Review Article

THE EFFECT OF TEACHER-GENERATED COOPERATIVE BRAINSTORMING VERSUS LEARNER-GENERATED COOPERATIVE BRAINSTORMING ON ACTIVAITING EFL LEARNERS' BACKGROUND KNOWLEDGE IN ESSAY WRITING CLASSES

*M. Rashtchi and M. Beiki
Department of TEFL, North Tehran Branch, Islamic Azad University, Tehran, Iran
*Author for Correspondence

ABSTRACT

The present study attempted to investigate the effect of teacher-generated cooperative brainstorming versus learner-generated cooperative brainstorming as two pre-writing tasks on the essay writing of Iranian EFL learners at advanced level. Through convenience sampling, 30 female learners studying in an English language school in Tehran were selected. After participating in a writing pretest, the two intact classes were randomly assigned to teacher-generated cooperative brainstorming (TG) and learner-generated cooperative brainstorming (LG) groups with 15 students in each group. The LG group experienced student-student activated pre-writing activities while the TG group experienced teacher-student activated pre-writing activities in writing classes. The results of the independent samples t-test, after the treatment, revealed that the LG group outperformed the TG group. The results of the attitude questionnaire demonstrated that the respondents supported the implementation of both teacher-generated cooperative brainstorming and learner-generated cooperative brainstorming activities in essay writing classes.

Keywords: Background Knowledge, Brainstorming, Cooperative Learning, Pre-writing Tasks

INTRODUCTION

Writing as a skill interrelated with creativity requires several forms of knowledge including grammar, vocabulary, and rhetorical structure of the language (Fitze and Glasgow, 2009). It stimulates thinking and compels students to concentrate and organize their ideas. Also, it reinforces learning and reflecting on the English language (Maghsoudi and Haririan, 2013) and fosters students' collaborative abilities (Storch, 2005; Wigglesworth and Storch, 2009; Yong, 2010). However, as Cohen and Brooks-Carson (2001) argued, creating ideas can yield to anxiety particularly for those who experience writing in second or foreign language contexts. McDonough (2004) believed that learners' anxiety can be reduced through cooperative group discussions. Such activities can provide opportunities for interaction (McDonough, 2004) and initiate a supportive learning environment to exchange ideas and acquire knowledge (Mohamed and Mahmoud, 2014). Cooperative learning has the potential to enhance students' learning and improve social relations (Johnson *et al.,* 2000), increase positive interaction (O'Donnell *et al.,* 1985), stimulate ideas (Hirst and Slavik, 2005), and develop communicative competence (Richards and Rodgers, 2011).

Cooperative learning, according to social constructivist perspective, leads to the co-construction of knowledge and interaction (Storch, 2005). Also, scaffolding can occur among peers while working in groups (Donato, 1994). During the writing process, multiple sources of knowledge should be coordinated and thus working in groups can scaffold writing (McCutchen, 2000). Peer feedback, associated with interaction, can be a useful source for learning and cause learners to act as both writers and reviewers. While writing cooperatively, the diversity related to different levels of background knowledge among the members of a group can result in shortening the time needed for the processing of information (Yarrow and Topping, 2001). According to Atkinson (2003), the interaction among students, as a consequence of cooperative writing, can encourage students' feedback to peers' written tasks. As Kim and Kim (2005) maintained, students should follow cooperative language learning instruction in order to generate,

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organize, and share ideas, and focus on the main components of the writing skill such as vocabulary, purpose, target audience, and mechanics.

Activating background knowledge in the pre-writing stage strengthens students' thinking skills and thus has a decisive role in teaching writing (Colantone, 1998). Brainstorming as a multiple thinking activity which comprises terminating old beliefs, expanding the limits of knowledge, and creating wonderful ideas is suggested in the pre-writing stage (Honig, 2001), since it can stimulate creativity, expand thinking ability, and introduce a wide range of options to the learners (Osborn, 1953). Through brainstorming, teachers can equalize learners' involvement in the writing task and encourage ideas regarding the content and structure of the compositions (Holden, 1996; Hyland, 2009; Richards, 1990; Shi, 1998)).

