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Investigating the Relationship between Critical Thinking and Academic Achievement in Male Students of the Islamic Azad University of Ahvaz Branch

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Abstract: *Purpose: The final responsible of the active learning process, which is carried out by the aid of teaching training activities, is academic achievement. The present research has been conducted aiming to investigate the relationship between critical thinking and academic achievement among male students of the Islamic Azad University of Ahvaz branch. Method: Since this research seeks to describe and explain the relationship between variables, it is among descriptive researches type. The statistical population is 750 male students that 256 people were selected by stratified random sampling method as samples. California Critical Thinking Skills Questionnaire (Facion, 1997) was distributed among them. Data analysis was performed by using Pearson correlation coefficient and multiple regression statistical tests. Findings: The results showed that a greater percentage of respondents have had 36 to 40 years old. Also, a greater percentage of respondents to the questionnaire have also been married and employed. Also, the critical thinking of respondents to the questionnaire had the mean of 18.42 and the standard deviation of 4.05, and their academic achievement had the mean of 16.60 and the standard deviation has been 2.16. The results showed that there is a direct and positive correlation between critical thinking and academic achievement. The regression analysis of data also showed that critical thinking variable justifies 52% of academic achievement variance. Conclusion: According to the research findings, it is concluded that the tendency to entrepreneurship and critical thinking affect the academic achievement of students. Finally, the ratio of critical thinking development and students' tendency to entrepreneurship were assessed with regard to the provided education, and it was specified that training critical thinking and tendency to entrepreneurship increase students' academic achievement.*

Keywords: *Academic Achievement, Critical Thinking, Islamic Azad University of Ahvaz Branch.*

INTRODUCTION

Academic achievement is an issue that parents are sensitive to, because they suppose that future success of their children depends on obtaining desirable grades in school (Seif, 2013). The term “Academic Achievement” refers to the manifestation of student's educational status. In expressing academic achievement, they say: "This term refers to the amount of individual school learning as measured by various lesson tests such as mathematics, geometry, sciences, and so on". So according to the above definitions, it can be said that academic achievement is a term that refers to the amount of learning and information obtained in the teaching process that is assessed and trained by the academic achievement tests and ultimately, based on the amount of obtained achievement, the judgment and decision making

can be done (Behzadi, 2009). Academic achievement is the "final responsible of the active learning process that is carried out by the aid of teaching training activities" (Behzadi, 2009).
One of the factors affecting the academic achievement is critical thinking. Critical thinking, as a general application of the process of thinking with a method and rule, not only means purposeful contemplation, but also to test the degree and logic that humans use (Jackson, 2015). Achievement in critical thinking skill is often among the most important formal educational reasons; because critical thinking ability is essential for success in today's rapidly advancing world (Finn, 2015). Today, education and training experts agree that critical thinking should not only be one of the goals of education and training, but also should be an inseparable part of education at any level, because critical thinking is the thinking that leads to the best solution by analyzing, evaluating, selecting and applying; the same thing that today's world needs (Forest 1997; quoted by Finn, 2015).
Robinson (2015) concludes in his research that critical thinking can lead to the description of responses and the responsibility of thinking that are among important factors in determining academic achievement. Critical thinking by affecting the cognitive information processing and better utilization of concepts and so on influences academic achievement (Khansari, 2008).
Vahdat et al. (2012) in a research entitled as "The relationship between critical thinking tendency and academic achievement of high school students" found that there is not a significant relationship between this tendency to critical thinking and academic achievement in terms of gender, type of school, field of study and academic basis. Academic achievement itself is effect of many factors. But most of these factors are regarded social and cultural or educational factors. Regarding the educational system method in Iran, which is a teacher or professor-centered and always refuses challenging the professor by the student, this issue has been under question that what effects the creation of a critical atmosphere in the classroom, that results in strengthening critical thinking skills, has on improving students' academic achievement.

