Hajhosseini et al., *Cogent Education* (2016), 3: 1175051
http://dx.doi.org/10.1080/2331186X.2016.1175051

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CURRICULUM & TEACHING STUDIES | RESEARCH ARTICLE

Critical thinking and social interaction in active learning: A conceptual analysis of class discussion from Iranian students' perspective

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Received: 18 November 2015
Accepted: 03 April 2016

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Abstract: Following the failures in traditional methods of teaching, theorists have recently emphasized students' active role in education in which the teacher is no longer a mere transmitter of knowledge. Discussion-based teaching has been regarded as a route to improving students' active role. The current study intended to discover the benefits of using discussion for social interaction and critical thinking disposition from Iranian students' perspective. Participants included 14 first-year educational psychology students who were selected through purposive sampling method. A general psychology course at the University of Tehran was held based on proposed patterns for class discussion. The data were collected through structured interviews, and analyzed through interpretive analysis. Findings showed that the components of critical thinking dispositions and social interaction were mostly exhibited during discussions. It seems that involvement of students in class discussions have benefits over the traditional realms of education. These positive effects are seen at personal and social levels, bringing forth more dynamic aspects of culture.

Subjects: Education; Educational Psychology; Psychological Science

Keywords: critical thinking; social interaction; active learning; class discussion

1. Background

Due to the increasing pace of scientific developments and growth in knowledge, universities are increasingly under pressure to present and transfer information. In this structure, the teachers are viewed as sources of information, whose job becomes to present information, while students are tasked only with reception of information, similar to a small library that is packed with books.

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PUBLIC INTEREST STATEMENT

The present research analyzed the use of discussion-based teaching style in a college class in Iran. It also attempted to examine this method of active learning in terms of developing critical thinking and social interaction in students. The results of this qualitative study revealed that the involvement of students in class discussions have benefits over the traditional academic education. These positive effects are seen at personal and social levels, bringing forth more dynamic aspects of culture. Real-life application of this method of teaching, the core of which relies on discussion groups, is the ultimate goal of this investigation.

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One crucial factor for training conscious human resource is to establish the pedagogy of thinking and reflecting that provides the essential conditions for challenging, reasoning, evaluating, and learning. Such a pedagogy promotes, facilitates, and enhances inquiry, research, and critical thinking for innovation and knowledge construction. Critics of this approach include constructivists, social constructivists, and advocates of critical pedagogy, who believe that an individual constructs and reconstructs his or her knowledge through active engagement in context, meaningful experiences, and social interactions with others (Gage & Berliner, 2002). They hold that individuals pass new information from the cognitive filters including schemas, conceptions, beliefs, and cognitive structures and then acquire new personal concepts and ways of perceiving, thinking, making distinctions, and solving problems through active engagement in social context. Theorists of this approach including Piaget, Dewey, Brunner, Vygotsky, and Freire have emphasized students' social interaction in which the teacher is no longer a person who simply passes the information. However, the teacher becomes a facilitator who helps students by taking cognitive challenges. Moreover, the student is not merely an inactive receiver, but an actor who is actively engaged in experience of the problem or issue. Furthermore, constructivist pedagogy which is based on the concepts of distributed cognition, collaborative learning, and active individual includes a wide range of methods such as group discussion and cooperative learning that call on teachers to give students autonomy and freedom to discover and formulate their own meanings of phenomena (Gage & Berliner, 2002).

1.1. The role of discussion in active learning

"Discussion" is known as a crucial instructional method that allows active learning, promotes greater understanding, and facilitates critical thinking in students (Ikuenobe, 2002; Okolo, Ferretti, & MacArthur, 2007; Sautter, 2007). Gage and Berliner (2002) believe that teaching through discussion fosters the following important abilities: (a) ability to think critically, (b) ability to support opinions by reasoning, and (c) ability to participate in democratic space through listening to others, evaluating their argument, and respecting their views. During discussions, students can express and formulate their own views, receive others' evaluations, and recognize the vague points in their own understanding (Hadjioannou, 2007). Discussion improves students' tolerance of challenging viewpoints, develops interactive skills, and increases students' capability for critical thinking (Eggen & Kauchak, 2001).

