A COMPARISON OF CRITICAL THINKING, SELF-EFFICACY AND ACADEMIC PERFORMANCE AMONG STUDENTS OF FACULTY OF HUMANITIES AND ENGINEERING

*Neda Mahdyeh¹ and Marzieh Arefi²
¹Department of Psychology, Science and Research Branch, Islamic Azad University, West Azarbaijan, Iran
²Department of Psychology, Urmia Branch, Islamic Azad University, Urmia, Iran

ABSTRACT
The present research aims at comparing critical thinking, self-efficacy and academic performance of students of humanities Faculty and technical-engineering Faculty of Ahwaz Chamran University. To do this, 400 students (200 from technical engineering faculty and 200 from humanities faculty) were selected by cluster sampling. They answered to the critical thinking questionnaire (Facione and Facione, 1997) and general self-efficacy questionnaire (Sheerer and Adams, 1982). The results of the research analyzed by multivariate variance analysis showed a significant difference at (p< 0/001) in critical thinking and academic performance between the two groups of humanities students and technical-engineering. However, no difference was seen in the self-efficacy scale.

Keywords: Critical Thinking, Self-Efficacy and Academic Performance

INTRODUCTION
21st century, is the century of rapid changes in cultural, social and economic issues and consequently new expectation from educational systems and also family as the main Kornel of these changes. Since education is the principal foundation in steady development of a country, the intellectuals tried to diagnose and teach the important criteria and parameters in these systems in order to increase the efficiency of two systems of family and educational system. Since a long time ago, development of mental abilities has been of interest for the philosophers’ and the relevant sciences, especially Psychology. The philosophers of ancient Greek had, always emphasized and focused upon the human mental abilities. They have founded numerous methods and schools to develop, discover and expand the mental Powers (Gralewsky and Karwowski, 2012). Critical thinking is one of them. Doubtlessly, it can be claimed that the stout and complicated body of science and the contemporary civilization owes its Power to the healing blade of critical thinking as the chief core of understanding, thinking (Stapleton, 2011).

According to Anis (2002), critical thinking is a kind of logical and reasonable thinking involved in decision-making, accepting the beliefs or doing things. It consists of activities such as making hypotheses, having various viewpoints, and presenting possible solutions and differs plans to do things. There are various viewpoints about thinking. They can be summarized into two general categories: One believing that thinking is not a single thing. Its dimensions and kinds are focused on rather than defining or analyzing it. It is divided into different components such as: Free association, fantasy, scientific thinking, logical thinking Problem-solving, creativity and critical thinking. The other viewpoint is that decomposing the thinking process into various dimensions and components does not seem to be logical since the nature of thinking is unified (Stapleton, 2011).

At the heart of critical thinking is thinking about thinking to improve the process of thought (Paul, 1993). The specialists and theorists, consider critical thinking as including analysis, evaluation and inference. Interpretation and giving comments, explanation and self-regulation are among the central components of critical thinking. Critical thinking is defined as the ability to analyze a question, problem or condition to integrate total extant information concerning the topic under study and to achieve a solution or a hypothesis to justify the person’s orientation.
Also critical thinking is said to scrutinize hypotheses, appreciate hidden values, evaluate evidence and assess conclusions. The diversity in the concepts expressed in the literature of critical thinking has led to some confusion in this field. The critical thinking theorists have used the term critical thinking and other terms of critical thinking components alternatively. Some increasing evidence indicates that probably critical thinking occurs and continues to occur if it is supported by others and repeated frequently and related to the context of practical situations (Simpson et al., 2002).

While critical thinking plays an important role in the fields of education, another important and effective variable in the field is self-efficacy

Bandura (1986) states in his book the Foundations of Thought and Social Behavior that people have a ‘self-system’ which is effective in controlling their thoughts, feelings and functions. Self-system covers a group of emotional and cognitive constructs such as learning from others, the ability to symbolize and to arrange personal behavior. Generally speaking, Bandura considers human behavior and motivation as a consequence of the beliefs people have about themselves-which are key constructs of personal function and control. Based on Bandura’s cognitive-social viewpoint (1986), self-reflection is the mediator of knowledge and function. People evaluate their feelings and experiences by self-reflection.