Research Theoretical Foundations

Academic Achievement

Academic achievement is the "final responsible of the active learning process, which is carried out by the aid of teaching training activities" (Behzadi, 2009). One of the general entrance features of the student, which has been considered for all school lessons, is general intelligence (Adib Hajbagheri et al., 2013). Although no clear agreement is observed in the definitions provided for intelligence by the behavioral sciences experts, they all in a way refer to the ability and talent to solve problems. Psychologists and training researchers have paid great attention to the extents of general intelligence as the determinant or restrictor factors of children's learning.
Conducted researches have indicated that "individuals with a high achievement motivation in doing works, such as learning advance more than people who lack this motivation" (Sakaki and Azar, 2006). Parents should learn this training principle that all students do not achieve a level of learning at a fixed time, but the time is different for them. Sometimes it is necessary to increase the lesson hours, or the use of auxiliary teacher, guidebook, educational CDs and attendance at compensatory classes will be very suitable and useful (Ahmadi, 2011).
In families whose parents are acquainted with their children's psychological and personality traits and satisfy them, encouraging children and timely rewarding raises their interest for learning and leads to the student's academic achievement (Akhlaghi, 2009). On the other hand, the teacher's language encouragement and his rewarding activate the individual's mental energies, and the student's academic achievement and behavioral equilibrium will become better day by day (Behzadi, 2009). It is also better that parents take step towards becoming educated and are trained to be able to communicate with their children and help them in learning (Khayer, 2006).
The lack of a relationship between parents and school causes the teacher and student to be forgotten. His weaknesses remain hidden and behavioral and lesson problems are not removed. Having low grades and the repetition of them strengthens student's inadequacy (Saiee, 2008). At home, the areas of mental relaxation, self esteem, acceptance of children, respecting them, controlling the words and cherishing the

children's effort should be taken into account so that the student continue his effort and study comfortably and, with a sense of value and a feeling of psychological security (Saraie, 2013).
Also, if the parents want healthy, altruism and studious children, the first thing to do is to control their words at home. They should use words that enhance happiness, self-esteem, effort, and "positive self-concept" (Sharifian, 2012). If empathy and cooperation is created between parents and instructors, the atmosphere of the schools becomes significant and refreshing, and the students benefit more from personality and academic growth (Arefi, 2014). The most important contribution of parents to the academic achievement of children is to allocate a specific time to inquire them about the school's daily events and talking about friends, games, teachers, classroom activities, and so on (Alaghehband, 2013). Creating motivation and love for study is not just the duty of teachers. Parents can also play a role in creating children's willingness to study, provided that they are themselves studying and devote hours to study in their daily schedule. If this hour is simultaneous with doing the tasks of children, its effect will be greater (Golabzadeh, 2010).

