

# A Comparative Study of the Critical Thinking Skills among the Students of Accounting and Software in the Female Technical and Vocational University in the City of Borojerd

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## Abstract

The purpose of this study is to compare the critical thinking skills among the students of accounting and software in the female technical and vocational university in the city of Borojerd. This study is a descriptive-comparative research. The statistical population of this study includes the female students of accounting and software in the technical and vocational university in the city of Borojerd. A sample of 60 students was selected from this population randomly in the 2014. The sample consists of 30 students of accounting and 30 software students. In order to collect the research data, the second form of California Critical Thinking Skills Questionnaire was used. The research data were analyzed in the SPSS16 through analysis of variance (ANOVA). The average and standard deviation of the research data is  $9.15 \pm 3.09$ . Although the scores of accounting students were better than the scores of software students, but no significant difference was not observed between them. The difference between the two groups of respondents was significant in terms of inductive reasoning ( $p= 0.014$ ). Another part of our findings revealed that the scores of critical thinking skills among the accounting and software students are similar to the scores of critical thinking skills of students in other countries. Our findings revealed that the scores of critical thinking skills of accounting and software students are lower than the scores of those in other countries. These findings point to the fact that the educational plans of this university need some reviews and modifications.

**Keywords:** Critical thinking, Accounting Students, Software Students, Skill

## 1. Introduction

Currently, educating people, who can think better, is one of the main issues all over the world. Since students are considered as the most important source of development in every country, they need to develop and utilize the methods of critical thinking so much that they will be able to use these methods in their academic researches, problems, and critical decisions. University is an opportunity for improving awareness, developing success skills, cultivating thought skills, learning new mental skills, and developing necessary skills of the effective thought (Jonse, 1995). It is inevitable to change the role of educational centers as information source and the role of professors as transferor of information. In this regard, the students should improve their skills in thought and reasoning and use the information after their analysis and processing (Meyers, 2012).

Unfortunately, many educational institutes instill the students with scientific concepts and repetitive practices and thereby prevent them from effective thinking. Obviously, data transfer is not sufficient for solving the problems in the current conditions and the learners should be provided with thinking methods. It will be possible through changing traditional methods of education and reinforcing critical thinking skills in the students (Khodamoradi, 2006). In order to succeed in the current democratic society, the people should be able to think critically and develop the most appropriate decisions in their personal and collective affairs. If the students are taught to think critically, their affairs will be improved (Walker Garison, 2006).

According to Meyers (2012), many authors and researchers of educational sciences have worried about inability of students in critical thinking. Since educating critical thinking skills in the students is one of the main goals of educational system in every country, the professors should be educated to reinforce critical thinking skills in their students (Meyers, 2012). Critical thinking was introduced in times of Socrates. He referred to deep questioning and analysis of concepts as main concepts. It can also be found in the books of Aquinas in the Medieval and in the books of Erasmus, Collette, and Moore in the Renaissance. Regarding the importance of critical thinking and its reinforcement in the eyes of authors and researchers, a diversified range of definitions and theories have been developed on critical thinking (Vesik, 2009). In this regard, every author and researcher defines critical thinking based on his/her needs and interests (Bataineh and Alazzi, 2009). The critical thinking association defines critical thinking as the process of creative order, active and professional conceptualization, application, analysis, combination, and evaluation of the information collected through observation, experiences, thought, infer, or even communications (Snyder et al., 2008). In the 1963, Ennis wrote an article on the critical thinking "A definition for critical thinking". In the article, he attempted to highlight the practical aspects of critical thinking and create a bridge between superficial and actual logic. He has revised and improved his

definition as following: critical thinking is a rational and reasonable thinking that is concentrated on which we should do or believe (Ennis, 2002). Indeed, critical thinking is a targeted and result-oriented thinking that needs judgment (Jackson et al., 2006).

Several studies have been done in our country that some of them are presented in the following section.

Mehrabi et al. (2011) in their study “investigating the critical thinking skills of students in the Payame Noor University of Shiraz” found that there is not any significant difference between the scores of critical thinking skills among freshmen and senior students. Mahbobi et al. (2012) in their study “comparing the critical thinking skills and tendency to critical thinking among normal and disabled students in the city of Gilanegharb” found that there is a significant difference between the scores of critical thinking of normal and disabled students in terms of exploration and development of students. Azodi et al. (2010) in their study which was “comparing the critical thinking skills of students in the Boshehr University of Medical Sciences” do not found any significant difference among scores of medical, nursing, and midwifery students. Javidi and Abdoli (2010) study the revolutionary trend of critical thinking in the students of Ferdosi Mshhad University. Their findings showed that there is a significant difference between the critical thinking scores of freshman and senior students. Barkhordari (2011) in his study “investigating the degree of tendency to critical thinking among M.A. students of nursing in the Shahid Sadoghi University of Medical Sciences and Islamic Azad University of Yazd” found that 81.8% of nursing students tend to critical thinking skills. Khodamoradi (2011) in his study “the comparison of the critical thinking scores of freshman and senior students in the selected universities of medical sciences in the city of Tehran” found that there is a significant difference between critical thinking skills of nursing students in the Shahid Beheshti University of Medical Sciences and Iran University of Medical Sciences. Gharib (2006) investigates critical thinking scores in the freshman and senior students and found that there is a significant difference between critical thinking scores in the freshman and senior students.

Review of literature revealed that education of critical thinking can be effective in the motivation of learning, problem-solving skills, decision-making, and creativity (Mirmolayi, 2004). The results of past studies indicated that the revolutionary trend of critical thinking is weak in the students. As a result, it is necessary to investigate the effect of educational plans on the reinforcement of critical thinking skills in the students. This is why the present study aims to compare the critical thinking skills among the students of accounting and software in the female technical and vocational university in the city of Borojerd.

