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Another view to importance of teaching methods in curriculum: collaborative learning and students' critical thinking disposition

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Abstract

Today, there is unprecedented attention to critical thinking. Teacher's correct perception of teaching methods has a key role in students' disposition to critical thinking. So this study aiming to effect collaborative learning on students' disposition to critical thinking in high school. This study is quasi-experimental design of pre-test and post-test. Findings showed that there was significantly different between the pre-test and post-test in disposition critical thinking (t=-4.27,p=0.000) and creative component (t=-5.92,p=0.000) But, in the maturity(t=-1.21,p=0.235) and commitment components(t=-1.17,p=0.252) there wasn't significant different between the pre-test and post-test. According to these findings, we suggest applying collaborative learning in curriculum.

Keywords: Collaborative Learning, Teaching Method, Disposition Critical Thinking, Curriculum.;

1. Introduction

1.1. Critical thinking and education system

One of the emphasized goals in each education system is to increase and improve learners' thinking skills and such takes place through the integration of these concepts in the curriculum (Parirokh & Fattahi, 2005).The main aim of education should be nurturing of the rational thinkers (Marzano & et al, 2001). In fact, learning how to think has been a major goal in formal educations (Bernard & et al, 2008). And several studies have shown that the development of intellectual skills is considered as a main priority in educational planning (Sh'abani, 1999). Of course, the issue which is constantly considered in the educational systems is the quality of thinking. Although it has been described in many different forms, but the general term that applied for this kind of thinking in educational systems is critical thinking (Marzano & et al, 2001) that should be taken as a cognitive skill as one of the main objectives of educational systems (Halpern, 2001; Demir, Bacanli, Tarhan & Dombayci, 2011).

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1.2. Critical thinking: disposition and abilities

Given that the critical thinking has become an important process in education, creation of a fundamental understanding about variety of its meanings and dimensions (skills and attitudes) seems necessary (Porter, Igein, Alexander, Blaylock, Comb & Williams, 2005). Lyutykh (2009) Believes that critical thinking is "way of right thinking". Bowell & Kemp (2005) know it as involvement, logical decision making and taking responsibility for what we do. Page (2007), Renaud, R. D. & Murray (2008) and Piaw (2010) consider critical thinking belonging to higher cognitive levels of Bloom's cognitive objective taxonomy (analysis, synthesis and evaluation). Facione (2000, 2010) believes that it is some kind of judging and meaningful activity and consists of interpretation, analyzing, evaluation, explaining and explanation, self-regulation and induction. It is obvious that critical thinking can't happen without inclination towards that (Profetto, 2003) and sufficient desire for development and application of these skills is necessary (Jin, Bierma & Broadbear, 2004). In fact, critical thinking requires a number of trends and dispositions (Ess, 2004) and critical thinkers should not be worried about how to enhance their thinking skills. They should rather continuously review their trends and dispositions in this background (Billings & Halstead, 2005). Regarding tendency aspect, attitude and inner motivation of individual when facing problems is discussed (Profetto, 2003). Looking at studies in the field of critical thinking shows that there is more emphasis on skill aspects and unfortunately other aspect which is a required for it is ignored (Pakmehr & Dehghani, 2011).

1.3. Collaborative Learning and Critical thinking

According to Whitehead, however, the real product of education is an intellectual process (Myers, 2007) but much of knowledge and training, instead of being focused on achieving hidden potentials, focused on basic specific skills such as: reading, writing and counting (Fisher, 2006) and unlike that there is emphasis on critical thinking in goals of educational systems and claims of officials, there isn't enough effort and motivation to encourage learners to think critically in practice and although teachers stating and accepting that critical thinking will smooth the way for more and better training, often, by using traditional teaching methods, removing the facts and creating disciplinary environment, prepare the field for memorization of curriculum contents (Maleki & Habibipour, 2007). In fact, the development of critical thinking as a desirable educational outcome requires teaching methods which help learners improving their ability in critical thinking and increase their tendency to use such skills (Lampert, 2006). Therefore, the teachers' correct understanding of appropriate teaching methods and effective factors influence many motivational variables of learners such as tendency to think critically. Today collaborative learning has an important role between teaching methods. In this method, students through cooperating with each other, share the learning experience and they can improve many of their skills and abilities (Jacbs, Barbara Ott & Yvonne Ulrich, 1997). Dikici & Yavuzer (2006) believe that the output of collaborative learning is far more than competition and individual activities. Results of several studies in the higher education system have shown the positive effect of collaborative learning method on learning skills and high cognitive levels of students (Jacbs, Barbara Ott & Yvonne Ulrich, 1997, Celuch and Slama, 1999) But despite the importance of intellectual skills in lower educational levels, unfortunately, this component is mostly neglected and a great share of studies in this field was related to higher education system. Furthermore, what is prior to the development of skills is serious attention to the tendency of critical thinking in this field. Therefore, according to the explained issues and since the discussions during group activities between learners improve students' tendency toward critical thinking this study is aimed to investigate effects of cooperative learning on students' critical thinking disposition in high school.