Bandura (1986) considers ‘self-reflection’ as the sole human ability which is used by humans to transform and evaluate their thoughts and behaviors. These self-evaluations include the perceptions of self-efficacy, that is-the beliefs concerning the individual's abilities to organize and actualize whatever is needed to arrange and face various situations in future. According to Bandura (2006), self-efficacy refers to the person’s beliefs in relation to his ability for doing specific things. It originates from different sources including the successes and failures of the person, the observation of successes or failures of those resembling him (her) and also verbal persuasion. Generally speaking, it can be said that self-efficacy indicates the student’s belief in his own abilities to do educational assignments. It is regarded as a motivational factor, activating and giving orientation to the student’s behavior toward this (her) goal which is sometimes considered as a level of self-confidence (Jain and Dowson, 2009). The basics of self-efficacy in various fields and contexts have been tested and have been supported increasingly by reliable findings (Multon et al., 2008, quoted from Rajabi, 2006). For example, self-efficacy has an effective role in anxiety (Morony et al., 2013), locus of control (Joo et al., 2013), negative self-evaluation and social anxiety (Rudy et al., 2013), mental hygiene (Gloudemans et al., 2013) and academic achievement (Komarrajuand Nadler 2003).

On the other hand, one of the most important concerns of every educational system in all societies is academic achievement or failure.

Academic performance is the criteria for assessment of the rate of achievement of educational objectives. Academic performance includes recording all the student’s cognitive activities which is assessed by an accepted grading system considering different levels of emotional and educational activities and time tables. It is regarded as the process of academic achievement (Meral et al., 2012). Putwain and Daniels (2010) have defined academic achievement as mastering over information and theoretical knowledge in a field and in an educational course-Educational achievement is determined by achievement tests. Achievement test is systemic attempt to recognize learner’s knowledge, In fact, it can be said that one of most important objective goals and fruits of any educational system and higher education is improvement and increasing promotion of the students’ academic performance in any societies (Rosander et al., 2011). Nowadays one of the functions of universities is to make the students ready to get specialized jobs and get employed. Thus, one of the higher education systems objectives worlds over is studying and determining the effective factors of students ‘academic performance and arranging and guiding each of these factors so that the students attain skills and specializations in their academic fields.

So many factors can affect educational performance among which are: Anxiety (Vitasari et al., 2010) self-efficacy (Meral et al., 2012; Seif et Mazrughi, 2008) aptitude (Blanch and Aluja, 2013) objectives of achievement (Putwain and Daniels, 2010) emotional intelligence and self-assertion (Lee et al., 2011),
critical thinking (Bakhtiyar and Nasrabad et al., 2012), Tolerance (Abolghasemi, 2011), and social acceptability and mental health (Abolghasemi and Jauanmiri, 2012).

Regarding what has been said, the present research aims at comparing critical thinking, self-efficacy and academic performance among the students of faculty Humanities and engineering in Ahwaz Chamran University.

MATERIALS AND METHODS

Statistical Population and sampling
The statistical population consists of whole students of Humanities faculty and technical-engineering faculties of Ahwaz Chamran University in the academic year 2012-2013. Five academic disciplines were selected by one-phase random cluster sampling from the faculties (Humanities and Technical-engineering) The humanities faculty consists of psychology, counseling, education, divinity, law, history, geography, economics, management, English language and literature, French language and literature. History, psychology, law, English language and literature and Persian language and literature were randomly selected as the sample of the humanities faculty.
The technical-engineering faculty consists of Electric engineering fields, electronic engineering, mechanic engineering, civil engineering, metallurgy, computer engineering and architecture engineering. Randomly, architecture, civil electric, computer and mechanic engineering were selected as the technical-engineering group sample.

It should be mentioned that since the research population was too large and it was impossible to have the complete list of the population, the researcher decided to use cluster sampling to have a more precise selection of the sample and to facilitate the process of research.

