A study on relationship between critical thinking in teaching style and educational performance of primary teachers in city of Shabestar

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Abstract

Recently, research on critical thinking and related factors as one of the professional qualities of teachers has attracted the attention of many education experts. This study aimed to assess the critical thinking of primary school teachers and its role in their preferred teaching style. The research method was descriptive and correlational. The statistical population included all primary school teachers in the academic year 2014-2015 in city of Shabestar, which were based on the result of inquiry of the Education Organization of Azerbaijan (city of Shabestar) 4115 in number. 110 teachers were selected according to Cochran’s formula using multiple stage randomized cluster sample and were evaluated using teaching style questionnaire and critical thinking disposition assessment scale of Ricketts. Data analysis was conducted using Pearson’s correlation coefficient and dependent t-test. The findings of the research showed that teachers were better disposed towards active teaching style compared to passive teaching style. Overall, critical thinking level of teachers was good and of active and passive teaching style, critical thinking disposition of teachers had a significant positive relationship with active teaching style only ($r = 0.48, p < 0.001$).

Keywords: critical thinking, critical thinking disposition, teaching, teaching style.
Introduction

One of the fundamental characteristics of human is behavioral consciousness and faculty thinking. In other words, the human can be conscious of his behavior and use faculty of thinking in dealing with different issues (Shariatmadari, 2000). In “How we think”, Dewey says about the concept of thinking, “The action by which the current situation would approve or produce other realities, or the way in which the future beliefs are founded based on the past beliefs (cited by Mossalanejad and Sobhanian, 2008). One of the most important goals of education in the twenty-first century concerns the manner of training individuals to prepare them to deal with a changing society and complexities of the age of information explosion. On this basis, promotion of thinking in schools and training centers is of high importance and it may not realize only by communicating information to students (Shabani, Mehr Mohammadi, 2000) but require a fundamental change in curriculum and the attitude of teachers towards their task in the field of teaching and a shift to the side that leads to the faculty of thinking of the students.

Learning how to think is a fundamental objective in formal training (Bernard, 2008) and shifting the learners from a self-centered world based on limited personal experience, to a more abstract field that involves numerous facts is one of the main goals of any educational system (Myers, 1995). Since rationality and autonomy plays an important role in people's daily lives in democratic societies today, and education system to which is assigned the responsibility of the education and training of people must be include such value in its ideas and goals. The promotion of these values and their popularity among people require practice and use of the skills. Evidently, traditional educational methods doesn’t focus on such requirements. In such a framework and conditions that require rationality, it is necessary to include critical thinking and reflection as part of the education process (Gharib et al., 2009).

On the other hand, in the education literature, the role of teacher has received special attention and almost all researchers admit the effective role of this in education; therefore, tendency of teachers towards thinking critically as those responsible for teaching learners deserves scrutiny.

On the other hand, there is no doubt that learners at first are not skilled in critical thinking as much as they should be and research shows that learners are not experienced in critical thinking sufficiently as a result of the conditions of class and teaching methods used by teachers as in most classes, few opportunities is considered for learners to become engaged in different theories involved and unknowingly learners are encouraged to accept such idea as deemed to be true by the teacher. But to develop critical thinking, learners must be encourages to find the correct idea by themselves, which is quite inconsistent with sole use of lecturing as teaching method (Yuksel, 2008). Therefore, some believe that there is a direct relationship between the teaching approaches of teachers and their teaching style and critical thinking of learners and that teaching in the classroom should shift from a passive curriculum based on memorizing the concepts to the critical thinking as a component involved in facilitating the learning (Gallo, Curtis, Rudd, Eckhardt & Ricketts, 2008). Pratt (2002) believes that the dominant approach in teaching is one focused on knowledge transmission.