## 2. Research methodology

The preset study is a descriptive-comparative research. The authors of this study were determined to investigate and compare the critical thinking skills among the students of accounting and software in the women technical and vocational university in the city of Borojerd in the 2014. The statistical population of this study includes the female students of accounting and software in the technical and vocational university in the city of Borojerd. A sample of 60 students was selected from this population randomly in 2014. The sample consists of 30 accounting students and 30 software students. In order to collect the research data, the standardized questionnaire of California Critical Thinking Skills was employed. The questionnaire consists of 34 items. Some of the questions have been developed in the four-point scale and most of them have been developed in the five-point scale. The questionnaire consists of five sections including analysis, infer, reduction, deduction, and evaluation (Higuchi and Donald, 2002). The minimum and maximum of the scores were 0 and 34. The scores of analysis, infer, deduction, and reduction are 9, 11, 16, and 14 respectively (Higuchi and Donald, 2002). The questionnaire has good validity, as it has been developed based on the California academic system. The authors have reported that the validity of questionnaire is 0.71 (Facion and Facion, 1993). Khalili (2003) has measured validity and reliability of this questionnaire. He indicated that reliability of questionnaire 0.62. In order to analyze the research data and test the hypotheses, both descriptive and inferential statistics were used altogether. In this regard, the analysis of variance (AOVA) was used in the SPSS16. The respondents were told about the questionnaire and then 45 minutes were allocated for them for responding the questionnaire.

## 3. Findings

A sample of 60 students was selected from this population randomly in 2014. The sample consists of 30 accounting students and 30 software students. The findings of this study revealed that the average and standard deviation of the questions were 9.15 and 3.09. This means that the average and standard deviation of the questionnaires of critical thinking were 9.15 and 3.09. the averages and standard deviations of the questions of analysis, infer, reduction, deduction, and evaluation are presented in table 1. Based on the findings of table 1, it can be said that deduction and evaluation, as two parts of critical thinking, have the most averages.

The results of ANOVA revealed that there is not any significant difference between critical thinking scores of software and accounting students. The results of this test revealed that the difference between software and accounting students was significant in terms of dimensions of critical thinking (see table 2).

**Table 1: the averages and standard deviations of critical thinking scores in two groups of respondents**

Variables	Accounting students		Software students		Total students	
	Average	Standard deviation	Average	Standard deviation	Average	Standard deviation
Analysis	2.53	1.30	2.06	1.43	2.30	1.38
Evaluation	4.26	1.81	4.03	1.90	4.15	1.84
Reasoning	2.96	1.37	2.40	1.35	2.68	1.38
Inductive reasoning	5	2.14	3.76	1.56	4.38	1.96
Deductive reasoning	3.53	1.54	3.60	2.01	3.56	1.77
Total scores	9.76	3.01	8.53	3.10	9.15	3.09

**Table 2: the results of ANOVA**

Variables	Effects	df	SS	MS	F	P
Analysis	Intergroup	1	3.26	3.26	1.73	0.193
	Intragroup	58	109.33	1.88		
Inductive reasoning	Intergroup	1	0.81	0.81	0.23	0.629
	Intragroup	58	200.83	3.46		
Reasoning	Intergroup	1	22.81	22.81	6.44	0.014
	Intragroup	58	205.36	3.54		
Deductive reasoning	Intergroup	1	0.067	0.067	0.021	0.886
	Intragroup	58	186.66	3.21		
Total score	Intergroup	1	22.81	22.81	2.43	0.124
	Intragroup	58	542.83	9.35		

#### 4. Discussion and conclusion

Our findings made manifest that the average and standard deviation of the scores of critical thinking are 9.15 and 3.09. The scores of critical thinking in this study are somewhat less than averages of critical thinking scores of other respondents. Khalili (2004) reported that the average and standard deviation of the scores of critical thinking of nurses and students were  $12.34 \pm 2.45$  and  $11.68 \pm 3.25$ . Mehrabi (2011) showed that the average and standard deviation of the scores of critical thinking of freshmen and senior students are  $5.66 \pm 0.848$  and  $7.18 \pm 3.198$  in the Payame Noor University of Shiraz. He found that there is a significant difference score of two groups of respondents. Azodi (2010) found that average and standard deviation of the scores of critical thinking in the students of Boshehr University of medical sciences are  $11.37 \pm 2.78$ . Any significant difference has not been observed in the study. Mahbobi (2012) indicate that the average and standard deviation of the scores of critical thinking among the disabled and normal students are  $12.12 \pm 2.51$  and  $12.45 \pm 2.12$  respectively. Only the difference was significant in terms of trust. Facion (1997) found that the average and the standard deviation of critical thinking scores students is  $16 \pm 4.45$ . McCarthy (1999) found that the scores of critical thinking of freshman and senior students are 15.36 and 17.26 respectively. He also found that the critical thinking scores of senior students are more than the critical thinking scores of freshman students significantly. It should be noted that critical thinking is not a skill that could be developed through speaking, listening, or participating in the workshops (Mires, 2012). Generally, there are several strategies for training critical thinking skills in the students. The first of these strategies is keeping balance between contents of courses and educational process. The reason is that there is a balance between the contents of courses and educational process of critical thinking skills. However, a large part of educational contents are not necessary and are repetitive. In this regard, it is inevitable to recognize and prioritize the contents of courses based on the educational needs and wants of students. Along with training the contents of critical thinking skills, it is necessary to train the methods of critical thinking among the students (Khalili, 1999). Based on the findings of this study, the educational officials and professionals should consider critical thinking as one of the inevitable skills of students in different levels. It is suggested that the future studies will concentrate on the students of different universities such as Islamic Azad Universities and others.

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