Data collection instrument

1- California Critical Thinking Skills Tests-Form B (CCTST-B) To assess The critical thinking of the students the California Critical Thinking skills test, form B (Facione, 1997) was used. The test consists of 34 questions with 4/5 multiple-choices with a correct answer in 5 fields of cognitive skills of critical thinking (deduction, evaluation, analogy analysis, inference). The subjects could answer them in 50 minutes. The principal questions were story pieces anecdote or specific analytical situations. The subjects should get correct answer by taking presented postulates into consideration and analyzing the conditions of that situation. 20 questions were with 4-multiple-choices and 14 with 5 choices.
The scores of the scale ranged from 0 to 34. High scores indicated having high critical thinking and lower scores indicated low ability in critical thinking. This test was made by facion in 1997. At present it is one of the most practical and feasible tools for evaluation of skills of critical thinking translated into Farsi. To match with cultural conditions, some changes have been made in some questions Dehghani. Et al.,s (2011). Got the validity coefficient of this scale by Cronbach alpha 0/78 in their research (Facione (1997) reported the validity of the test by kuder-Richardson 0/70-68. In Abdollahi et al., (2010) the validity was 0/93 by Cronbach alpha method and also in Bakhtiyarn asrabadi research et al., (2012) the validity of the scale has been 0/93 by /Cronbach alpha. At the present research also the validity coefficient of 34-question scale of the critical thinking has been 0/81 by Cronbach alpha.

2- At present research General Self-efficacy Scale of Shrer and Adams (1982) was used to measure the rate of self-efficacy among students. This scale has 17 questions with 5-grade liwert scale from-I ‘completely disagree “(1) –to ‘I completely agree” Higher scores indicate higher self-efficacy and lower scores, indicate lower self-efficacy. The highest score, 85 and the lowest score is 17. In Rajabi research (2006), a Cronbach alpha coefficient for the total scale was 0/82, for the Ahwaz Chamran University Psychology students was 0/84, for the Marvdasht Azad University Psychology students was 0/80. Also, concurrent validity coefficient for the scale of general self-efficacy and Rosenberg self-esteem scale on 318 of the respondents was 0/30, among Ahwaz Chamran University psychology students 0/20, and among Marvdasht Azad university psychology students, 0/23, were estimated. All of which were significant. All were significant. Schwarzer et al., (2000/quoted by Rajabi/ (2008) got the validity
coefficient of the scale of beliefs of general self-efficacy with optimistic attribution in a group of students 0/49 and With the perception of challenges in stressful situations 0/45 and for teachers with self-regulation 0/58. All the coefficients were significant. Also in Jaefarysani research et al., (2011) the Reliability coefficient of this scale has been reported by cronbach alpha 0/86. At present research cronbach alpha coefficient 0/73 was obtained.

RESULTS

Descriptive statistics indicators for the sample including mean, standard deviation, the lowest and the highest scores of the variables in the research are presented in table 1.

Table 1: Mean standard deviation, the lowest and highest score of Critical thinking, self-efficiency and academic performance of Undergraduate students of technical-engineering faculty and humanities faculty

<table>
<thead>
<tr>
<th>Variables</th>
<th>Statistical indicators</th>
<th>Technical-engineering</th>
<th>Humanities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical thinking</td>
<td>Mean</td>
<td>21/54</td>
<td>12/26</td>
</tr>
<tr>
<td></td>
<td>Standard deviation</td>
<td>3/68</td>
<td>4/23</td>
</tr>
<tr>
<td></td>
<td>Lowest score</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Highest score</td>
<td>33</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>42/03</td>
<td>41/16</td>
</tr>
<tr>
<td></td>
<td>Standard deviation</td>
<td>10/03</td>
<td>9/99</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>Lowest score</td>
<td>24</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Highest score</td>
<td>72</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>15/13</td>
<td>16/60</td>
</tr>
<tr>
<td></td>
<td>Standard deviation</td>
<td>1/84</td>
<td>1/68</td>
</tr>
<tr>
<td>Academic Performance</td>
<td>Lowest score</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Highest score</td>
<td>19</td>
<td>19</td>
</tr>
</tbody>
</table>

As it can be seen in table 1, mean and standard deviation score of critical thinking in the technical-engineering students group have been 21/54, 3/68, respectively and in the humanities students group 12/26 and 4/23, respectively. The mean and standard deviation of the self-efficacy scale of the technical-engineering are 42/03 and 10/03 and for the humanities students 41/16 and 9/99, respectively. The Mean and standard deviation far the academic performance in the technical-engineering students have been 15/13 and 1/84, respectively and in the humanities students group 16/60 and 1/68, respectively.