According to the researchers, today's classroom doesn’t meet the requirements of the development of critical thinking and the teacher should play an important role as providing an environment for development of such thinking (Billings & Halstead, 2005). Teachers’ disposition to focus on passive methods increases dependence of students on teachers, leading to increased learning problems (Boyle & Trevitt, 1997). As a result, teachers should use
flexible and variable curriculum rather insisted that students understand the content in a particular way. Regardless of the teaching method, clear feedback from teachers is required for the students to develop critical thinking. In fact, teachers must create a problem-solving environment that attracts learners and motivates learners to develop their critical thinking (Myers, 1995), which explains the important and effective role of the teacher.

Critical thinking skills are improved through curriculums (Mundy, Sharon A. Denham, 2008). It is necessary for the purpose of developing critical thinking to basically revise curricula, which requires a reflection on the role of the teacher, the teaching methods and learning outcomes (Cimer & Timucin, 2010). As said earlier, much attention has been paid in the literature to teaching method and use of novel teaching methods and almost all researchers admit the important role of teaching style and method in education. But no research has been conducted to study what are the factors affecting teacher's teaching style and if critical thinking disposition affect preference of a teaching style over another. In other words, critical thinking has two dimensions: skill and disposition. Skill involves cognitive processes while disposition involves the attitudes and intrinsic motivation of a person in dealing with the issues and certainly, in this case, there is such a thing as thinking about something without disposition towards the same (Profetto, 2003). Researches have shown that in principle the dimension of skill is emphasized in critical thinking while critical thinking disposition is unfortunately ignored. Therefore, this study aimed to focus more on critical thinking disposition of teachers and the relationship between critical thinking of teachers and their preferred teaching style.

Comparison of critical thinking and ordinary thinking helps to define critical thinking. In normal thinking, ones guess, prefers, judges, judges without criteria, while in critical thinking, one estimates, classifies, understand the principles, argues, make judgments upon certain criteria to solve a problem (Wood Kathleen, 1995 cited by Gharib et al., 2009). Various definitions of critical thinking have been proposed but we mentioned a few. Test and evaluation of capabilities, formulation of logical inference, developing coherent and logical reasoning models, conscious identification and acceptance and rejection (Eslami et al., 2003); for instance, Glaser (Glaser, 1941) defines it as knowledge of logical methods for research and reasoning. Perkins, Smith and Nickerson (Nickerson, Perkins, Smith, 1985) have defined it as the ability to judge fairly the claims and assumptions and Schafersman (Schafersman, 1991) defines it as a process and to reason, reflect, react and responsibility that helps one to decide what to do and what to believe in. McCarthy (McCarthy, 1996) asserts that critical thinking is not limited to being rational, capable of problem solving, reasoning and making decisions but includes deep sense of responsibility about interests and important things as well.

It is clear from what was said earlier that little consensus exists about the definition of critical thinking; here is the definition provided by the American Philosophical Society, through the efforts and co-operation in North America of 46 interdisciplinary theorists based on Delphi method. Critical thinking is being curious about common issues, openness to reason and rationality and having an open mind, flexibility, lack of bias in the assessment, lack of bias in dealing with people, being cautious in one’s judgment, revision in thinking, organizing complicated problems, exerting hard work to achieve more knowledge, have compelling reasons for choice of criteria, careful research, persistence in seeking comments (quoted from Yuksel, 2008). Since the function of every education system is comprehensive development of character of students to enable them to play their role in society, fostering critical thinking.
skills can contribute to such end, because it helps students to modify and revise their information based on their interaction with the environment as well as their personal experiences to play their social role more dynamically and effectively (Agharkakli, Safari, Hafezi, Katkan, 2011). And, as noted above, critical thinking can be taught to students. In other words, students should have opportunity to practice such thinking. First, it seems that knowledge should be obtained of the critical thinking disposition of teachers who are responsible for training and on the other hand, teacher’s critical thinking can improve his teaching method and contribute to his interest in use of active teaching methods. In the following, the concepts of teaching and teaching method will be discussed.