Many studies have shown the practicality of collaboration (e.g. Franken and Haslett, 2002; Leki, 2001; Storch, 2005; Swain and Lapkin, 1998; Wigglesworth and Storch, 2009; Yong, 2010) and cooperation (e.g. AbdelWahab, 2014; Almugren and Ahmed, 2009; Atkinson, 2003; Chen, 2004; Cole, 2012; Depaz and Moni, 2008; Elola and Oskoz, 2010; Mohamed and Mahmoud, 2014) in teaching writing. However, this study aimed to investigate whether such activities could contribute to activating students' background knowledge in the pre-writing stage. The findings, as assumed by the researchers, can introduce an alternative technique to teaching writing. Also, in line with Bandura's (1971) social learning theory which stresses the importance of observing the attitudes, behaviors, and emotional reactions of individuals, this study examined the attitudes of its participants toward the two pre-writing tasks(i.e. learner-generated versus teacher-generated brainstorming). The aim was to help practitioners assess the potential efficacy of cooperative pre-writing activities in writing classes. To fulfill the purpose of this study, the following research questions were proposed:

RQ1. *Do teacher-generated cooperative brainstorming and learner-generated cooperative brainstorming differently affect Iranian EFL learners' essay writing?*

RQ2. *What are the participants' ideas and perceptions towards the two pre-writing tasks?*

Literature Review

The various cognitive and linguistic features involved in the writing skill make it a difficult task for learners to master (Luchini, 2010). Through the process of writing, learners are required to develop and support ideas they intend to communicate. They need to organize, revise, and re-write before their manuscripts are completed. However, writing will be a "tedious chore" for teachers and students if it merely focuses on the product (Furneaux, 1999). Brainstorming can actively engage learners in the process of writing. As Richards (1990) argued, it can develop students' cognitive skills and help them generate ideas. In his study, Richards showed that students who were trained in brainstorming techniques were more efficient in creating and organizing ideas than the other students. Likewise, Khalaf (2011) signified the positive effect of brainstorming on developing students' essay writing in terms of content organization and mechanics. Rao (2007) found that students who used brainstorming techniques during a twelve-month period gained higher results in the writing tasks. Al-khatib (2012) demonstrated the crucial role of brainstorming in developing creative problem solving skills among English language learners. Maghsoudi and Haririan's study (2013) revealed the positive effect of brainstorming on EFL learners' writing achievement and autonomy.

In L1 and L2 settings, collaborative writing elevates the quality of writing (Storch, 2005); enhances student motivation (Swain and Lapkin 1998); increases pooling of knowledge (Donato, 1994), and expands attention to discourse structures, grammar, and vocabulary use (Swain and Lapkin, 1998). Franken and Haslett (2002) showed that peer interaction had positive effects on students' summary writing as well as argumentative writing. Storch (2005) showed that collaboration among group members led to sharing ideas; also, Storch revealed that students who worked in pairs wrote shorter but grammatically more accurate and complex argumentative essays than those who wrote individually. In another study, Storch (2007) compared the texts produced by pairs with those produced by individuals and found no significant difference in terms of accuracy; however, he concluded that collaboration affected students' word choice. Storch argued that although group work on grammatical tasks may not lead to higher levels of accuracy, it could provide L2 learners with the opportunity to use the language.

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Wigglesworth and Storch (2009) compared accuracy, fluency, and complexity of the texts produced in pairs with those of individual writers and found that collaboration during writing could positively affect accuracy.

Background Knowledge and L2 Writing

According to Robertson, Taczak, and Yancey(2012) no study has actively documented how students make use of background knowledge as they find themselves in new rhetorical situations, and how employ what they already know, and whether such knowledge and practice is effective in the new situation. Tedick's (1990) study on the effect of topical knowledge indicated its important role in students' writing ability. However, Lee and Anderson (2007) showed that general knowledge of language plays a more important role than topical knowledge in the participants' writings.

MATERIALS AND METHODS

Method

Participants

Thirty advanced level female learners in two intact classes participated in this study. They were studying in an English Language school in Tehran and were selected based on convenience sampling. The classes were randomly assigned to the learner-generated cooperative brainstorming (LG) and teacher-generated cooperative brainstorming (TG) groups. The participants' age ranged from 15 to 25 years old. They already had studied English for six years, with an average of three hours of English classes per week.

Instrumentation

A writing exam on *generation gap* was used as the pre- and post-tests. The writings were rated by two raters. The compositions were corrected manually based on the correction scheme adapted from Storch and Tapper (2009). Inter-rater reliability showed a high reliability index for the pretest(r=0.84) and the posttest (r=0.85), respectively. Also, a retrospective questionnaire was used to elicit participants' attitude toward the two types of activities used in the study. The questionnaire included a series of open-ended questions administered among the participants after the posttest, the results of which were analyzed and reported (see Appendix).