To study the research hypotheses, multivariate variance analysis was used. Next we will deal with the findings concerning the research hypotheses.

Hypothesis 1- There are significant differences among the humanities students and technical-engineering students in critical thinking, self-efficacy and academic performance.

Table 2 shows the summary of multivariate variance analysis findings of the comparison of the means of critical thinking, self-efficacy and academic performance of technical-engineering students group and the humanities students group (Table 2).

Table 2: The summary of multivariate variance analysis findings for the comparison of the means of critical thinking, self-efficacy and academic performance of technical-engineering students and the humanities students

<table>
<thead>
<tr>
<th>effect</th>
<th>Test</th>
<th>Value</th>
<th>F</th>
<th>df hypothesis</th>
<th>df error</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>group</td>
<td>Pill’s trace</td>
<td>0/607</td>
<td>203/72</td>
<td>3</td>
<td>396</td>
<td>0/001</td>
</tr>
<tr>
<td></td>
<td>Wilks’ lambs</td>
<td>0/393</td>
<td>203/72</td>
<td>3</td>
<td>396</td>
<td>0/001</td>
</tr>
<tr>
<td></td>
<td>Hotelling’ strace</td>
<td>1/54</td>
<td>203/72</td>
<td>3</td>
<td>396</td>
<td>0/001</td>
</tr>
<tr>
<td></td>
<td>Roy’s largest root</td>
<td>1/54</td>
<td>203/72</td>
<td>3</td>
<td>396</td>
<td>0/001</td>
</tr>
</tbody>
</table>
The contents of the table show that there are significant differences among the two groups of technical-engineering students and humanities students at least in one of the criteria variables (critical thinking, self-efficacy, and academic performance). To study the difference point, one-way variance analysis in MANOVA context was done on the criteria variables.

Hypothesis 1-1: There is a significant difference between the critical thinking rate of technical-engineering students and the humanities students of Ahwaz Chamran University.

Hypothesis 2-1: There is a significant difference between self-efficacy rate of technical-engineering students and the humanities students of Ahwaz Chamran University.

Hypothesis 3-1: There is a significant difference between academic performance of technical-engineering students and the humanities students of Ahwaz Chamran University.

Table 3 shows the one-way variance analysis findings in MANOVA context for the comparison of the means of the two groups in critical thinking, self-efficacy and academic performance (Table 3).

Table 3: One-way variance analysis findings in MANOVA context on the means of the three criteria variables (critical thinking, self-efficacy and academic performance) in two groups of students of technical-engineering faculty and humanities faculty

<table>
<thead>
<tr>
<th>Effect</th>
<th>Dependent Variable</th>
<th>ss</th>
<th>(df)</th>
<th>(ms)</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Critical thinking</td>
<td>8621/12</td>
<td>1</td>
<td>8621/2</td>
<td>546/71</td>
<td>0/001</td>
</tr>
<tr>
<td></td>
<td>Self-efficacy</td>
<td>76/56</td>
<td>1</td>
<td>76/56</td>
<td>0/76</td>
<td>0/38</td>
</tr>
<tr>
<td></td>
<td>Academic performance</td>
<td>214/62</td>
<td>1</td>
<td>214/62</td>
<td>68/92</td>
<td>0/001</td>
</tr>
</tbody>
</table>

Considering the table 3 information, a significant difference was seen between the two groups of technical-engineering students and humanities students in two variables: critical thinking and academic performance. However, there was no significant difference in self-efficacy between the two groups. So considering the above table it can be said that: The first hypothesis stating a significant difference between the rate of critical thinking of two groups of technical-engineering students and humanities students is confirmed. This is significant at (p < 0/001 and F = 546/71). Comparing the means in table 4 it can be said that the group of technical-engineering faculty obtained a higher score in critical thinking in comparison with the humanities faculty students.

The second hypothesis stating a significant difference between the rate of self-efficacy in two groups of technical-engineering students and humanities students is rejected at (p < 0/05). So it can be said that there is no significant difference between two groups in self-efficacy. However, comparing the means of table 4, a minor higher difference can be seen in technical engineering students.