An important issue for educational systems throughout the world is teaching method. Since late, in different civilizations and cultures, teaching method has been an issue in education of new generations, with each teacher acting based on his view. However, today, with advancements and based on scientific and practical knowledge of the human behavioral, the principles and methods teaching have changed (Searson & Dunn, 2011). Teaching is one of the effective tools that provide grounds for education and many professionals consider proficiency and skillfulness in teaching methods as one of the criteria of competence, so that they consider it as the preferred criterion for the qualification of teachers (Maleki & Habibipoor, 2007). Therefore, for the realization of reforms in education and meeting the needs of our society, it seems necessary to investigate and research on teaching methods, because if the educational content is not provided using the best teaching methods, efficiency and effectiveness may not be expected to realize. Given the importance of teaching, numerous definitions of teaching have been provided: teaching is a process by which a teacher creates favorable educational conditions and provides a learning process for the students (Kennedy, 2006). Alton Lee (Alton Lee, 2006) argues that, “Teaching is a complex and predesigned process to be implemented by educators and aims to involve the trainee with the materials learned.”

In another definition, teaching as a profession affects activities in the classroom, so knowing what occurs in the teaching process is necessary for the teacher (Kauchak & Eggen, 2003). Or according to a definition, teaching method refers to ordered measures adopted by teacher according to the conditions and possibilities to achieve the target (cited in Shabani, 1998). Selection and use of teaching methods depends on teacher’s thoughts, beliefs and views of the education; so that without knowledge of philosophy, principles and techniques of learning and teaching methods, a teacher will not be able to perform his duty properly. If the main purpose of education is to produce independent, creative thinkers, with critical thinking and rational reasoning, such purpose may not be realized through using methods that foster the spirit of reactiveness and passiveness and surrender (Fathi Vajargah, 2007). The style of teaching of a teacher is one with which a teachers feels comfortable, and by which he prevents the occurrence of disorders in his class (Vaughn, & Baker, 2001).

In another definition, teaching style is method by which teacher specifies the learning assignments and directs the process of teaching and can be considered as a preference and disposition for a certain behavior that leads to learning and is affected by values, views and cultural background of teachers (Kabadayi, 2006). In other words, the concept of style is related to the preferred method of the person who uses his abilities (practice them) and is an important factor in the differences between individuals and differences in matters such as thinking, learning, teaching, and generally doing the tasks.
Here, we should refer to a relatively new concept in the field of teaching that has drawn attention of scholars, namely, teaching style, which represents the common behavioral pattern of teacher in classroom and quality of his teaching. Opdenakker and Damme (Opdenakker, Damme, 2006) state in this regard, “One of such teaching methods is student-oriented one. In this style, teacher takes different measures based on differences between students, playing an active role in dealing with problems of his students during the course of classroom activity. Teacher often share his problems with his colleagues and appraises his teaching directly or indirectly and establishes friendly relations with his student; it can be said that this teaching method is rather focused on learning and students themselves. The opposite of this style is subject-based method, which pays less attention to the difference between students and their Personality development, and the highest priority to ensure that the educational content is learned by students well. However, these are the only teaching methods and other scholars have introduced other form of teaching styles; for example: Bennett (Bennett, 1997) introduces formal and informal styles; McNeill (Mac Neil, 1980) uses explanatory style versus exploratory style. Fisher and Fisher (Fischer and Fischer, 1997) noted multiple categories of teaching styles including student-centered, learning-centered and subject-centered ones (Opdenakker & VanDamme, 2006).

