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Comparing of the Critical Thinking of Students in Real and Virtual Courses

Marzieh Dehghani,[1] Mostafa Bagherian Far,[2,*] and Fariborz Mohamadi Farsani[3]

[1]Department of Education, Faculty of Educational Sciences, University of Tehran, Tehran, IR Iran
[2]Curriculum Planning in Higher Education, Faculty of Psychology and Educational Sciences, University of Isfahan, Isfahan, IR Iran
[3]Faculty of Educational Sciences, University of Tehran, Tehran, IR Iran

[*]*Corresponding author*: Mostafa Bagherian Far, Ph.D. Student, Curriculum Planning in Higher Education, Faculty of Psychology and Educational Sciences, University of Isfahan, Isfahan, IR Iran. Tel: +98-9171435085, E-mail: mostafab178@yahoo.com

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Abstract

Background: One of the most important basic skills of the 21 century is critical thinking. The aim of this study is comparing the critical thinking of students in real and virtual courses.

Methods: The type of research, in terms of purpose, is applied and in terms of method is descriptive, survey. In this paper, according to the desired criteria, 120 MA students of faculty of psychology and educational sciences, Tehran University in the 2015 - 2016 academic years, in virtual and real courses were selected. A total of 60 virtual course students were selected with the census method and 60 real course students selected with random selection method. Assessment tool used this study is Ricketts (2003) critical thinking questionnaire consisted of 33 question that its validity has been certified by a group of stuff and its reliability in the 3 sub-scales, creativity, development, and commitment were obtained, respectively 0.75, 0.57, and 0.86. In order for data analysis, mean, standard deviation, and percentage were obtained and the Levine test, t-test, and one-way ANOVA test were used.

Results: Considering the results for gender and age, there was no significant difference between present and virtual students (P = 0.078, P = 0.062). Moreover, for present students the mean and the standard deviation was respectively, 3.76 and 0.28 and the same for virtual students was 3.75 and 0.38. Accordingly, there is no significant difference between critical thinking (P = 0.054) and its component (creative, P = 0.071, P > 0.05, growing = 0.061, P > 0.05 and obligation = 0.068, P > 0.05) in virtual and real course student.

Conclusions: Virtual education, if it has high quality, can develop students' critical thinking as well as present education.

Keywords: Thinking, Real Course, Virtual Course, Student, Education, Critical Thinking

1. Background

The Internet has converted to an important tool in life, to the extent that removing it from everyday life is avoided. This change can compare with invention of phone and in the 5th decade. Internet can decrease space and increase the relations among humans. This technology leads to the ability to connect simultaneously and unlimited people no matter where they are in the new world. It is a case of creating new world that we know of as a virtual world. The world against real world has many advantages such as: accessibility easy, 24-hour relations (1), work easy, low price, missing of users, and so on. In spite of all good characteristics of the Internet, there are many problems for using it and the influences it has upon human soul.

Users increase using the Internet and they spend more time in virtual space, which leads to false affiliation where getting rid of it is difficult. In addition to extensive advantages of Internet, psychologists and educators warn about negative effects and physical and psychological problems (2, 3).

One of the results of emergence and growth of a kind of learning is called learning or virtual learning (4, 5). Although in-person training has never been static and has a variety of approaches, today, with changing the technology, this teaching has been in attendance by universities (6) and the virtual learning environment is used in higher education (7). Building the institutions and virtual teaching institutions are 3 cases from high education efforts for paying attention to the changes of the new age.

Holding virtual classes and teaching stages without excessive costs, such as preparing the class, setting the time for the master and students is the main goal in electronic teaching.

In the electronic teaching extent consider the web-based teaching words distance teaching, distance train-

ing, and computer-based teaching and its mean is teaching that is based on technology. This teaching can represent simultaneous or in simultaneous.

One of the goals in high education in electronic learning-based classes is activation of students in this element. Its result that can grow the important skills such as critical thinking of its origin has attributed to Soghrat. By using his questions it has caused the person to think. He believed that a person can't emphasis on those who have power for arriving to intellectual science. He says, however the persons may have a high situation, when they think sometimes they act without thinking (8). In 2 decades many perspectives in relation to structure and critical thinking extent has been represented. However, for its nature, there isn't a proper understanding (9). This thinking means that reasonable thinking by emphasis on making-decision beliefs or actions or a total ability for characterize can cause the person to use the intellectual judge or perform the reasonable criticism or not (8).

The critical thinking is a multi-dimensions element and includes: cognition and tendency elements. This thinking origins from higher level thinking (9). Base on the other skills, growing is a higher level thinking (such as solving problems, research, the creative views production, and the teamwork skills).