Brookfield and Preskill (2005) are the main proponents of the view claiming that critical thinking and social interaction can be facilitated through discussions. They have defined discussion as an alternately serious and playful effort by a group of two or more to share views. They consider four purposes for discussion, which include: (a) helping participants reach a more critically informed understanding about the topic, (b) enhancing participants' self-awareness and their capacity for self-critique, (c) fostering an appreciation for diversity of opinions that emerges when viewpoints are exchanged, and (d) acting as a catalyst in order to help people take action. Discussion is an important way for people to affiliate with one another and develop the sympathies and skills that make participatory democracy possible (Brookfield & Preskill, 2005).

Brookfield (2012) regards discussion as a method to enact critical thinking because he believes that tutorial groups provide good situations for reciprocal critique, and that critical thinking involves more than cognitive activities such as logical reasoning. His model for critical thinking centers around four interrelated components of thinking processes:

(1) *Hunting assumptions*: identifying the assumptions that frame our thinking and determine our actions;

(2) *Checking assumptions*: assessing the degree to which these assumptions are accurate;

(3) *Looking at things from different viewpoints*: looking at our ideas from several different perspectives and angles;

(4) *Taking an informed action:* the action taken following the above steps.

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Brookfield (2012) maintains that the discussion taking place in collaborative learning is one way of identifying the critical thinking skills that the students use. He has introduced various forms of focused discussion groups (*critical conversation, scenario analysis, circle of voices, circular response,* and *chalk-talk*), in which students experience critical thinking, primarily as a social learning process, and the peers serve as critical mirrors who shed light on assumptions that have never been checked.

In addition to the pedagogical approach to critical thinking, there is another approach that describes critical thinking with its components classified into two categories: intellectual skills and emotional dispositions. For instance, Fisher (2001) describes critical thinking as a range of intellectual skills and abilities that include identifying and evaluating assumptions, judging acceptability of claims, analyzing, evaluating, and producing explanations. Ennis (1990) describes critical thinking based on intellectual skills components such as identifying the elements, identifying hidden assumptions, and evaluating the credibility of claims. He also introduces some dispositions for a critical thinker that include willingness to examine beliefs and assumptions, willingness to listen carefully to others, and willingness to look for evidence.

Some researchers (Facione & Facione, 2005; Facione, Facione, & Giancarlo, 2001) discriminate between intellectual skills (analysis, inference, evaluation, deductive reasoning, and inductive reasoning) and emotional dispositions. According to Facione (2010), critical thinkers must be both "willing" and "able" to think critically. Accordingly, a certain set of logical attributes that can be used to describe a person inclined to use critical thinking includes engaging in the following activities: *Analyticity*—disposition of being alert to potentially problematic situations, and anticipating possible consequences; *Systematicity*—the person strives to approach specific issues and problems in an organized and focused way; *Inquisitiveness*—the person wants to know how things work; *Open-mindedness*—disposition of being tolerant against divergent views with sensitivity to possibility of one's own bias; *Critical Thinking Self-confidence*—the person who trusts himself or herself to make good judgment, that is the level of trust one places in one's own reasoning processes; *Truth-seeking*—disposition of being eager to seek the truth; *Maturity*—disposition toward decision-making with a sense that some problems are ill-structured and that some situations admit of more than one plausible option.

Several researchers have conducted studies based on critical pedagogy perspective. Based on Freire's theoretical perspective, researchers like Wallace (2002), Cho (2014), Sanchez (2005), and Sullivan (2004) have applied critical pedagogy to develop critical thinking. Others have studied the role of discussion in developing critical thinking on the basis of social constructivism. Boghossian (2004) has employed the models of inquiry in enhancing critical skills and dispositions. Sullivan (2004) and Capone (2010) have introduced a model of group discussion. In addition, Boulter (2010) and Yang (2002) have preferred web-based discussion.