As seen, many definitions of teaching style have been provided. In general, we can conclude that teaching style reflects durable personal characteristics that identify the type of behavior in the classroom. Here, definition by Opdenakker and VanDamme of teaching styles is accepted. The basic element of student-centered approach is the "student". Therefore, physical and mental activity of students is encouraged unless it disturb the order of the classroom, teacher functions as a guide in this process. Allegorically, it can be said that in the above-mentioned method, teacher is the conductor and students are the band. As might be expected, this method does not and should not apply to all courses. But traditional education prevented even the minimum involvement of students and teacher was the sole active agent in classroom. This method is also known as exploratory method, because students are free to think and make innovations. In some texts, this is called problem solving as well, because student tries to identify the problem, determine its boundaries, search for possible solutions and anticipate the consequences of each of them, choose the most appropriate solution and to achieve the aims and make the final evaluation of the work. In this method, the teacher is a guide who awakens interest and ideas and, above all, appears as a sympathetic observer (Sarmad, 1997). Passive style is of course one of the weakest teaching styles, because in this method teacher is reduced to the transmitter of material defined by others. This method is often known as traditional method and aims to transfer a certain amount of pre-determined materials in each period or year to students. Also, this approach is consistent with the direct teaching methods; direct teaching methods are methods in which the teacher alone presents the subject (Mirlohi, 2003). Many studies have been done in the field of teaching styles; here we mention some of them. Naimie et al. (Naimie, Siraj, Yang, Shagholi, Ahmed, 2010) studied the preferences in teaching and learning styles and their consistent and inconsistent with success of learners. The sample consisted of 310 undergraduate students of language and 4 associate professor of foreign languages at Islamic Azad University. Data were collected through interviews and observations. The results of this study showed that the consistency between teaching styles and learning styles led to improved learning and success of students. Javidi chelated Jafarabadi and Abdoli (Javidi, Abdoli, 2010) designed a study to investigate evolution of critical thinking among the students of humanities at Ferdowsi University of
Mashhad. For this purpose, 144 first-year and fourth-year undergraduate students were evaluated. The results of their study showed that (1) there was a difference between the first-year and fourth-year undergraduate students in terms of mean scores of critical thinking; 2. the total mean scores of critical thinking of first and fourth year students was weak; 3. male students obtained better scores in skill of interpretation while female students gained better scores in skill of inference. However, no significant difference between boys and girls was observed in terms of critical thinking; and, 4. There was no significant difference between mean scores of students in humanities and other disciplines in any area of critical thinking except interpretation.

Critical thinking is among the issues that have attracted the attention of researchers. Following are some of the studies in this regard.

Noshadi (Noshadi, 2008) conducted a study titled "Critical thinking disposition of humanities students: a conceptual framework for fostering critical thinking among students in the humanities" on 120 male and female students of different disciplines in the humanities (law, history, education, economics and sociology) and concluded that of students of these fields of studies, and among different levels of education, sociology students, graduate students, especially doctoral students were more highly disposed to critical thinking than undergraduate students.

Eskandari and Salehi (Eskandari, Salehi, 2006) studied the effect on the performance of students of the consistence between the teaching and learning styles (case study: Departments of Agriculture and Natural Resources in Kurdistan University) and their results showed that the consistence between styles of teaching and learning styles had a positive and significant effect on the performance of students. It can be concluded that if teachers of agriculture and natural resources could match their teaching styles to the learning styles of their students, their students would have a better academic performance.

Wiggs (Wiggs, 2011) conducted a study entitled "Involve learning test: evaluation of students' teamwork and critical thinking among nursing student" as an experimental design with the control group (174) and experimental group (309). First, a-pretest of critical thinking was given to both groups, and then, experimental group was divided to two group, each further divided to groups of five. The experimental group received training based on involvement method while control group received traditional teaching. Finally, the implementation of critical thinking post-test showed that the experimental group had higher mean scores of critical thinking compared to the control group. The mean scores of critical thinking of two experimental groups had no significant difference.

Richardson and Ice (Richardson & Ice, 2010), based on the idea that different educational strategies can affect different parts of students' critical thinking and given the point that this is important for designers and educational administrators, performed a research entitled "Evaluation of critical thinking of the students through online discussion educational strategy ". This study was conducted on 300 students in the United States. The results showed that online discussion had an impact on critical thinking of students. According to results of evaluation of the preference of the type of online discussion, 47% of the students preferred free discussions, 36% of the students preferred negotiation and 17% preferred discussion based on a specific target.