We can see in Table 1 that Shabani (10) has represented the critical thinking skill and semi-skill (11).

If the critical thinking skill be improper and scrimpy, they have some problems in relation to high level thinking and skills. Therefore, it is a necessity for high teaching to grown the learners critical thinking skills through their own teaching process (12), and it is important for high teaching that considers the skills in high teaching programs.

Due to complexity high level thinking skills, growing the critical thinking skill in the present class has its challenges. This challenge in virtual classes can be a double factor. A question can be considered accordingly, does the virtual teaching have the critical thinking growing power or not?

If the answer is yes, it is related to constructivism views in particular, outside and social constructivism (13). On the other hand, critical thinking patterns philosophies, according to process recognition structural, survey and relativism, and so on. The researches performed are related to this research, which considers some dimensions. Therefore, Veloy and Patterns (14), in their researches, showed that the critical thinking skill in students under research is low. This case in the critical thinking in high education students show that high teaching in the curriculum and ways for learning and teaching isn't proper for growing critical thinking students. In addition, it follows with the growing the person that have a critical mind, reasonable, and objectivity must be controlled in teaching extent.

Aghakhani and Safaeeandhafezi (15), by researching in related to influence critical thinking, understand that using the technology on the analyze scales value and deduction and totally on critical thinking has a positive influence. Mosalanijad and Sobhanian (16) performed a research for analogy of virtual teaching influence and traditional teaching on the critical thinking of students. The results showed that there is a meaningful difference among scores, some critical thinking parts in 2 groups and in spite of the score differences in some components totally, the test score was more in person with virtual teaching.

Saade et al. (9) research that by using the learning management system (LMS) on web-based performed and showed that if the virtual place has the interaction manner, it can grow the critical thinking in students. Results of Yang researches in distance writing was based on online arguments showing that the questions and arguments grow the critical thinking skill. Khoshneshin (17), in finishing his research showed that question activity of Soghrat in virtual place can advance deduction and analogy skills and increase the other skills. Also, online arguments, after the question process of Soghrat lead to the analyze skill, deduction, reasoning, and totally improving the critical thinking skills.

Richardson, by considering gained results, stated that critical thinking growing in virtual teaching is possible and a determined factor in the influence of online arguments on high level thinking aim for students for getting a comfort feel and aplomb (17). Kurubacak (18), in growing the critical thinking skill through reasonable learning materials or RLO, shows that if making some of RLO devolved to learners through interaction among them, the critical thinking components improve.

Really this technology can play an important role in growing the students critical thinking, however some researches accepted that virtual learning is better than present teaching by considering that Tehran University in high education M.A use the virtual teaching. The goal of this research is to compare the critical thinking level of the students with present students in the terms. Students through Internet used the image and sound of professors and they have the ability to create relation with other students and professors through sound and image or writing and state own views or challenges of some arguments. Also, students dnt arrive online teaching have ability to download and use different files that they are reusable.

Interning the virtual teaching in Tehran University has a short background. This comparing can determines the students base level in critical thinking and create the fields for next researches in relation to teaching kind and criti-

Table 1. Critical Thinking Skill and Semi-Skill According to Shabani (10)

	Semi-skills
Definition and explanation of problem	Determining the main perspectives of a problem-comparing the similarities and differences -determining the information related to a problem-regulating the proper questions
Judge about information related to problem	Distinguish the reality, opinion, and reasoning judge, study of concepts acceptance- determining the hypothesis that is stated obviously-determining frameworks and items-determining the feel, propagation factors -determining the value systems and different views-ability for determining similarity and differences among value systems and perspectives.
Solving the problem/extracting the results	Determining the collected information value-ability for making-decision in case of collected information-getting the results, making decision, regulated hypothesis-predicting the possible results-ability of predict the results of accident or different phenomenon

cal thinking. Therefore, this research compared the critical thinking level in present and virtual students.

