

L2 VOCABULARY LEARNING THROUGH COLLABORATIVE TECHNIQUES

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ABSTRACT

The present study examined the effects of selected collaborative techniques on second language (L2) vocabulary comprehension and production. The participants of the study were 86 adult pre-intermediate level English learners in institutes in Qazvin. They were in five groups and each group received instruction through one of the following collaborative techniques for 21 sessions. The collaborative techniques included Jigsaw, Rotating Circles, Snowball, Think-Pair-Square, and Word Webbing. Two separate one-way ANOVA procedures were used to analyze data. The results showed that word webbing was the most effective technique on both vocabulary comprehension and production. The findings of the present study may have theoretical as well as practical implications.

KEY WORDS: collaborative learning, vocabulary learning, jigsaw, rotating circles, snowball, think-pair-square, and word webbing.

INTRODUCTION

Mankind is social and likes to learn in a social context; thus, collaborative learning is a proper response to this tendency in human nature. Dillenbourg (1999) defines collaborative learning as "a situation in which two or more people learn or attempt to learn something together and solve a problem" or "mutual engagement of participants in a coordinated effort to solve a problem together" (p. 6).

Collaborative learning has many advantages. It increases self-esteem and motivation among students, improves complex and cognitive thinking, creates positive feelings among students and about school, and makes responsible students. Most teachers have the same point of view. They believe that students learn better in collaborative groups than in traditional classroom settings (Jacobs, Power, & Loh, 2002).

However, some teachers believe collaborative method is problematic for several reasons. They do not like missing their traditional role in the classroom. Others insist that collaborative learning is not suitable for students. They believe that students learn at different speeds, some of them take

over the group. This study investigates the role of collaborative learning techniques on reading comprehension to see which techniques are effective on reading comprehension.

Another side of this study is vocabulary learning through collaborative techniques. Collaborative activities facilitate vocabulary learning. Many language teachers are aware of the significant role of collaborative interaction in vocabulary learning. They present more than one technique and strategy in the classroom. What is less obvious is which of the collaborative techniques is more conducive to vocabulary comprehension and production. The present study addresses this issue.

LITERATURE REVIEW

Vygotsky (1986) places great emphasis on the value of social interaction. Vygotsky (1978) notes that human is social in nature; so his cognitive skills develop in a group setting. He argues that “learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers” (p. 90).

Johnson, Johnson, and Smith (1991) add that students work together in small groups to maximize their own and others’ learning. Students work in a group where each member has a different level of knowledge and skill. Students would be able to convey their knowledge to the other members of the group if their work was based on a specific learning purpose.

To Barkley, Cross and Major (2005), “collaborative learning has come to mean students working in pairs or small groups to achieve shared learning goals” (p. 4). Three features of collaborative learning are intentional design, co-laboring, and meaningful learning. In intentional design, teachers divide students into different groups and may use pre-structured activities or design a new structure of their own. Co-Laboring is a Latin meaning of collaboration, it means that all students in the group must engage in an activity as a team. The last feature is meaningful learning in which all students work together on a collaborative assignment, so they increase their knowledge and information during collaborative activities. These three features are important and vital to collaborative meaning (Barkley, Cross, & Major, 2005).

Collaborative learning is rooted in Piaget’s theory, Zone of Proximal Development (ZPD) Theory, Communicative Language Teaching, and Input Hypothesis. Apple (2006) defines ZPD as the limit to which someone can learn something with others’ help. Hiep (2007) recommends the use of cooperative learning activities in Communicative Language Teaching (CLT). CLT activities are based on pair or group work. He points out that CLT is a learner-centered approach, so it is collaborative learning in nature and wants students to learn together in pairs or in groups.

There are various advantages to collaborative and cooperative learning. They have different effects on the learning process of which most are beneficial. According to ZPD Theory, group work increases social skills. Older children help younger ones and practice how to learn as a team. Vygotsky (1978) believes that children learn together and increase their individual skills in group activities.

Gokhale (1995) adds that interest and critical thinking rise among collaborative groups. Students can become critical thinkers. Students become able to share their knowledge and be responsible for their own learning. Pair and small group activities give more time to students for speaking in the target language. In addition, learners feel more comfortable and less anxious when they interact with peers in the group. Their self-confidence increases through group activities (McDonough, 2004). Wills (2007) refers to some of the psychosocial advantages of cooperative learning. He holds that group working reduces the fear of failure among students. Students can access the stored information much easier and quicker during a cooperative learning situation. DelliCarpini (2009) adds that “cooperative learning creates multiple opportunities for comprehensible input and output” (p. 44).