The results showed that students preferred not to discuss based on predetermined goals and topics. The thing that increases critical thinking disposition is the fact that such predetermined goals and topics should not be included in the curriculum.
Sandag and Odabasi (Sandag & Odabasi, 2009) performed a study to determine the effect of problem-based learning in online environments on critical thinking and acquisition of content knowledge among undergraduate students of the Faculty of Mathematics in Turkey. For this purpose, an experimental design with experimental group (n = 20) and control group (n = 20) was used. Experimental group received online problem-based learning while control group received online teacher-centered learning. Test results showed that online problem-based learning had no effect on acquisition of content knowledge in experimental group, but significantly increased their level of critical thinking. Thus, it can be concluded that both problem-centered and traditional learning equally increase content information and knowledge while problem-based learning increased critical thinking because got students involved in a problem-centered situation and in solving of the same.

Kulinna and Cothran (Kulinna, Cothran, 2003) conducted a study aimed to investigate the relationship between self-reported use by teachers and knowledge of teaching styles among teachers of physical education in elementary schools and high schools. There was a significant difference between teachers who evaluated their teaching and knowledge of different teaching styles and use of them.

It is quite clear from the literature that no research has been conducted on possible relation between critical thinking disposition and preferred teaching style of teachers. On the other hand, according to literature, there is a close relation between critical thinking and teaching style of teachers, with teaching style affecting critical thinking of learners. For example, according to Sandag and Odabasi (Sandag & Odabasi, 2009), problem-centered teaching style had significant and positive impact on critical thinking of learners, compared to traditional method. Thus, with knowledge of factors affecting teaching styles of teachers and critical thinking disposition among teachers, required training programs can be provided to teachers to improve their critical thinking and teaching style both, leading to realization of education process. Overall, this research aimed to study critical thinking disposition of elementary school teachers and its role in their preferred teaching style and its results could function as a point of departure to promote critical thinking and teaching style of teachers.

**Methodology**

Statistical population, sample and sampling method: Statistical population comprised based on the objectives and questions of the research all female teachers of elementary schools of the seven districts of theoretical field of studies in Shabestar city in school year 2011-2012. According to the result of inquiry from Education Organization of East Azerbaijan, sample size was 4115. Thus, after preliminary implementation and in accordance with the formula, sample size of 110 teachers were selected in theoretical field of studies. In this formula, the initial estimated value of the variance and standard deviation were 408.36 and 102.12, respectively, and the value of negligible difference or the potential efficiency was equal to 5, and alpha of 0.01 was considered.

In this study, sampling was conducted using multi-stage cluster sampling method. For this purpose, city of Shabestar was divided to three classes: higher, middle and lower classes, and from each class, one district (district 3 from higher class, district 2 from the middle class and district 3 from lower class) were randomly selected and 2 schools were selected from each district and teachers were included in the research by census. It should be noted that researcher attended the schools and administered the questionnaires to the teachers, and after
completion of the same, researcher collected them and provided explanations to teachers if required. In this study, two questionnaires of teaching style and critical thinking disposition scale of Ricketts (Ricketts, 2003) were used. 1. Critical thinking disposition scale of Ricketts (Ricketts, 2003): The questionnaire included 33 five-choice items on Likert scale (from strongly agree to strongly disagree). The maximum and minimum score achievable in this test were 165 and 33 points respectively and had three subscales of creativity, perfection and mental engagement. Reliability for each of these subscales were 0.64, 0.53 and 0.82, respectively, and in study by Pakmehr and Dehghani (Pakmehr, Dehghani, 2010), Cronbach's alpha coefficient of 76% was achieved. In the present study, calculated alpha was 70%.

The preferred teaching style questionnaire contained 39 items based on a teaching style questionnaire of Moosapoor (Moosapoor, 1998), that has been used in Teacher Training courses to evaluate the course of teaching methods and techniques. Items of each raw related to two different types of teaching: a) direct or teacher-centered teaching (teacher as leader), and b) indirect or student-centered teaching (teacher as advisor). Each item comprised 6 options on Likert scale ranging from "not at all" to "very high". Scoring was arranged from low to high. Zero score was assigned to the option of "not at all" and five to "very high". Items were classified into 4 groups: establishment of relation (5 items), continuation of relation (14 questions), effectiveness of relation (10 questions) and evaluation of the relationship (10 items).