Critical Thinking

Critical thinking is an approach in the method of thinking about imaginations, testimonies, and performances in order to obtain a reliable awareness in that subject. This method includes processes of speech recognition and diagnosis, the analysis and evaluation of data (Elder, 2012).
Critical thinking is a subjective process that results in judgment and decision making about beliefs, actions, and subjects, and enables an individual to take into account various aspects of a phenomenon or problem or several phenomena, or to judge by virtue of valid reasons (Kareshki, quoted by Sakaki et al., 2006). The critical thinking involves having abstract thinking, required prior knowledge, and the ability to think in the desired domain. Critical thinking is a cognitive strategy that guides the person through reviewing and continuous testing of possible solutions (Moghadam, 2009). The critical thinking is a process that includes a conclusion and a question of the subject principles. It is important that the student understands the context of teaching issues (and the basic subject principles and social value system) (Radmanesh et al., 2014).
Dewey believes that critical thinking is active, continuous and exact thinking about a belief or hypothesis, taken from knowledge in the light of backgrounds that support it and the subsequent results that lead to it (Taghavi Larijani et al., 2014).
Esmite and Holfiche (2008) state that a school that does not use critical thinking in all activities is not a proper place for community culture (Esmite and Holfiche, 2008). Mayer (2003) believes that the ability to clearly write and read and understand mathematical foundations is not equal to actual training, but actual training is the ability of critical analysis of the literature, recognizing the truth from virtual and taking logical decisions (Mayer, 2003). Robinson (2009) states that "to teach thinking to the students is increasingly being considered as an essential goal in education and training. In order for students to live successfully in the community, they must be equipped with the thinking skills required to acquire and process information throughout the life" (Robinson, 2009).
Golshokouh et al. (2011) investigated the relationship between thinking styles, achievement motivation, academic achievement and creativity with the entrepreneurship of the students of Andimeshk University. The results showed that legislation thinking style is the motivation of progress, creativity, and analytic thinking style and academic achievement are the predictors of entrepreneurship. Cassum et al. (2015) in a research entitled as "the role of critical thinking in academic achievement" concluded that there is a negative relationship between critical thinking tendency and reflective observation, and this relationship is positive with abstract conceptualization. The role of critical thinking tendency and cognitive styles of learning in the ratio of academic achievement is inevitable.
Maclor and Davise (2011) believe that the goal of education and training is nothing except thinking and critical thinking is a fundamental part of thinking and learning that is linked to the growth of individuals and ultimately results in the growth of community (Maclor and Davise, 2011). Vimbi (2011) in investigating the studies related to the thinking skills education, found that this kind of educations make students solve problems inside and outside the school better (Vimbi, 2011).

Characteristics of Critical Thinking

Vide (2010) states eight characteristics for critical thinking. Critical thinking involves asking question and defining problem, examining documents, analyzing presuppositions and biases, avoiding emotional reasoning, avoiding too much simplification, paying attention to other interpretations, and tolerating ambiguities (Vide, 2010). Stroome and Bakuse (2009) proposed dealing with ambiguity as an essential and basic part for critical thinking (Stroome and Bakuse, 2009).

Huese (2006) counts the following four characteristics for critical thinking:

1. Intellectual Curiosity: Encouraging search, penetrating in affairs, questioning and criticizing,
2. Openness: Paying attention to the students to avoid limited thinking and addressing the discovery of issues,
3. Careful Thought: Encouraging students to control wrong and incorrect affairs, and being careful in their work and organizing it,
4. Planning: Encouraging the strategy of planning, determining the goal, orienting and directing for achieving the outcome (Makienko et al., 2012).

Research Method

Since this research seeks to describe and explain the relationship between critical thinking and academic achievement among male students of the Islamic Azad University of Ahvaz branch, so it is among the descriptive researches type. And also considering that the relationship between variables is investigated, the research method is correlation type. The statistical population of present research is all male students from 3 Faculties of Basic Sciences, Humanities, Technology and Engineering of Ahvaz branch in the academic year 2014-2015, the number of whom was 750 at the time of present research. The method of sampling in the present research is stratified random type. Regarding to the fact that the education level of statistical population under investigation was not the same and in terms of educational degree, the population under investigation is heterogeneous the stratified random sampling method was selected. The statistical sample was selected from 3 Faculties of Basic Sciences, Humanities, Technology and Engineering (750 people) of the Islamic Azad University of Ahvaz branch, 250 students from each faculty; hence 256 people, respectively 80, 85, 91 persons, from three faculties were selected. The questionnaire used in this study contained the California Critical Thinking Skills Test (Form-B) (CCTST-B), which was invented by Facion in 1997. This test contains 34 questions of 4 to 5 options with an accurate answer in five areas of the cognitive skills of critical thinking (analogy, induction, evaluation, analysis, inference) that subjects can respond to them during 50 minutes. The total reliability of this questionnaire was obtained as 0.93 by Cronbach's alpha method.