Despite the advantages of collaborative learning, there are also arguments against collaborative learning. According to Tinzmann, Jones, Fennimore, Bakker, Fine, and Pierce (1990), teachers do not like collaborative learning because they know that a collaborative classroom is noisier than a traditional classroom and they do not want noisy classrooms. Another reason is the preparation time for collaborative learning. Some teachers do not know how to use time appropriately in a collaborative classroom, so they think collaborative learning wastes the time of the class. The third reason is individual differences among students. Some teachers believe students with individual differences cannot be grouped together. They argue that teachers think some students may not accept responsibility in a group.

Tinzmann, et al. (1990) mention several roles for teachers in a collaborative classroom. The first role is as a facilitator. Teachers help students connect new information to their prior knowledge. Teachers can facilitate collaborative learning by designing different tasks. The second role for the teacher is modeling. Modeling may involve thinking aloud and demonstrating. The last role is coaching. Teachers help students to provide a strategy and use it in the learning process. The teacher is a supporter, an observer, a change agent, and an advisor in a cooperative classroom (Wang, 2007). Students also play different roles in collaborative learning such as facilitator, time keeper, checker, encourager, recorder, summarizer, elaborator, and observer in their own groups (Farrell & Jacobs, 2010).

It is believed that there are more than 100 techniques used in collaborative learning. Each of these techniques has different effects and is useful for students and teachers in diverse situations. Using these techniques depends on the task and group size. Teachers should know the goals of the teaching and learning, then select suitable cooperative techniques in their classrooms (Keyser, 2000).

A number of studies have investigated various aspects of collaborative learning and techniques. Pamela (1994) investigated cooperative learning in multicultural university classrooms. The results showed the cooperative learning strategies have positive effects on the learning process, especially in multicultural classrooms. Moreover, the cooperative response technique was more powerful than the other cooperative techniques.

Critical thinking is one of the most important factors in collaborative learning. Gokhale (1995) investigated this factor. He compared individual and collaborative learning, but he also implemented critical thinking in both of these groups. The findings showed that students worked corporately better than individually, and that students in the collaborative group answered critical thinking questions better than the ones in the individual group.

Researchers have investigated different factors which influence a collaborative interaction, like age, gender, high or low ability, motivation, etc. Webb (1991) studied the role of gender in collaborative interaction. The results showed that boys like to receive request for help, but there were no differences in girls' and boys' abilities.

Adeymi (2008) investigated cooperative learning and problem solving strategies with juniors in secondary school. This study investigated three teaching strategies (cooperative learning, problem solving and conventional). The results showed that students like cooperative learning and problem solving strategies more than the conventional strategies.

Kim and McDonough (2011) implemented collaborative learning to different kinds of tasks. They studied the role of pre-task modeling on collaborative learning interaction. They divided students into two groups. One group received videotaped models of collaborative interaction before carrying out the task. The other group did not use pre-task modeling. The findings showed that the first group was more successful in completing the tasks and demonstrated more collaborative pair dynamics modeling.

Wang (2011) studied collaborative learning as a new method for improving college students' autonomy in China. He had two groups of students. The first group included 64 students who worked corporately, whereas the second group included 62 students who were taught in a traditional way. The findings showed that collaborative learning increased autonomy, and students learned better than the traditional way.

There are also a number of studies on vocabulary learning via collaborative interaction. One of these studies is Huong (2006) in Vietnam. Huong (2006) investigated learning vocabulary in collaborative groups at a university. The results showed that learning vocabulary was affected by group work.

Newton (2001) investigated vocabulary learning through communication tasks. One of the options was cooperative learning in pre-task. Students looked for meaning of the words in dictionary corporately. The finding showed that cooperative learning helped to improve vocabulary learning process in pre-task.

This short historical perspective on collaborative learning shows that there are some gaps in research on collaborative learning techniques. Researchers have studied different collaborative techniques in their research, but they have not focused on which technique is more effective in vocabulary learning or reading comprehension. The present study is an attempt to partially fill this gap.

RESEARCH QUESTIONS

The present research intends to answer the following research questions:

1. Are there any significant differences among the selected collaborative learning techniques (Jigsaw, Rotating Circles, Snowball, Think-Pair-Square, and Word Webbing) on L2 vocabulary comprehension?
2. Are there any significant differences among the selected collaborative learning techniques (Jigsaw, Rotating Circles, Snowball, Think-Pair-Square, and Word Webbing) on L2 vocabulary production?