It should be noted that in the preferred teaching style questionnaire, the ending phrases and verbs were changed slightly. The validity of questionnaire was measured based on experts' opinions, and its reliability was confirmed by calculating Cronbach's alpha. Cronbach's alpha was calculated for all items separately and then for each component for both active and passive style and the reliability was good: alpha of 0.94 for all items, alpha of 0.93 for items related to passive style of teaching and 0.95 for those related to the active style of teaching.

Results
The findings of this research are presented for each research question separately.

The first question: To what extent are teachers disposed to critical thinking? Descriptive statistics indices of critical thinking disposition of teachers surveyed are reported in Table 1. As is observed in Table 1, the mean scores of critical thinking disposition of teachers surveyed was 129.47 out of a total score of 165. According to the mean values achieved in passive and active teaching styles, it is can be said that the mean scores of active style of teachers surveyed were higher compared to those obtained for passive style. For the purpose of assessing critical thinking disposition, highest and lowest scores were 165 and 33, respectively and the median score was 99. For the component of creativity, the highest and lowest scores were 55 and 11, respectively and the median score was 33. For the component of cognitive maturity, the highest and lowest scores were 45 and 9, respectively and the median score was 27. In examination of component of mental engagement, the highest and lowest scores were 65 and 13, respectively and the median score was 39 (Aminkhandaghi, Pakmehr, Amiri, 20011).

The results in Table 2 indicate that all teachers surveyed had reached a satisfactory condition in critical thinking disposition (t = 36.42, p < 0.001) and components of creativity (t = 39.56, p < 0.001), cognitive maturity (t = 7.21, p < 0.001), and mental engagement (t = 29.82, p < 0.001).

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Second question: What is teachers’ preferred teaching style? For the question to which teaching styles the teachers incline, dependent t-test was used, the results of which are reported in Table 3.

Based on the results shown in Table 3, teachers were significantly inclined to active teaching style. The correlation matrix between critical thinking disposition of teachers and their preferred teaching style is reported in Table 4.

Table 1. Descriptive statistics indices of and critical thinking disposition and its components and teaching style of teachers

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>STD</th>
<th>Minimum score</th>
<th>Maximum score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creativity</td>
<td>46/19</td>
<td>3/49</td>
<td>37/00</td>
<td>55/00</td>
</tr>
<tr>
<td>Cognitive maturity</td>
<td>30/02</td>
<td>4/40</td>
<td>13/00</td>
<td>47/00</td>
</tr>
<tr>
<td>Intellectual engagement</td>
<td>53/24</td>
<td>5/01</td>
<td>39/00</td>
<td>65/00</td>
</tr>
<tr>
<td>Critical thinking</td>
<td>129/47</td>
<td>8/77</td>
<td>104/00</td>
<td>158/81</td>
</tr>
<tr>
<td>Active teaching style</td>
<td>182/74</td>
<td>3/32</td>
<td>137/00</td>
<td>241/36</td>
</tr>
<tr>
<td>Passive teaching style</td>
<td>174/11</td>
<td>21/05</td>
<td>127/00</td>
<td>256/88</td>
</tr>
</tbody>
</table>

Table 2 - one-sample t-test of "critical thinking disposition" and "its components" in the teachers surveyed

<table>
<thead>
<tr>
<th>Variable</th>
<th>Median score</th>
<th>Mean</th>
<th>Mean difference</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall disposition</td>
<td>99</td>
<td>129/47</td>
<td>30/47</td>
<td>36/42</td>
<td>109</td>
<td>0.000***</td>
</tr>
<tr>
<td>Creativity</td>
<td>33</td>
<td>46/19</td>
<td>13/19</td>
<td>39/56</td>
<td>109</td>
<td>0.000***</td>
</tr>
<tr>
<td>Cognitive maturity</td>
<td>27</td>
<td>30/02</td>
<td>3/02</td>
<td>7/21</td>
<td>109</td>
<td>0.000***</td>
</tr>
<tr>
<td>Intellectual engagement</td>
<td>39</td>
<td>53/24</td>
<td>14/24</td>
<td>29/82</td>
<td>109</td>
<td>0.000***</td>
</tr>
</tbody>
</table>