Procedure

The two intact classes met two sessions per week with a ninety-minute duration for eight weeks. The participants learned about the mechanics of writing, cohesive devices, discourse markers, and the like during the course. It is worth mentioning that both classes were taught by the same teacher. To conduct the study, the researchers went through the following procedures.

Pretest

The participants' five-paragraph essays on *generation gap* were rated by two experienced writing teachers based on Storch and Tapper's (2009) guide. The pretest showed that the groups were at the same level of the writing ability since the scores laid within one standard deviation above and below the mean. The results of Kolmogorov-Smirnov (K-S) test showed that the writing scores were normally distributed. Afterwards, the two intact classes were randomly assigned to LG and TG groups. The topics of the compositions included *personality traits and life*, *an interconnected world*, *dealing with adversity, your phobias*, *globalization and cultural issues, how to become good citizens, and the role of ideology in today's world.* Each topic took two sessions to be completed.

Learner-Generated Cooperative Brainstorming Group (LG)

The class was divided into five groups, three members in each group. On the first session, the teacher explained the objectives of the course and the sequence of activities before, while, and after writing. Each member of a group agreed to take a different responsibility. For example, a student volunteered to make a list of words, themes, phrases, and proverbs related to the topic, another member agreed to search the Internet for some information about the topic, and the third decided to summarize the materials and prepare an outline. With each new topic, the responsibilities in a group would change. While writing cooperatively, the participants shared chores and discussed different issues regarding the topic. Criticizing, revising, and rewriting during the post-writing phase were also emphasized.

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For example, the first topic was *personality traits and life*. One of the members of a group found some information regarding the personality traits in psychology, different personality types, positive personality traits, and the way an individual's personality can affect others. Another member provided a list of words, themes, phrases, and proverbs.

The third member organized the materials and tried to prepare an outline about the topic. Then they started writing an essay. While writing, they had group discussions about the content and structure of the essays. During the class time, the teacher was present but with least possible intervention; she observed the groups and tried to ensure that students were engaged in the classroom activities. However, she was ready to answer the questions.

The following table shows a sample list about the topic:

Words	Themes	Phrases	Proverbs
Disorganized Low self-esteem Procrastination Sedentary life style Getting angry Perfectionism Attitude Honesty Self-confident Extroversion Introversion	Criticizing others for the faults we also have; Paying too much attention to one thing while neglecting another; Being mindful of the lasting effects of praise and criticizing	Being a push over Don't go overboard To be in hot water Be a real bind Help someone out Give someone Moral support Look up to someone Be proud of	A sleeping cat will not catch a rat Write injuries in sand Kindness in marble Focus on the snake and miss the scorpion People who live in glass houses shouldn't through stones

Teacher-generated Cooperative Brainstorming Group (Group B)

Fifteen participants experienced teacher-generated cooperative brainstorming pre-writing tasks. Charette brain storming, which is a stage-based technique, (Christmas, 2011) was employed to activate the participants' background knowledge.

The teacher broke down the topic into smaller questions. The students had five minutes to think and answer the questions. Individual thinking, as Christmas (2011) argued, was believed to produce "a richer variety of ideas" and encourage all students "to actively participate" (n. p.) because the ideas proposed by individuals with higher self-confidence may dominate in group discussions. The teacher wrote the students' ideas on the board and organized them. Then the students started writing about the topic. For example, the topic of the third session was *adversity*. First, the teacher proposed the following question on the practice session:

• *Do you agree that adversity can be a positive experience?*

Then she confined the question to narrower questions:

a) How can adversity change the way we live?

b) What does it mean when we say adversity "can be a positive experience"?'

c) Can you give some examples for the positive or negative aspects of diversity?

c) How has adversity affected different aspects of human life?