The third hypothesis indicating a significant difference in academic performance between technical-engineering students and humanities students is confirmed at (p < 0/001, F = 68/92).

Comparing the means in table 4, it can be said that the humanities student score higher in academic performance.

Table 4 shows the results of the comparison between the two groups in critical thinking, self-efficacy and academic performance (Table 4).

Table 4: Test (LSD) of comparison of means of two groups in critical thinking, self-efficacy and academic performance

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Mean difference 1-2</th>
<th>Standard deviation</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical thinking</td>
<td>Technical-engineering</td>
<td>Humanities</td>
<td>9/28</td>
<td>0/40</td>
<td>0/001</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>Technical-engineering</td>
<td>Humanities</td>
<td>0/87</td>
<td>1</td>
<td>0/38</td>
</tr>
<tr>
<td>Performance</td>
<td>Technical-engineering</td>
<td>Humanities</td>
<td>-1/46</td>
<td>0/17</td>
<td>0/001</td>
</tr>
</tbody>
</table>

As it can be seen in table 4, the technical-engineering faculty students group obtained higher scores in critical thinking and self-efficacy variables compared with the humanities students. The mean difference
DISCUSSION AND CONCLUSION

The findings of the research showed that the first hypothesis indicating a significant difference between the technical-engineering faculty and humanities faculty students in critical thinking variable is confirmed. This is significant at (P < 0.001 and f = 44/77).

The findings related to this hypothesis are congruent with the finding of Rai and prakash (1987, quoted byseif, 2013, Anajafi et al., 2009) Hosseimilargani and Seif (2002) and Rezayi (1998). To explain the lst Finding we can mention thinking styles and context-bound learning and context-free learning by Cassidy (2004). According to Cassidy, those who are dependent on context cannot separate stimuli from the context easily. So their perceptions are easily influenced by the background changes. On the other hand, the context-free learners can separate the stimuli from the context easily so their perceptions are not influenced much by the changes in the context.

Those who are context-bound are also called holist and those who are context-free are called analyzer: these persons face their environments differently. Those who are dependent on context are attracted by others. They choose jobs which involve relationships with others like teaching they choose topics such as social sciences. While, context-free persons prefer jobs which do not involve much social interaction like astronomy and engineering. Briefly, context-bound people view issues holistically while context-free persons view them analytically.

Except context-bound and context-free styles and differences in the way of thinking, especially critical thinking, among humanities and engineering student, some other researchers such as Kolb and Fry (1975) dealt with the topic differently. According to Kolb and Fry (1975), most of engineers have abstract conceptualization learning coupled with active experimentation.

They are efficient at finding practical uses and applications for thoughts and theories. They can concentrate hypothetical and analogical reasoning for specific problems, view specific topics from various angles, they are able to solve problems and make decision based on the solutions they find for problems. They prefer to deal with technical tasks rather than interpersonal tasks. When faced with a problem, they try quickly to find solutions and concentrate on the solution.

On the other hand, many persons in the humanities and fine arts have objective experience learning method and contemplative observation. Their approach is observing rather than acting. They are interested in various cultural attractions and gathering information. Generally speaking, persons with this method, have imagination and ‘feeling’. These characteristics are useful for success in artistic and literary activities. Also the research results showed that the second hypothesis stating the significant difference between technical-engineering students and humanities students in self-efficacy variable is rejected. The result is not significant at (p < 0/77 and F = 0/08) the results concerning this hypothesis is inconsistent with the results of Shiue’s research (2003), Husch (2001) and Gheibi et al., (2012). To explain this finding it can be judged that since in these present research general self-efficacy was studied rather than self-efficacy in a specific field, so it seems that general self-efficacy is something beyond the person’s beliefs about this own abilities in his specialty. Every person can have self-efficacy based on beliefs, self-concept, and expectations. On the other hand, in Bandura’s opinion, self-efficacy originates from 4 main sources. They are performance achievements (past experiences), vicarious experiences, verbal persuasion, and physical states. So, studying these main sources, it can be observed that both groups of engineering and humanities can have four sources and promote their beliefs concerning self-efficacy. For example, in relation to the person’s past experience, it can be said that both technical-engineering students and the
humane students have probably successful experiences and also failwes which are not possibly influenced by their field of study. For example, in the field of sport, people can be related to a sport activity, music, mountain climbing or even the person’s status in group. They might be pleasant or unpleasant experiences. That is, all the students of humanities and engineering have some other activities other than their field of study. These activities can have negative or positive effects on them. Vicarious experiences can be also said that they are not much influenced by the course of study. For example, when people do something which are not much informed about and they cannot assess their own abilities to face the challenges, the successes and failures can be the best informational sources the experiences they feel similarities in them. For example, a student who wants to attend a French class and he has not much information on French or cannot assess his ability to learn the language can use other people’s experience such as his brother, sister or friend. He can say to himself that since his brother could learn French so he can, too. Of course, personal features are very important, too. That is, if the model is a person who is similar to the person in age, educational status, intelligence quotient, reliability and prestige, favorability, and familial status; the imitation will be probably done. So it can be claimed that both humanities and engineering students are not an exception. When they face life challenges, their beliefs and their self-efficacy will be influenced by the people around them, living people or symbolic (Shehninylagh, 2008).