METHODOLOGY

Participants

The participants were 86 male and female EFL learners, at language institutes in Qazvin, ranging in age from 17 to 21 years old. The learners' level of proficiency was pre-intermediate to intermediate. Participants were studying in five classes. Each group was randomly assigned to a different treatment condition. These treatments were different kinds of collaborative techniques for reading comprehension and vocabulary.

Instruments

The following materials and instruments were used in the present study:

The participants were administered a KET (Key English Test) test before the treatment. The test contained 41 multiple-choice items. To minimize the effect of their prior vocabulary knowledge, a vocabulary pretest containing 150 items was administered before the treatment. These lexical items were contextualized in 150 English sentences. Learners were required to write the meaning of the underlined words in Persian. The time allocated to this pretest was 50 minutes. Those words the meaning of which the participants did not know were selected for inclusion in the posttests.

The instructional materials included five units of Top Notch (2 a). The book is used for pre-intermediate learners at language institutes. A total number of 150 vocabulary items and 5 reading texts were presented in 18 sessions, spanning one semester.

At the end of the experimental period, all participants were given two posttests; a 30-item vocabulary test in multiple-choice format was used to measure the participants' receptive lexical knowledge. Another 30-item vocabulary test in fill-in-the-blanks format was utilized to measure the participants' production knowledge.

Procedures

Initially, the participants were selected based on criteria such as proficiency level and the relevance of the treatment to their main instruction as well as the willingness of their instructors to cooperate. Since the participants were learners at institutes and had been given placement tests before hand, and since they had received the same instruction, their homogeneity was almost certain. Still, before they received the treatment, a KET test was administered to homogenize the

participants in terms of their vocabulary knowledge. To make sure that the participants had no prior knowledge of the target words, the vocabulary pretest containing 150 items was also administered before the treatment. The instructional materials included 5 units of Top Notch (2 a). The participants were in 5 groups. Each group was randomly assigned to one of the following treatment conditions:

Group A was instructed through the Jigsaw technique. There were 15 learners in this group. They were divided into four groups. This technique was taught in eight steps:

Step 1. A task was divided to different subtasks.

Step 2. The class was divided into groups of 3 or 4 members randomly.

Step 3. Each group worked on one subtask.

Step 4. One student from each Jigsaw group joined the expert group.

Step 5. They discussed the subtasks that they worked on. The subtasks were selected randomly.

Step 6. The students returned to their Jigsaw groups.

Step 7. They presented other subtasks to their groups. They helped other members of the group with the subtasks they had learnt about in the expert group.

Step 8. At the end, each group had the whole task; the parts of tasks completed each other like different parts of puzzle by experts.

Group B received instruction through the Rotating Circles technique. Rotating circles technique is based on physical movement. The number of learners was 18 in this group. They were divided into three groups. Each group was subdivided into two groups. There were 3 members in each subdivided group. The participants of this group were taught in five steps:

Step 1. The class was divided into groups of 6 members. Each of these groups of 6 was subdivided into 2 groups randomly.

Step 2. One subgroup was seated in an inner circle, with each student facing outwards. The other subgroup was seated in an outer circle. Around them each member faced inward towards a member of the inner circle.

Step 3. Each member of the inner circle had different subtasks. For about 5 minutes, the inner circle members discussed with the outer circle members opposite them.

Step 4. The outer circle was rotated one seat clockwise, so there was a new pair.

Step 5. The previous two steps were repeated until the outer circle was rotated by one complete turn.

Group C was instructed through the Snowball technique. Snowball technique is useful when the aim is to generate ideas. There were 20 participants in this group. This technique was taught in four steps:

Step 1. Each student received a task. They received the same task. They had to work within a preset period of time (5 minutes, more or less).

Step 2. They worked on the task in pairs, they shared ideas.

Step 3. Pairs then formed groups of 4 to share their ideas and knowledge.

Step 4. Snowball was finished there or was continued to groups of 8, until they solved their problems.

Group D (n = 16) received instruction through the Think-Pair-Square technique. Think-pair-square technique is another collaborative technique for generating ideas. This technique was taught in five steps:

Step 1. A task was given to class.

Step 2. Each student had a period of time to think about it and write her/his words.

Step 3. The student turned to a partner and shared their knowledge and ideas.

Step 4. Pairs joined another pair to compare their conclusions.

Step 5. They continued with another pair or stopped this process.

Group E was instructed through the Word Webbing technique. Word webbing technique is a graphic organizer strategy that provides a visual of how words or phrases connect to a topic. There were 17 learners in this group. Four students were in each group, but one group contained 5 participants. It was taught in six steps:

Step 1. Students were divided into groups of 4 or 5 randomly.