Findings

Table 1: Demographic Characteristics of the Sample under Study

		Number	Percentage
Age	20-25 Years	19	7.4
	26-30 Years	74	28.9
	31-35 Years	65	25.4
	36-40 Years	83	32.4
	41-45 Years	15	5.9
	Total	256	100
Marital Status	Single	121	100
	Married	135	52.7
	Total	256	100
Employment Status	Employed	173	67.6
	Unemployed	83	32.4
	Total	256	100

According to the results of table (1), we conclude that a greater percentage of respondents have had 36 to 40 years old. Also the greater percentage of respondents to the questionnaire were also married and employed.

Table 2: Investigating the Normality of Variables

Variable	Z-Kolmogorov	Error Level	Conclusion
Critical Thinking	1.242	0.091	It Is Normal
Academic Achievement	1.341	0.055	It Is Normal

P> 0.05

According to the results of table (2), as the value of significance level for critical thinking and academic achievement variables is greater than the error value of 0.05 (P> 0.05), then it is concluded that the critical thinking and academic achievement variables are normal.

Hypothesis: There is a significant relationship between critical thinking and academic achievement in male students.

Table 3: Descriptive Statistics of Critical Thinking and Academic Achievement in Respondent Male Students

Scale	Mean	Median	Mode	Standard Deviation	Range	Minimum	Maximum
Critical Thinking	18.42	19	24	4.05	16	8	24
Academic Achievement	16.60	16.99	15	2.16	9	11	20

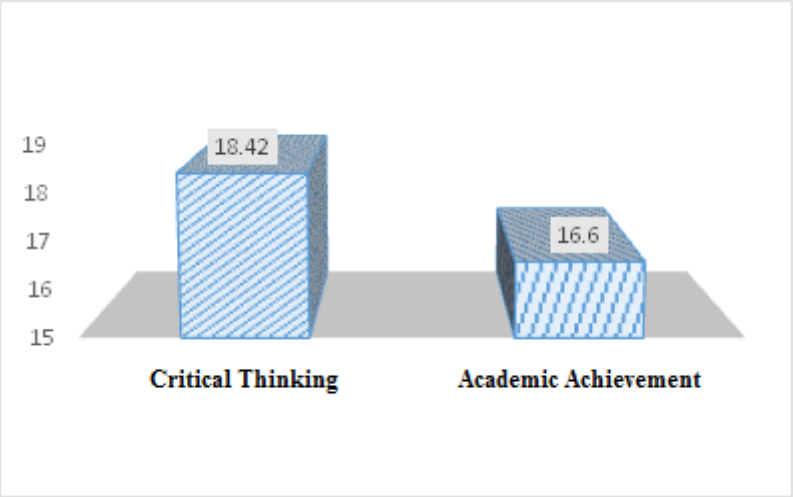

Diagram 1: Descriptive Statistics of Critical Thinking and Academic Achievement in Respondent Male Students

As it is observed in table (3), the critical thinking of the respondents to the questionnaire has had the mean of 18.42 and the standard deviation of 4.05, and their academic achievement has had a mean of 16.60 and the standard deviation of 2.16.

Table 4: Pearson Correlation Test for the Relationship between Critical Thinking and Academic Achievement

Correlation Coefficient(r)	Number (N)	Significant Level (P)
0.744	256	0.001*

$* P \leq 0/05$

According to the results of table (4), there is a significant relationship between the two variables (r=0.744, N = 256, P≤ 0.05), then the researcher's claim is confirmed. That is, there is a significant relationship between critical thinking and academic achievement in male students. The correlation coefficient (r) value is equal to 0.744 which indicates a direct, positive and strong correlation between critical thinking and academic achievement in male students, that is, with increasing critical thinking in male students, their academic achievement also increases, and vice versa. Therefore, with 95% confidence the researcher's claim is confirmed, meaning that there is a significant relationship between critical thinking and academic achievement in male students.