In Iran, little research has dealt with the application of cooperative learning. For example, Zakeri (2010) has utilized discussion-based learning for engineering students. The findings of his research have demonstrated that this method deepens the learning process. Another research has also suggested that cooperative learning may result in more meaningful learning for students (Malakouti, 2009). On the other hand, these methods of teaching are not regularly employed in Iranian university classrooms in practice, and their benefits and outcomes are not clear to students and professors (Noshadi, 2006). In addition, considering that most Iranian students are not taught nor trained to be critical thinkers, providing them with an appropriate context to foster critical thinking dispositions is of crucial importance (Fahim & Sa'eepour, 2011). Therefore, the present study was conducted to assess the students' interpretation of the two models of discussion offered by Brookfield and Preskill (2005). The study also intended to investigate the components of critical thinking disposition and social interaction elaborated by Brookfield (2012) and Facione (2010) during two types of discussions (*circle of voices and circular response*) from Iranian students' perspective. Therefore, the following research questions were defined for the study: How do Brookfield's models for critical discussion

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affect the students' social interaction? How do Brookfield's models for critical discussion affect the students' critical thinking dispositions?

2. Participants and method

Participants included 14 freshmen students in educational psychology major who attended a general psychology class. They included eight female and six male students aged 18–26 years old. The study utilized a participatory action research (PAR) approach. PAR is an approach to research in communities that emphasizes participation and action. In this approach, the researcher becomes an agent for change and part of the collaboration team, while seeking to understand the world or the smaller community setting, by focusing on the collective inquiry, feedback, and reflection about experiences. As such, PAR practitioners make a concerted effort to integrate three basic aspects of their work, which are participation, action (engagement with experience), and research (Chevalier & Buckles, 2013).

2.1. Procedure

In order to study Brookfield's models for critical discussion, a general psychology course at the University of Tehran (2014–2015) was selected for the purpose of this study.

2.1.1. Methods of discussion-based teaching

Two of Brookfield's models for discussion, including "circle of voices" and "circular response" were applied in a total of 16 sessions, with each model being applied to 8 sessions. Details for each of the two groups have been listed below:

2.1.2. Circle of voices

Groups of five people were formed and a question was posed to each group. Groups were allowed to organize their thoughts and to respond to the question posed. Once "circle of voices" began, participants started expressing their opinions, thoughts, and responses to the topic. As participants became motivated to speak out, the second ground rule came into effect. Students could only talk about their responses and reactions to what someone else had said in group.

2.1.3. Circular response

In the group with "circular response" model, 8–12 participants sat in groups in the form of circles, so that members could see one another. Like circle of voices, the process had two rounds of conversation. The first round began with each person talking about an issue that the group had agreed to discuss about. After the first person, the next person sitting on the side of that group member began to speak for to one minute. The new speaker was to incorporate into his or her remarks some reference to preceding speaker's comments. This process moved around the circle with every speaker responding to the previous speaker's comments. The process ended with the member who had started the response to the comment. At this stage, the ground rules were removed and the group moved into an open exchange and free form of conversation about the topic.

2.2. Instrument

The data were collected through structured interviews. Due to the nature of this interview, questions did not skew responses toward any particular theories, nor were they based on any predetermined option. The unbiased interview questions provided the interviewee with the possibility to express his or her feeling, understanding, and interpretations with his or her own words. This type of interview minimizes the possibility of discrimination because it motivates continued contributions about a general topic, which in turn leads to a more stable state (Borg, Gall, & Gall, 2006).

According to Table 1, the interviews were organized around two main themes: (a) evaluation of education, (b) evaluation of interactions. Interviews were conducted by the researchers at the end of the semester, each interview taking between 20 and 30 minutes. Interviews were recorded with subjects' consent and then transcribed verbatim.

Table 1. Interview questions

(A) Evaluation of education

(1) What was the outcome of this method in your learning and comprehension? What was the outcome of this method in your reasoning?