The students had five minutes to think about the questions. Then they were divided into five groups and were asked to discuss the ideas they had generated individually. As the next step, each group elected a reporter whose job was to summarize the ideas and report it to the class. With the students' help, the teacher organized the ideas. Regarding *Do you agree that adversity can be a positive experience?* the students generated the following ideas:

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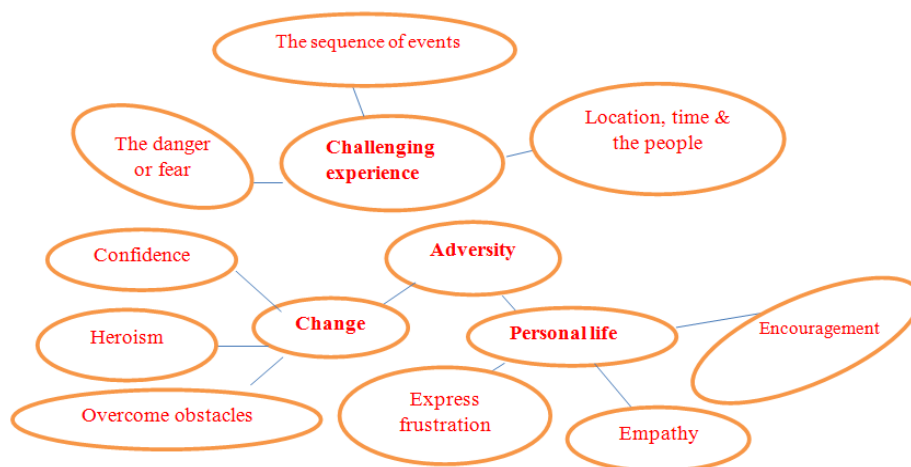
Afterwards, the students started writing individually based on the discussions. The words and phrases were on the board while the students were writing. The teacher had an active role in the class, teacher-student interactions were quite frequent, and students addressed the teacher to ask questions and solve writing problems. During the post-writing phase, the teacher helped the participants revise their essays.

The teacher collected the students' essays in both groups and corrected them based on the correction scheme adapted from Storch and Tapper (2009). The teacher's feedback included the development of introduction, body paragraphs, conclusion, content quality, cohesion, and coherence.

Posttest

The topic of the posttest was identical to the pretest. The participants wrote a five-paragraph essay on *generation gap*. The compositions were corrected by two experienced English language teachers. Inter-rater reliability was computed, and the mean of the two sets of scores was the student's final score.

Attitude Questionnaire

The participants answered a retrospective questionnaire after the posttest and expressed how they perceived the pre-writing tasks (see Appendix).

RESULTS AND DISCUSSION

Results

As stated earlier, the assumption of normality was observed in the distribution of the scores at the onset of the study. Table 1 shows the results of Kolmogorov-Smirnov (K-S) test ($p > .05$).

Table 1: One-sample K-S, writing pretest and posttest

Tests	Groups	n	mean	K-S Z	sig.
Pretest	LG	15	14.90	.685	.736
	TG	15	14.73	.569	.902
Posttest	LG	15	17.33	.931	.351
	TG	15	16.10	.765	.603

An independent samples t-test was run to examine whether the groups were homogeneous with regard to their writing ability prior to the treatment. Table 2 shows the results: LG ($M = 14.90$, $SD = 1.98$) and TG ($M = 14.73$, $SD = 2.53$).

Table 2: Descriptive statistics, writing pretest

Source	Groups	n	mean	Sd.
Pretest	LG	15	14.90	1.982
	TG	15	14.73	2.539

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Table 3: Independent samples t-test, writing pretest

Levene's Test for Variances			*T*-test for Means			
	F	*sig.*	*t*	*df*	*sig.* (2-tailed)	mean diff.
Equal variances assumed	3.112	.074	.288	28	.776	.1667

The result of the independent samples t-test, as shown in Table 3, indicated that there was no statistically significant difference between the means of the two groups on the writing pretest, $t(28) = .28$, $p > .05$. To answer the first research question of the study, an independent samples t-test was run after the treatment. Table 4 shows the descriptive statistics for the LG ($M = 17.33$, $Sd. = 2.28$) and TG $M = 16.10$, $Sd. = 2.38$).

Table 4: Descriptive statistics, writing posttest

Source	Groups	n	mean	Sd.
Posttest	LG	15	17.33	2.289
	TG	15	16.10	2.389

Table 5 signifies the results of the independent samples test on the writing posttest ($p < .05$).

Table 5: Independent samples t-test, writing posttest

Levene's Test for Variances			*t*-test for Means			
	F	*sig.*	*t*	*df*	*sig.* (2-tailed)	mean dif.
Equal variances assumed	3.625	.082	2.369	28	.025	1.2333

The result of the independent samples t-test indicated that there was a statistically significant difference between the means of the two groups on the writing posttest, $t (28) = 2.36$, $p < .05$. In fact, the learner-generated cooperative brainstorming was more effective than the teacher-generated cooperative brainstorming in improving the participants' writing ability.