Table 5: Multiple Regression Results for the Effect of Variables of the Tendency to Entrepreneurship and Critical Thinking with Academic Achievement

	Not Standardized Regression Coefficient		Standardized Regression Coefficient	T Statistics Value	Significance Level
	B	Standard Error	Beta		
Fixed Value	9.566	0.379	-	26.258	0.001*
Critical Thinking	0.277	0.025	0.521	11.113	0.001*

In the first row (fixed value), since the significance level value is equal to 0.001 and lower than the error value of 0.05, the absolute value of the t-statistics is equal to 26.258, and is higher than the value of table 1.96; with 95% confidence, the fixed value remains in the model and its coefficient is equal to 9.566.
In the third row (critical thinking), since the significance level value is equal to 0.001 and lower than the error value of 0.05, the absolute value of the t-statistics is 11.113, and is higher than 1.96; with 95% confidence the researcher's claim is confirmed. Therefore, the critical thinking variable remains in the model and its coefficient is 0.277. So, we conclude that critical thinking affects the academic achievement of male students, and the value of impact is also equal to 52.1%, that its value is direct and positive. Therefore, critical thinking has a direct and positive effect on the academic achievement in male students.

Discussion and Conclusion

Since the significance level value was equal to 0.001 and became lower than the error level of 0.05, therefore there is a significant relationship between critical thinking and academic achievement in male students. Correlation coefficient value (r) became equal to 0.744, which shows a direct, positive and strong correlation between critical thinking and academic achievement in male students, that is, by increasing critical thinking in male students, their academic achievement also increases, and vice versa. In addition, the regression analysis test of data showed that as the significance level value became equal to 0.001 and lower than the error value of 0.05, and the absolute value of the t-statistics became equal to 11.113, and is higher than 1.96 value with confidence of 95%, we conclude that critical thinking impacts on academic achievement in male students and its impact value also became equal to 52.1%, that its value is direct and positive.
These findings correspond with the results of the researches of Taghavi Larijani et al. (2014), Bakhshi et al. (2013), Kramer (2015), Cassum et al. (2015), Zimmerman (2007), Yalkin et al (2006), Festko and Mac Clor (2005), Sean & Colin (2003), Kano Garza and Hughes (2000).
Academic achievement is the ratio of learners' access to predetermined educational goals that are expected they achieve in their learning efforts (Tamanaiefar et al., 2012). Academic achievement and the factors affecting it have always been considered by education and training experts and have allocated a lot of researches to themselves. In recent years, researchers have sought to identify variables that can modify education and classroom structure by their help and hence promote academic performance. In this regard, one of the variables that should be taught to learners in any educational system is thinking skill (Ranjbar et al., 2006). Hence, from the middle of the twentieth century, critical thinking was placed on the agenda of educational theorists, and the experts merged the methods of this thinking with curriculum. Critical thinking is an important theoretical orientation that helps students' motivation in education and learning

processes and raises meaningful learning and the development of specific skills for mastery in the profession (Amirparvar, 2012). Some studies have shown that students' critical thinking score has a positive relationship with their academic achievement, while some other studies have not found such a relationship significant and have recommended further studies in this field (Amirparvar, 2012).

The contradictory results of researches about the relationship between critical thinking and academic achievement show that critical thinking needs some intermediate variables to influence academic achievement. Numerous research findings have also shown that academic achievement is affected both by the knowledge structures and the processes of information processing as well as environmental factors, including family and self-regulatory factors. The complexity of critical thinking refers to the point that this issue is a long-term developmental process that requires exercise, development, effort, and strengthening over time. One of the strategies that may be used to develop critical thinking is the development of self-regulating strategies (Ranjbar et al., 2006).

In spite of studies conducted about the role of critical thinking and self-regulating of learning on academic achievement, there is less study that simultaneously investigated the relationship between these two variables on academic achievement. Therefore, with regard to the fact that discovering and studying variables that affect academic performance results in better recognition and the prediction of variables influencing it, studying these variables is one of the research basic issues in the educational system (Tamanaiefar et al., 2012).

Consequently, regarding the point that critical thinking is a variable affecting academic achievement, hence, the stronger the critical thinking is in a person, to the same extent acquiring academic achievement raises too.

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