(2) What was the effect of this method on your motivation to have conversation with your classmates? What was effect of the applied method on your tendency toward self-criticism?

(3) How did you feel as the opposite group members were making a criticism? How did you feel while you were criticizing another person's opinion?

(B) Evaluation of interactions

(4) What was the effect of this method on your relationship with classmates?

(5) How did participation in the focused group discussions influence your interaction with teacher?

2.3. Data analysis

To analyze the information, lexical data from the interviews were processed by interpretive analysis based on grounded theory recommended by Strauss and Glaser (1967). This type of processing is based on careful assessment and categorization of the lexical data. For this type of analysis, the researcher interprets and infers the words semantically in order to create the categories (Borg, Gall, & Gall, 2006).

The four stages of data processing were preliminary analysis following each interview session, the initial coding, open classification, and ultimately categorization. After recording the participants' perceptions, meaningful segments of analysis were chosen as the first-level categorization. These segments are not the same as keywords, but are phrases that carry meaning which can be understood outside the context of the text. Each meaningful unit (segment) was classified into inferential components on the basis of the elements presented in theoretical explanations by Brookfield and Preskill (2005), Brookfield (2012), and Facione (2010), and through semantic inference by the researchers. In accordance with principles of grounded theory, a process of constant comparison, modification, and re-categorization was repeated until each meaningful unit was located in a clear and distinct category.

3. Results and discussion

The first question of the interview was about the effect of discussion-based teaching on comprehension and learning of the concepts, for which around 71% of the participants provided the following responses: "*it is the instrument for acquiring knowledge,*" "*it is going beyond solely obtaining infor mation,*" and "*deeper learning happens.*" Such statements show that discussions could cause deeper contemplation and better understanding for students. Therefore, one can attribute the effect of discussion to Brookfield and Preskill's view on developing the students' skills for synthesis and integration. Because students work dialectically in discussions, they are encouraged to explore the widest range of possible interpretive perspectives and strive to discover commonalities and previously unnoticed rational connections.

Answers like "*attention to other viewpoints*" and "*variety of experiences and learned knowledge*" were provided by almost 40% of the participants, which can demonstrate that the discussions have encouraged the students to search for truth. Brookfield and Preskill (2005) have stated that since discussion involves students with different perspectives, voices, and expressive forms, it is one of the most effective ways to make students aware of the range of interpretations that are possible in an area of intellectual inquiry. Therefore, it helps students to learn from each other and affirms students as co-creators of knowledge.

Regarding the next part of the first question about the effect of utilized method on reasoning, almost 78% of the responses were as follows: "*becoming aware of other's assumptions*" and "*paying*

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attention to bases of the theories." This indicates that discussion leads students to explore the evidences behind the voices. Since the students need to identify positions in critical discussions, they have to explore others' assumptions and evaluate them. These are evident in what Brookfield (2012) introduces as the first component of critical thinking—hunting assumptions. He contends that identifying the assumptions that frame our thinking and determine our actions is the heart of critical thinking. This concept can also be attributed to three components of critical thinking disposition in Facione's (2010) theory, including truth-seeking, analyticity, and maturity. Furthermore, some participants' statements (almost 42% of respondents) may support this effect: "*attention to validation and authentication of the reasoning,*" "*recognizing the fallacies,*" "*preventing to insist on the wrong reasoning,*" and "*empowered by the reasoning skills.*"

The first part of the second question dealt with the effect of discussion on students' motivation to have conversation with their classmates. About 85% of all respondents gave answers like: *"I feel I have the courage to express my ideas in front of others," "I do not feel scared,"* "*my self-confidence increased."* Such statements suggest that the discussion group has facilitated self-expression; what Gage and Berliner (2002) refer to as "development of ability to express and formulate one's own view." According to Facione (2010), these responses can be attributed to another component of critical thinking disposition called *Critical Thinking Self-confidence*. In explaining these findings, and according to Lipmann's opinions, when students participate in a discussion, they learn that it is not sufficient to simply rely on their initial thoughts about the subject; but they rather have to be able to justify their viewpoint with proper reasoning, include examples, listen to opposite reasons, and provide reasons in defense of their points of view. In this case, the students were encouraged to express their ideas and take a stance, which resulted in improved self-confidence. Similarly, Miller and Miller (1997) suppose that self-esteem and courage to express opinions are the emotional effects of participation in such discussions.