Another source of self-efficacy is verbal persuasion or verbal convincing. People make their self-efficacy concepts by the social supports and encouragements they receive. Social encouragements and verbal suggestions can help people to try more and have perseverance to succeed. This might lead to constant development of skills and personal self-efficacy (Pajares, 2002). Verbal convincing is usually given by parents, teachers, husbands or wives, friends and therapists. Verbal convincing should be realistic to be effective (Schultz and Schultz, translated by Seyed Mohammadi 2011). It can be said that most people can receive encouragements and verbal persuasions irrespective of their course of study, job, educational level or financial status.

Physical and emotional conditions as the fourth source of person’s self-efficacy can increase or decrease the level of self-efficacy beliefs. Features like anxiety, stress, motivation, and mental conditions provide information on self-efficacy beliefs. Mental pressures and tension are usually interpreted as indicators of predisposition for failure. Also, the person’s mood can have remarkable effect on self-efficacy beliefs. Positive mood and optimism promote self-efficacy beliefs while desperation hopelessness and depression reduce the self-efficacy beliefs (Pajares, 2002).

Another finding of the present research is significant difference between technical-engineering students and humanities students in academic performance. It is significant at (p <0.001 and F= 68/92). The results concerning this hypothesis are consistent with Cano-Garcia and Hughes’ research (2000), Hosseini and Seif (2002). To explain this finding, it can be said that according to Lee-Davis (2007), persons with convergent thinking often have non-verbal reasoning. Somehow, it can be said that they are more practical and doers rather than verbal or lectures. They say that technical-engineering learners and physicists have this method of thinking and learning. While, people with divergent thinking and learning often enjoy verbal reasoning and abilities. They are mostly intellectuals and lecturers. They try to do their business using the power of words. Lee-Davis states that people with verbal learning and thinking style often are attracted by fields like social sciences, psychology and law.

In addition to what was said about the difference among humanities students and technical-engineering students in thinking and learning styles, the difference influences the academic assessment method common in schools, universities, and educational institutes. As it was mentioned, most students of technical and engineering and physics have non-verbal learning style while humanities students have verbal learning style. Teaching methods, training and evaluations in most countries are still teacher-centered, lecture-based, focused on written tests and verbal evaluations. It can be almost said that considering Bloom’s categorization of educational objectives (knowledge, understanding, applying, analyzing, evaluation), most schools and universities, follow their educational objectives up to the
superficial levels (knowledge and understanding that is rote memory and learning and non-practical). They seldom move toward deeper levels and higher objectives such as analysis and composition. The technical-engineering students should naturally have a different method of learning and evaluation from the humanities students. They should have group work, exploratory and problem-solving method rather than lectures. The evaluation methods should be based on practical works and projects rather than paper and pen tests so, since the common learning and evaluation methods in universities are based on evaluating verbal proficiency and learning by heart, it is not unexpected that those who have verbal learning style can have better academic performance (Hosseini and Seif, 2002).

REFERENCES


Research Article


Seif AA (2013). New Educational psychology: psychology of learning and training (Teheran: Douran printing co).


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