Table 3. Comparison of the in-group results for teachers in terms of preferred teaching style

<table>
<thead>
<tr>
<th>Component</th>
<th>Teaching style</th>
<th>Mean</th>
<th>STD</th>
<th>STD</th>
<th>t</th>
<th>DoF</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching</td>
<td>Passive</td>
<td>174/2</td>
<td>21/05</td>
<td>2/007</td>
<td>-4/98</td>
<td>109</td>
<td>0.001**</td>
</tr>
<tr>
<td>style</td>
<td>Active</td>
<td>182/7</td>
<td>18/67</td>
<td>1/78</td>
<td>-4/98</td>
<td>109</td>
<td>0.001**</td>
</tr>
</tbody>
</table>

As seen in Table 4, of active and passive learning styles, critical thinking disposition of teachers had a significant positive relationship with active teaching style only (p < 0.001, r = 0.48).

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Third question: What is the relationship between critical thinking and teacher’s preferred teaching style? After the relationship between critical thinking disposition and active teaching style was found to be positive, simultaneously multiple regression was used for the predictor role of critical thinking disposition of teachers in the preferred active teaching style. As noted, the multiple correlation coefficient of critical thinking disposition of the teachers surveyed in prediction of their active teaching style was equal to 0.48. The amount of R2, namely, the extent to which criterion variable (preferred active style) was accounted for by predictor variables (components of critical thinking disposition) was 0.26. In other words, 0.26 of variance of active teaching style of teachers surveyed was explained by the various components of their critical thinking disposition. According to the results shown in Table 5, for the purpose of the test of the significance of the correlation coefficient, regression analysis showed that the observed F was significant (P < 0.001, F (106.3) = 12.54). This means that generally critical thinking disposition is able to predict active teaching style of teachers.

According to what is stated in Table 6, the regression coefficients and their significance showed that among the components of critical thinking disposition, only component of creativity (t = 3.57, P < 0.01) could predict active teaching style of teachers studied. While components of cognitive maturity (P = 0.054, t= 1.94) and mental engagement (P = 0.18, t = 1.32) were not able to predict active teaching style of teachers.

Table 4. The correlation matrix between critical thinking disposition of teachers and their preferred teaching style

<table>
<thead>
<tr>
<th>Critical thinking disposition</th>
<th>Statistical Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>*** 48/0</td>
<td>Variable</td>
</tr>
<tr>
<td>0.11</td>
<td>Active teaching style</td>
</tr>
<tr>
<td>Passive teaching style</td>
<td></td>
</tr>
</tbody>
</table>

*** Significant at 0.11 * Significant at the level of 0.05

Table 5. Results of multiple regression analysis to predict active teaching style of teachers evaluated through critical thinking disposition

<table>
<thead>
<tr>
<th>Source of variations</th>
<th>Mean Square</th>
<th>DoF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prediction</td>
<td>9957/36</td>
<td>3</td>
<td>3319/12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residue</td>
<td>28041/23</td>
<td>106</td>
<td>264/54</td>
<td>12/54</td>
<td>0/000***</td>
</tr>
<tr>
<td>Total</td>
<td>37998/59</td>
<td>109</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

***Significant at the level of 0.001
Table 6. The regression coefficients of components of critical thinking disposition in prediction of active teaching style of teachers

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>Regression coefficient b</th>
<th>SE</th>
<th>Regression coefficient β</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creativity</td>
<td>2.05</td>
<td>0.57</td>
<td>0.38</td>
<td>3.57</td>
<td>0.001***</td>
</tr>
<tr>
<td>Cognitive maturity</td>
<td>0.69</td>
<td>0.35</td>
<td>0.16</td>
<td>1.94</td>
<td>0.054</td>
</tr>
<tr>
<td>Intellectual engagement</td>
<td>0.53</td>
<td>0.40</td>
<td>0.14</td>
<td>1.32</td>
<td>0.18</td>
</tr>
</tbody>
</table>