Responses such as *"when I talk, everyone pays attention to me*" and *"what is important is what I talk about"* (by almost 30% of the respondents) show that discussion may encourage students to express their opinions. Brookfield and Preskill (2005) believe that discussion creates respect for students' voices and experiences; and so, the students appreciate the feeling of being listened to. The next part of the second question intended to discover the effect of the applied method on the tendency toward self-criticism. About 92% of participating students made comments such as "*we should learn appropriate discussion*" and *"we are weak in making criticism."* These responses indicate an appreciation for use of discussion, and may also show that respondents acknowledge the need for having some criteria or ground rules for fair criticism. Self-criticism (or self-evaluation) is yet another important component of critical thinking disposition outlined in Facione's theory (2010). Brookfield (2012) thinks of "hunting assumptions" as the first and foremost skill in critical thinking. He believes that in order to find and check assumptions, one needs self-criticism, self-evaluation, and re-evaluation of his or her own opinions. This is more clearly visible in comments like: "*having discussion with the opposite group forced us to have more awareness and critical thinking," "I could not respond because I had not studied well,"* and *"an issue has many dimensions which might not be noticed."* These and similar statements were seen in responses made by about 71% of participating students, which can indicate that when participants receive criticism from the opposite group, they are required to review and reconsider their own opinions.

The third question was about the participant's feelings as the opposite group members were making a criticism. About 85% of the participants made statements such as "*the opposite view might be true*" and "*students have different viewpoints."* Such responses may very well represent participants' acknowledgment of, and tolerance for the differences in opinions. What Facione and Facione (2005) call open-mindedness, refers to a students' willingness to see others' views, listen to opposite opinions, and show tolerance and respect for them. Brookfield and Preskill (2005) assert that discussion encourages attentive and respectful listening. With an appropriately setup discussion conditions, participants not only learn careful listening, they would also get the chance of exploring diverse perspectives and learn to tolerate and respect the opposite views. According to Slavin (2006),

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increasing the respect for opposite view and accepting other people's views are the precious results of taking part in discussions. Referring to discussions, Paul and Elder use the term "dialogic thinking" because they point out that discussion provides the ground for extensive exchange of disagreements that can follow with preparation of a framework for testing the strength and weakness of various views (Brookfield, 2012). Therefore, discussions can reduce the tendency for self-centeredness; and this is congruent with what Brookfield and Preskill (2005) have called "learning the processes and habits of democratic discourse."

Another part of the third question was about students' feeling while they were criticizing another person's opinion. Almost 78% of the participants provided statements such as *"I learned the correct way of criticizing"* and *"I learned logical reasoning."* These may be relevant to Brookfield and Preskill's notion that engagement in discussion requires a certain intellectual agility (Brookfield & Preskill, 2005). This means that students have to think quickly to formulate a counter response. The students' responses are best reflected in the concept of "cognitive maturity" introduced by Facione (2010).

The effect of discussion on students' relationship was the main concern in the fourth question. Almost 92% of the participants provided statements such as "*I get to know their level of thinking and attitude"* and *"when I listen to their words, I get to know them and their perspectives better."* These responses can indicate that students perhaps experience improvement in recognizing the individual differences. Due to what was mentioned, it seems that the discussions can help participants have a more realistic view of others, which in turn, may positively impact their interactions. Brookfield and Preskill (2005) have outlined these features as "increasing breath and making students more empathic." They believe that one of the benefits of discussion is that it offers the opportunity for people to know each other better and expand their friendships.