2. Methods

This study is quasi-experimental and designed with pre-test and post-test which are expressed with below symbols.

E	O	X	O′
experimental group	pre-test	independent variable	post-test

2.1. Participants and procedures

The population for this experiment includes all the basic high school male students of Farmina -Khorasan Razavi in the academic 2011year. Sampling was done by multi-stage clustering method. First, one high school out of three was selected randomly and then from 3 school stages of that high school, one was selected with 26 people in it as the experimental group.

2.2. Instrumentation and Data Analysis

Ricketts' (2003) Critical Thinking Dispositions Questionnaire: This questionnaire included 33 statements in Likerte 5-point scale. The minimum and maximum scores that might be acquired were 33 and 145, respectively. Three subcomponents (subscales) of the questionnaire were entitled innovativeness, Maturity and Engagement. (Aminkhandahi, Pakmehr & Amiri, 2011). The Kronbach's alpha coefficients were in stydy of Karami, Pakmehr & Aghili (2011) 0.84-0.86 and this study were 0.64. Statistic indicators and paired sample t-tes were used for data analysis.

2.3. Stages of implementation

1-Selecting experimental group, 2- teaching collaborative approach to the teacher, 3- Implementation of pre-test, 4- Implementation of collaborative learning, 5- Implementation of post-test and 6- Data analysis and presentation of results.

3. Results

Descriptive statistic of pretest and posttest of critical thinking disposition and its indicators in the studied group are shown in table 1. According to the results table there was a significant difference between scores of pre-test and post-test and students had higher average mean in post-test compared with pre-test.

Table 1: The statistic indicators for students' critical thinking dispositions and its components in pre-test and post-test

Variable	Pre-test		Post-test	
	M	SD	M	SD
Critical Thinking Disposition	110.88	11.65	119.76	7.79
Creative	32.76	8.71	45.00	4.40
Maturity	26.73	4.67	27.80	4.88
Commitment	45.84	8.54	47.53	6.02

Paired t-test results regarding effectiveness of collaborative method on critical thinking disposition and its components in the studied group show that there is a significant difference between pre-test and post-test scores of

critical thinking disposition (t= - 5.92, p=0.000) and the creative component (t= - 5.92, p=0.000). So that mean scores of post-test are higher than the pre-test, But in maturity (t = - 1.21, p = 0.235) and commitment (t = - 1.17, p = 0.252) components there wasn't any significant difference between pre-test and post-test results.

Table 2: Paired sample t-test results for students' critical thinking dispositions and its components in pre-test and post-test

Variable	Test	M	Std. E	t	df	p
Critical Thinking Disposition	Pre-test	110.88	2.28	-4.27	25	0.000***
	Post-test	119.76	1.52			
Creative	Pre-test	32.76	1.70	-5.92	25	0.000***
	Post-test	45.00	0.86			
Maturity	Pre-test	26.73	0.91	-1.21	25	0.235
	Post-test	27.80	0.95			
Commitment	Pre-test	45.84	1.67	-1.17	25	0.252
	Post-test	47.53	1.82			

*** p < .0005

4. Discussion and Conclusion

Improving the quality of learning in high schools and preparing young for thinking skills disposition is needed to promote the quality of teaching and results of several studies has shown usefulness of collaborative method in various fields. Therefore, in this study we examined the effect of collaborative method on critical thinking disposition in high school students. Results indicated the influence of collaborative method of critical think disposition. These findings are consistent with Shabani (1999), Hosseini (2009) and Wiggs (2008) and are disparate with results of Johnson, Archibald & Tenenbaum (2010). The deduction of these finding can be said to be that discussions and conversations that occur during classroom activities for learners with applied collaborative method, promotes students inner motivation for improving intellectual skills. In other words, this method has extra features compared with traditional methods such as discussion environment, social interactions and opportunities of criticism which increases students' disposition toward critical thinking. The next result was showed that collaborative method had affected on the creativity component but has been affectless on the other two components which are innovation and commitment. Regarding the influencing of collaborative method on creativity it can be inferred that using collaborative method increases joy of learning in classroom, so we can provide contexts for detection of group creativity in students. One of this study's limitations was small sample size because of executing limits so generalization of results to other groups and girl students is not possible. In general, results of this study, showed influence of collaborative method on students' critical thinking disposition. Therefore, given to this study's results and its matching with other researches' results in this field considering implementation of collaborative method in curriculum and educational systems can be emphasized. In summary, it can be said that the more the teacher creates opportunities for interaction between learners, the more opportunities for criticism in students' activities and various issues are created and it provides a more suitable context for students' critical thinking disposition. Therefore, considering opportunities that collaborative learning compared with individual environment provides, utilization of this of this method by teachers in educational systems is suggested.

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