Attitude Questionnaire Results

The learners of the LG believed that cooperative learning was motivating. They believed sharing knowledge facilitated communication and interaction. They asserted that questioning and answering before writing activity was their favorite activity and stimulated participation. For them, the pre-writing tasks were quite encouraging and could introduce different sources of knowledge. The ideas put forward by the group members, as they asserted, helped them reflect on the topic from various perspectives The Students liked the positive classroom atmosphere created via cooperative learning.

Group activities such as sharing information and generating new ideas were considered the most interesting activities for the members of the TG group. The participants stated that the teacher's questions stimulated new ideas and helped them organize the content of their writings. The mental model created by the teacher's questions had a crucial role in developing their essays. Similarly, this group appreciated the friendly atmosphere in the classroom and believed that writing through this method was more agreeable than what they had previously experienced.

Discussion

The positive answer to the first research question of the study revealed that the learner-generated cooperative brainstorming was more effective than the teacher-generated technique. However, the comparison of the pre- and post- test writing means showed that both techniques could enhance gains in the foreign language writing. The significant improvement of LG group's writing skill could be partially attributed to the processes of planning, negotiating, and sharing ideas among peers. Also, the search for words, phrases, and proverbs appeared to facilitate writing. The information the participants found regarding the topic was also effective and led to more satisfactory results. Being responsible for the pre-

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writing activities could increase students' focus and precision. Such activities seemed to *mediate* (Vygotsky as cited in Wertsch, 2007) between learners' mental processes and sources of knowledge available outside the classroom and thus help learners think and write more efficiently.

The student-centered nature of the technique could be in favor of the studies of autonomous learning (Cotterall, 1995; Murphy, 2008). Group work activities seemed to be effective in developing communication among the students and provided the opportunity to negotiate meaning and work collectively before a writing task. It should be noted that the participants in both groups demonstrated a good understanding of the necessity to respect others' opinions.

The findings highlight the role brainstorming in activating learners' background knowledge. Brainstorming, the "cognitive toolkit at students' disposal" enables them to discover their classmates' perspectives and develop a range of ideas (Christmas, 2008). It facilitates writing because, as Richards (1990) argued, it improves students' cognitive skills and contributes to generating and organizing ideas.

The result of this study supported the views of the proponents who argued for the effective role of cooperative learning in developing learners' writing ability (e.g. AbdelWahab, 2014, Atkinson, 2003, Chen, 2004, Cole, 2012, Depaz and Moni, 2008, Elola and Oskoz, 2010, Mohamed and Mahmoud, 2014). The finding is also in line with Mohamed and Mahmoud (2014) and Almugren and Ahmed (2009) who showed that cooperative language learning approach could develop students' writing skill and create a positive attitude. The results coincide with Johnson, Johnson, and Stanne's (2000) and Hirst and Slavik's (2005) opinions regarding the benefits of cooperative learning in enhancing students' social relations, classroom participation and interaction. Also, cooperative activities can result in scaffolding; learners can rely on their more knowledgeable peers when writing (Donato, 1994; Storch, 2005).

CONCLUSION

The results indicated the primacy of learner-generated brainstorming over teacher-generated. The study has an immediate implication for teachers and practitioners who attempt to find alternate ways of teaching writing to EFL learners.

Both techniques employed in this study can assist learners generate ideas and organize writings, although the learner-generated seemed to be more effective due to its autonomous nature. The study suggests alternative techniques to the routine procedures used in EFL writing classes. Cooperative pre-writing tasks can contribute to deeper insights into the topics that students intend to write. The current study can encourage language teachers to conduct some action research on the efficacy of cooperative pre-writing tasks at various levels of English language proficiency. Students can benefit from the relaxed atmosphere created by cooperative learning.

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Appendix
Attitude Questionnaire

1. What do you think about learning writing in a cooperative learning environment? Did you like it? Why? Or why not?

2. What were your favorite activities in the classroom? What were your least favorite activities? Why did you or didn't you like them?

3. Do you think cooperative brainstorming (teacher-generated/learner-generated) could help you with your writing tasks? If yes, in what way? If not, please give your reasons.

4. How did cooperative learning relate with your motivation for writing?

5. What does your future English writing class look like? What features does it have? What are your suggestions for a fruitful English writing class?