2. Methods

This research, by considering to matter nature, goals, and hypothesis, and due to using its results in field of teaching and learning is kind of usage and survey, statistic society include of different students of cultural science in Tehran University at the first term in 2103 - 2014 in virtual and present. The only requirement for the participants was to be a student in the present or virtual courses MA of educational studies, in the University of Tehran. There were 60 virtual students (35 woman and 25 men) and sampling was done by the Census method. Among students of cultural science, present terms selected 60 people (35women and 25 men) randomly every 2 groups completed the "Rickets Critical Thinking Questionnaire". The questionnaire was unnamed for confidentiality of the participants' information. Written permission was obtained from officials at the University of Tehran. Upon the provision of the required explanations about the study to the participants, they provided oral and written consent. The validity of this questionnaire was confirmed by experts and its reliability in the 3 sub-scales, creativity, development, and commitment were obtained respectively 0.75, 0.57, and 0.86 (19). This questionnaire had 33 questions as multi-selection and it had a creative with 11 items, growing with 13 items, and obligation with 9 items scales. It was as 5 values Likert scales (I totally disagree = 1, I disagree = 2, I have no idea = 3, I agree = 4, I totally agree = 5) and the students must state acceptance or resistance. The test score is obtained from the sum of scores obtained in 3 sub-scales; and the interpretation of the scores is such that scores between 1 to 2.33 represent poor critical thinking, the score between 2.34 and 3.67 represents moderate critical thinking, and a score above 3.68 reflects strong critical thinking. The questionnaire influence studied through specialist views. A sample of the questionnaire was sent toa specialist and after collecting the views, the questionnaire was revised and sent to them again and in total collection, revised. In order for data analysis mean, standard deviation, and percentage were obtained and the Levine test, t-Test, and one way ANOVA test were used. The questionnaire was unnamed for confidentiality of the participants' information.

3. Results

From the total number of 120 students, 120 of them filled out the Rickets Critical questionnaire (100% response rate). 50% of the students were taught with the virtual training method and 50% were taught with the Present Training method. 55% of students were under the age of 25, 33% were between 25 and 35, and 12% were over 35. The findings showed that the mean and standard deviation of critical thinking students in the present course was 3.76 and 0.28 and virtual students 3.75 and 38, respectively. The descriptive findings of the students' comments based on the gender variable on critical thinking and its dimensions showed a significant difference in Table 2.

The data presented in Table 2 indicates that there is no significant difference between male and female students about critical thinking (P = 0.078) and the components of creativity (P = 0.093), obligation (P = 0.067) and growing (P = 0.113).

Table 3 indicates the results of one way ANOVA test for student opinions based on the age variable on critical thinking and its dimensions

The data presented in Table 3 indicates that there is no significant difference between students based on the age about critical thinking (P = 0.062) and its dimensions creativity (P = 0.089), obligation (P = 0.073) and growing (P = 0.090).

Table 4 indicates Descriptive indicators related to score of critical thinking (creativity, obligation, growing) in virtual and present students.

In Table 4 we observe the mean of 2 group's: students in present and virtual terms is 3.75 and 3.76. Furthermore, the

Table 2. The Results of the T-Test Student Opinions Based on the Gender Variable on Critical Thinking and Its Dimensions

Variables	Average Men	Average Women	T	P Value
Creativity	4.02	4.13	-1.17	0.093
Obligation	4.01	4.07	- 0.94	0.067
Growing	3.11	3.19	-1.41	0.113
Critical thinking	3.745	3.765	-1.46	0.078

Table 3. The Results of One Way ANOVA Test, Student Opinions is Based on the Age Variable on Critical Thinking and Its Dimensions

Variables	Average Age Under 25 Years	Average Age 25 to 30 Years	Average Age over 30 Years	F	P Value
Creativity	4.10	4.11	4.03	0.317	0.089
Obligation	4.05	4.07	4.01	1.91	0.073
Growing	3.18	3.19	3.12	3.59	0.090
Critical thinking	3.79	3.8	3.69	3.01	0.062

Table 4. Descriptive Indicators Related to Score of Critical Thinking (Creativity, Obligation, Growing) in Virtual and Present Students

Scores Tendency to	Mean ± SD	T Test for Two Groups		P Value
		Means differences	T	
Creativity		0.058	0.53	0.071
Present student	4.10 ± 0.35			
Virtual present	4.044 ± 0.405			
Obligation		0.03	0.207	0.068
Present student	3.99 ± 0.43			
Virtual present	4.089 ± 0.46			
Growing		0.036	-0.317	0.061
Present student	3.13 ± 0.445			
Virtual present	3.16 ± 0.447			
Critical thinking		0.01	0.199	0.054
Present student	3.76 ± 0.28			
Virtual present	3.75 ± 0.38			

standard deviation for group's students in present and virtual terms is respectively 0.28 and 0.38. Findings show that important difference don't exist among 2 groups. Also, by considering to results of Table 4, for critical thinking: t = 0.199 and significant level is 0.199 (P = 0.054), for creativity: t = 0.53 and significant level is 0.942 (P = 0.071), for obligation: t = 0.207 and significant level is 0.929 (P = 0.068), and for growing: t = -0.317 and significant level is 0.990 (P = 0.061), we can say there isn't a significant difference among variance of t-Test and Levin test scores for 2 groups in critical thinking, creativity, obligation, and tendency to grow. In this study the difference between the woman and the man did not matter.