**Significant at the level of 0.01

Discussion and Conclusion

The present research aimed to assess critical thinking disposition and its role in preferred teaching style of the elementary school teachers. The data analysis showed a significant correlation between critical thinking disposition of teachers studied and active learning style preferences (p < 0.001). The results also showed that among the components of critical thinking disposition, creativity had the highest correlation with active teaching style preference among teachers (p = 0.001) and the lowest correlation with mental engagement component (p > 0.001) and had no significant relationship with the components of cognitive maturity. It is concluded from the significance of this relationship that teachers who have higher creativity have higher analytical skills, reasoning and evaluation power, which is certainly effective in choice of active teaching style.

However, this finding is reasonable, because active teaching style requires, as mentioned, that teachers strengthens the curiosity of students and establish an intimate relationship with students and overall make the students involve in the learning process. Teacher who is more strongly disposed to critical thinking and is more creative in teaching and communication with student certainly performs active methods of teaching more than others.

Other results of the study showed that the studied teachers had fortunately reached a desirable level of critical thinking (p < 0.001, t = 36.42). These findings were consistent with the results of Amin Khandaghi, Pakmehr and Amiri (Amin Khandaghi, Pakmehr, Amiri, 2011) and Tiwari et al. (Avery, Lai, Tiwari, 2003) bit inconsistent with the results of the Emir (Emir, Ricketts, 2003) who evaluated critical thinking in Turkey.

These results can be one of the strengths of the system of teacher training and in-service training courses in our country, as in teacher training centers and in-service training courses, it has been tried to pay attention to thoughts and ideas of teachers and students and to provide training in a way provoking critical thinking among teachers and make them disposed to such thinking. In other words, it can be inferred from the findings that the curriculum, active teaching methods and facilities of teacher training centers and in-service courses for teachers are able to stimulate the critical spirit in teachers and students.

Another finding of this study is relevant to the style of teaching; the mean preference of active style was higher than passive teaching style preference. In other words, teachers who were disposed to active teaching style were more than other teachers who were not disposed to this style. This is consistent with Amin Kandaghi and Malihe Rajaei (Amin Kandaghi, Malihe Rajaei, 2011), in which the tendency of student teachers towards different teaching styles was studied and the same result (higher tendency towards active teaching style) was concluded.
This also indicates that teacher’s critical thinking disposition is related to and has an effect on their teaching style and also showed the potential of education system for change and evolution of learning process, as scholars in the field of education have consensus that teachers are the key elements of success and effectiveness of education system. Given significant relation between critical thinking disposition and teaching style, it is recommended that required powers be given to students of teacher training universities to promote critical thinking and that the professors give challenging assignments to make students aware of their capabilities. Evidently, assignments must be challenging and slightly higher than their capabilities, not very easy or very difficult and complex, in which case they will definitely reduce their motivation. Also on the other hand, given the importance of critical thinking in teacher training centers, it is recommended that a course named “training critical thinking” be added to the curriculum of this field of studies or a separate course be held on this subject for them. In the end, it should be noted that given the results of many studies have shown that active learning methods and problem solving can lead to a positive attitude towards critical thinking among the students, active teaching methods as another effective factor in developing critical thinking disposition should be included in teacher training programs and in-service training courses. On the other hand, since various factors can be related to the teaching style of the teacher and critical thinking disposition, therefore, it is suggested that these factors be identified and evaluated. Overall, given desirable critical thinking disposition level among teachers and their inclination towards active teaching style, education system and authorities should use the potentials of teachers by involving them in decision making and giving them more powers, thereby driving the education of the country towards excellence.
References


22. Amin Kandaghi, Malihe Rajaei (2011). The Comparision of Students and Rducators Preferred Teaching Styles in Teacher Educating Centers, 3rd Conferences on Educational Sciences, Istanbul, Turkey.


Critical Thinking Appraisal: One scale or many subscales? Thinking Skills and Creativity, 3: 15-22.


