593
	The biggest root	0.050	2.414b	3	0.069	0.047	0.593

The results of table 7 revealed difference between respondents' learning styles and demographic characteristics. In order to this, the tests of Tris Pillai, Lambda, Tris Hotelling, and the biggest root have been used. The results showed that there is not any significant difference between respondents from three learning methods perspective. In other words, there is not any significant difference between male and female students' learning styles. With respect to the Eta, it can be said that 4.7% of the variances can be explained through gender. On the other hand, the statistical power is 59.3 and revealed that the statistical power of this test is 59.3 and indicates that the sample size is sufficient for this purpose.

**Table 8: the results of MANOVA test for examining respondents' learning styles based on the gender**

Variable	Independent variables	Squares	df	Squares average	F	Sig	Eta	Statistical power
Gender	Projective learning style	7.036	1	7.036	0.286	0.594	0.002	0.083
	Collective learning style	33.098	1	33.098	4.901	0.028	0.032	0.595
	Individual learning style	10.605	1	10.605	1.120	0.292	0.008	0.183

The Table 8 revealed the results of different between respondents' learning styles (project, collective, and individual) based on the gender. As the results of this table revealed, there is not any significant difference between respondents' project and individual learning styles, but the difference between male and female students' learning styles is significant in terms of collective learning style. In other words, male and female students have different collective learning styles and they have similar individual and project learning styles.

**Sixth hypothesis:** there is a significant difference between preferred progressive teaching methods and demographic characteristics.

In order to examine the difference between preferred progressive teaching methods and demographic characteristics, analysis of variance (ANOVA) has been used.

**Table 9: the results of analysis of variance (ANOVA) test for examining the difference between preferred progressive teaching methods and demographic characteristics**

Source of changes	Squares	Df	Squares average	F	Sig	Eta	Statistical power
<b>Gender (intergroup)</b>	3.831	1	3.831	1.296	0.257	0.009	0.205
<b>Error (intergroup)</b>	437.424	148	2.956				
<b>Total</b>	441.255	149					

The results of analysis of variance (ANOVA) test for examining the difference between preferred progressive teaching methods and demographic characteristics have been presented in table 9. As the results revealed, there is not any significant difference between respondents' learning styles. In other words, there is not any significant difference between male and female respondents' learning styles. With regard to the Eta, 0.9% of the variances in learning styles can be explained by gender. Also the statistical power is 20.5 and this refers that the sample size is sufficient for research purpose.

## 5. Discussion and conclusion

As the results of this study (tables of 1 and 2) revealed, there is not any significant relationship between individual learning style and preferred progressive teaching methods. Also the results revealed that there is not any significant relationship between collective learning style and preferred progressive teaching methods.

The teachers have to consider the students' learning styles in implementing the teaching methods and select the teaching methods based on them. Generally, the individual learning style refers to this fact that the students prefer to study and learn individually. This means that the use of active teaching methods by teachers is not very effective in reinforcing the students' learning capability and also has not consistency with them. Undoubtedly, the effects of active teaching methods on the students' effective and sustainable learning are obvious for educational planners and theorists. The active teaching methods can create more learning motivation in the students and also encourage them toward learning their interested knowledge and skills. However, the results of the present study revealed that some students desire to individual learning styles and prefer that their teacher use inactive teaching methods. The reason may be a peace and quiet educational environment and it is the individual learning style that provides such conditions for them. In this regard, the teachers' educational contents can be considered as a past experience in terms of learning and reinforce the learning conditions. Also it is should be remembered that get the habit to traditional and inactive teaching methods. This may be the main reason of preferring individual learning styles by many students. Thus it is possible to make the learning styles better through educating them and reinforcing the benefits of active teaching method.

The collective learning style refers to this fact that the students prefer study and learn the educational contents collectively. The results of our study revealed that this learning style is the collective style and the students with such a style prefer traditional and inactive teaching methods. Therefore, the teachers should attend this fact that the consistence between teaching method and learning styles can be effective on the students' learning ability. However, the traditional and inactive teaching methods decrease the students' participation and cooperation in the learning process. The reason is that the main characteristic of this method is attending the role of teacher not students and their learning. It can be said that the collective learning style requires the students' voluntary participation and cooperation. The reason of selecting traditional and inactive teaching method by students of this study is their unawareness of their learning style and different active and inactive teaching methods. It is should be remembered that the respondents of this study had not experienced all of the teaching methods and their answers were perceptual not actual. This can be effective in the students' preferred teaching methods. However, this problem can be solved through giving knowledge and awareness for students about importance of learning, learning style, necessarily of its consistence with teaching methods, different teaching methods, and their strengths and weaknesses.

Shahnoshi (1999) found that there is a significant relationship between students' learning style and some of the teaching methods such as active teaching methods (problem solving, project, role playing) in the theoretic courses. On the other hand, the results of his study revealed that there is not any significant relationship between students' learning styles and their preferred teaching methods. This means that the students preferred inactive

teaching methods. Finally, he found that the relationship between students' learning styles and their preferred teaching methods in the practical courses is not significant.

Based on the results of table 3, it can be said that there is a significant relationship between project learning style and students' preferred teaching methods. In other words, it can be said that the students with project teaching styles prefer active teaching methods. Thus the teachers should select active teaching methods based on the course subject and thereby help their students in achieving more and better learning. The students who prefer project learning style desire to learn the educational contents through library, laboratory, and classroom projects and thereby improve their knowledge and awareness. For this purpose, the teachers should provide students with a suitable educational environment based on the students' learning style such as the use of different software in classroom and working in laboratory for their students. As a result, not only the students' learning motivation will be reinforced, but also they will be able to actualize their potential creative thought.

Smith and Reiding (1999) found that the holistic-analytical learning style has a significant effect on the preferred cooperative teaching methods (such as role playing and collective discussion). In other words, the students who have holistic-analytical learning style prefer active teaching methods. Najafi Kiani et al. (2009) found that the teachers have to use the teaching methods that are suitable with students' learning style. The results of our study showed that the relationship between preferred teaching methods and learning styles is significant and thereby it can be said that the relationship between learning styles and preferred teaching methods is significant.

Also based on the results of regression equation and its standardized coefficient that have been presented in table 6, it can be said that there is a significant relationship between project learning and preferred teaching methods. In other words, a change in the independent variable (project learning style) results in 0.364 changes in the dependent variables (preferred progressive teaching methods). Another part of the results of this table revealed that the individual and collective learning styles do not influence preferred teaching methods significantly.

The results of our study in terms of the difference between respondents' learning styles based on the gender, those have been indicated in table 7, revealed that there is not any significant difference between male and female students in terms of learning styles. The Eta of this hypothesis that is 4.7% indicates that this is derived from gender. Based on the results of table 8, it can be said that the collective learning style is significant, but there is not any significant difference between male and female students who have individual or project learning style. The results of the study that has been done by Ismail (2010) indicated that the male and female students had different learning styles.

Based on the results of table 9, the observed difference between students' average of preferred teaching methods is not significant in terms of gender. Another part of the results showed that only 0.9% of these differences are derived from gender. Although learning style is not influenced by gender, but it is expected that educational methods is not influenced by gender. Shahnoshi (1999) found that most of the preferred teaching methods is not influenced by gender and only the relationship between gender and some of the preferred teaching methods is significant.

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