4. Discussions and Conclusion

This research aimed to compare the level of critical thinking virtual and present students if the person in a society wants to have a better life, work, and action. It is a necessity for them that have critical thinking. Growing the critical thinking for students is important due to the fact that for facing the complicated realities it is vital. Result showed that there isn't a significant difference among 2 groups. Among critical thinking though this matter can origin in virtual teaching brevity and it shows that virtual teaching, if some has conditions, can grow the critical thought. As it can be observed in research literature,

1 of the components that influence on growing the critical thinking is online and interaction discussion and researches of Yang (6), Khoshneshin (17), and Saade et al. (9) uphold this matter. This interaction exists in virtual teaching in Tehran University. The students have abilities of interacting through different ways (image-sound-and writing).

As stated, origin of virtual teaching is structuralism view as Khan (20) implies interaction in a learning place is a main factor in growing critical thinking students to interact with professors and online sources. Some components in leaning include: internet revisers, servers, writing programs, teaching planning, and they ease learning in a place based on electronic learning. Some components are predicted in virtual teaching programs in the University of Tehran; therefore, it is natural that the student critical thinking in virtual terms doesn't have a significant difference with present students.

Also, according to Kurubacak results (18), usage of learning materials RLO lead to growing the critical thinking components. In virtual teaching, in the University of Tehran, this material is available, and students can through creating the sources by them and they participate with others in this. It seems that material can have influences on growing critical thinking. Really, learners are active in creating their own acknowledge and it is another base from structuralism theorem.

Too results show that there isn't a significant difference between the 2 groups in case of creativity. In studying the finding, we can say by considering teaching perform in classes by speech, there isn't a special difference. These findings are according to levy et al. researches (3). The findings showed that professors want the student to remember items, traditionally, but in critical thinking students learn that read items and understand them and analyze them namely they must learn critical thinking and use it. The creative thinking is kind of thinking that lead to creating the new opinions, new approaches and new perspectives.

Other results from this research show that there isn't significant difference among obligation in virtual and M.A present in electronic teaching. In studying the results we can say there isn't a significant difference among 2 groups for their obligation. Result showed that there isn't a significant difference among the tendency to grow in virtual and present students. Therefore, we can say the virtual students and present have no significant difference in science advancement and skill or own ability and in kind of performing their actions. The growing is process that attempts to improve the skills and behaviors by determining the effective factors on the roles for increasing more abilities and preparing their requirements. In addition, the growth of this is one of the most important tools for facilitating student learning. Attention to students' growth in universities makes students better informed on environmental and information changes and are ready to embrace change. If students have a good level of growth and growth, then one can expect to be well utilized from all sources of the university and continuous improvement of quality in university activities. Other benefits of growth, students in their field of expertise, their knowledge increases. The results of Tables 3 and 4 showed that there is no significant difference between critical thinking and its dimensions based on the gender and age.

Finally, the critical thinking is a vital factor in growing and producing the sciences and it can create some fields for growing the science. The first, growing the critical thinking in scientific centers lead to improving the opinions and thinking and it helps to increasing the science. When thinking is realized, some attempts perform to answer and restructure it. Two, when the critical thinking is governing in the scientific world. Persons attempt more to create correct sciences. Three, existence of criticism space and thinking avoids interring the unknowing persons. In result, conditions are suitable for growing the science and presenting the views and lead to interring the expert persons to space that they can create more sciences. From the findings we can result that it seems that students don't haave a tendency for getting the critical thinking skills. The goal of high teaching is improving the thinking skill until they can perform own obligation. This thinking leads to students gain information related to perspectives or standards though studying books, Internet, university, and organizing them and by reasoning way. They analyze them also. It leads to advancing abilities for solving problems making decisions about different perspectives. Using critical thinking helps students to increase their progress and gain higher scores and outcomes of the exam and understand the lessons of the subject with greater depth, longer sustainability, and even more profitable levels. It also prepares students to think about issues right and choose the best answer. In other words, thinking education helps students learn how to think, what the values of respect, how to critically examine views and beliefs, what questions to ask in the classroom, and what topics to contemplate and judge about matters. By mastering critical thinking skills, students will use new ways to achieve valuable results, and will be able to accept the views of others.

It proposes that students must use information from teaching based on discussion and avoid the traditional method as well as interacting the learners-teachers or lessons materials and so on. It is recommended in virtual teaching, in Tehran University, interaction increase and structure of lessons sources belong to students.

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Footnote

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