The fifth question of the interview was about the effect of discussion on the students' relationship with the teacher. About 71% of the students described their interaction with the teacher through the following statements: "*I do not feel the teacher's superiority because we think together and share our thoughts,"* "*I am not scared of the teacher,"* and "*I feel free in class and I can express my ideas easily."* These statements indicate that the quality of student–teacher interaction seems to have changed, transforming the teacher's high and controlling position into a more cooperative one. Frequent references to words and phrases like *"partnership," "interaction,"* and "*feeling close to teacher"* demonstrate students' positive evaluation about the new way of communicating with the teacher. This finding is consistent with Ferrari (2010) and Sanchez (2005), who have emphasized the changes occurring when the teacher takes on the role of a co-learner. According to Freire (1972), since neither the student nor the teacher claim to have a perfect knowledge, the students and the teacher cooperate with one another in quest of a shared reality; and with the help of each other, they can create something greater than that possible by only one of them alone. In this case, teaching and learning become more like a continuous and stable process of social interactions.

4. Conclusions

Findings of the study showed that discussion-based teaching promotes deep understanding by making the students question their conceptual knowledge. In addition, it was demonstrated that frequently exchanged questions, answers, agreements, and disagreements help to gradually enhance critical thinking disposition in students, and to reduce self-centeredness among students. Appropriately organized discussion groups also bring out a distinctly new manner for students to participate in a teamwork activity. Some simple arrangements, such as sitting in circles, taking turn to speak, and responding to other members' questions appear to facilitate a powerful social interaction. Interestingly, the participants taking part in discussions report improvement in quality of their relationship with classmates and the teacher.

Analysis of the participants' answers in the current study confirms the six components inferred from Facione and Facione's theory including truth-seeking, analyticity, cognitive maturity, critical thinking self-confidence, self-evaluation, and open-mindedness. Furthermore, seven benefits of

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discussions introduced by Brookfield are also evident in students' responses. These benefits include (a) better integration and synthesis of information, (b) arriving at more fulfilling understanding of topic, (c) ability to explore a wide range of diverse perspectives, (d) improved tolerance for ambiguity, (e) more insight about questioning of assumptions, (f) increased respect, along with more active listening, and (g) collaborative learning that occurs more naturally.

Ultimately, involvement of students in class discussions seems to have benefits over the traditional realms of education. These positive effects are seen at personal and social levels, bringing forth more dynamic aspects of culture. Unfortunately, the Iranian educational system has thus far been rightly criticized for not utilizing more effective ways to foster healthy critical thinking in students, but is instead known for its focus on accumulation of data and textbook information in the minds of learners, which is contrary to creating thoughtful individuals (Hashemi, Naderi, Shariatmadari, Seif Naraghi, & Mehrabi, 2010). In other words, the Iranian school system and university system are often not conducive to educating or training critically thinking students (Fahim & Sa'eepour, 2011). This is despite the fact that old Iranian cultural and religious traditions have suggested that one hour of thoughtful discussion is worth more than a full night of prayers.

From the information that has been presented so far, it can be concluded that discussion-based learning paves the way for an appropriate and attractive context to foster critical thinking dispositions. Improved social interaction (among students and with the teacher) may be also another positive outcome of this approach. Therefore, it is recommended that real-life application of this method be supported by Ministry of Education and Ministry of Science, Research and Technology. Due to the fact that this was a qualitative study done on a relatively small sample of Iranian students and only in one context of learning, generalization of findings to other populations and other educational settings should be done with care. It is also recommended that future empirical studies expand the scope of current research, considering cultural variables, and utilizing large samples.

Funding
The authors received no direct funding for this research.

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Citation information
Cite this article as: Critical thinking and social interaction in active learning: A conceptual analysis of class discussion from Iranian students' perspective, Mansoureh Hajhosseini, Saeid Zandi, Sediqeh Hosseini Shabanan & Yaser Madani, *Cogent Education* (2016), 3: 1175051.

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