Step 2. Each group received a butcher paper and different color markers.

Step 3. One student drew a circle in the middle of the paper and wrote the main idea in it.

Step 4. Each student added a concept to it with different color markers. They wrote subtopics in the corners.

Step 5. Each student selected one corner and wrote her/his words. All students had a chance to add their ideas.

Step 6. Papers displayed around the classroom and each group reported their word-web.

At the end of the experimental period, posttests were administered. The 30-item vocabulary test in multiple-choice format was used to measure the participants' receptive lexical knowledge. And the 30-item vocabulary test in fill-in-the-blanks format was utilized to measure the participants' productive vocabulary knowledge. The time allocated to this posttest was 30 minutes. To answer the research questions, two separate one way ANOVA procedures were used.

RESULTS AND DISCUSSION

Investigation of the first question

The aim of the first question was to investigate the effect of selected collaborative techniques on L2 vocabulary comprehension. To this end, a one-way ANOVA was run. Descriptive statics are given in Table 1.

Table 1: Descriptive statistics for the ANOVA on Vocabulary Comprehension

	N	Mean	Std. Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
Jigsaw	15	18.46	3.66	16.43	20.49
Rotating circles	18	20.33	3.18	18.75	21.91
Snowball	20	21.95	2.68	20.69	23.20
Think-pair-Square	16	21.81	2.45	20.50	23.12
Word webbing	17	23.11	3.70	21.21	25.02
Total	86	21.20	3.45	20.46	21.94

Based on Table 1, word webbing group has the highest mean, followed by snowball group, think-pair-square group, and rotating circles group. The participants of the jigsaw group have the lowest mean. To see whether or not the observed differences among the groups are statistically significant, a one-way ANOVA procedure was used. The results are shown in Table 2.

Table 2: The results of the ANOVA on Vocabulary Comprehension

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	205.347	4	51.337	5.153	.001
Within Groups	806.886	81	9.962		
Total	1012.233	85			

As it can be seen in Table 2, the F-value and the significance level ($F_{(4,81)} = 5.15$, $p < .05$) suggest significant differences among the collaborative groups. To locate the significant differences between the means, a post hoc Tukey HSD's test procedure was used, the results of which are summarized in Table 3.

Table 3: Multiple comparisons of means on Vocabulary Comprehension

(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Jigsaw	Rotating circles	-1.86	1.10	.445	-4.94	1.212
	Snowball	-3.48*	1.07	.015	-6.49	-.47
	Think-Pair-Square	-3.34*	1.13	.033	-6.51	-.18
	Word webbing	-4.65*	1.11	.001	-7.77	-1.53
Rotating circles	Snowball	-1.61	1.02	.517	-4.47	1.24
	Think-Pair-Square	-1.47	1.08	.652	-4.50	1.54
	Word webbing	-2.78	1.06	.078	-5.76	.19
Snowball	Think-Pair-Square	.137	1.05	1.00	-2.81	3.09
	Word webbing	-1.16	1.04	.795	-4.07	1.73
Think-Pair-Square	Word webbing	-1.30	1.09	.759	-4.37	1.76

*. The mean difference is significant at the 0.05 level.

A look at Table 3 makes it clear that there are significant differences between jigsaw group and snowball group, between jigsaw group and think-pair-square, and between jigsaw group and word webbing group. It means the jigsaw group is the worst group among these five collaborative techniques in vocabulary comprehension.

Investigation of the second question

The second research question sought to investigate the effect of selected collaborative techniques on L2 vocabulary production. A one-way ANOVA procedure was used. Descriptive statistics are presented in Table 4.

Table 4: Descriptive statistics for the ANOVA on Vocabulary production

	N	Mean	Std. Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
Jigsaw	15	9.86	2.44	8.51	11.22
Rotating circles	18	10.77	2.60	9.48	12.07
Snowball	20	13.05	2.68	11.79	14.30
Think-Pair-Square	16	11.12	1.99	10.06	12.18
Word webbing	17	15.70	2.31	14.51	16.89
Total	86	12.18	3.14	11.51	12.86

Based on Table 4, word webbing group has the highest mean, followed by snowball group, think-pair-square, and rotating circles. The Jigsaw group has the lowest mean. To see whether or not the differences among the groups are statistically significant, the one-way ANOVA was used, which yielded the following results (Table 5).

Table 5: The results of the ANOVA on Vocabulary Production

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	359.949	4	89.987	15.151	.000
Within Groups	481.074	81	5.939		
Total	841.023	85			

Table 5 shows that there are significant differences among the five groups ($F_{(4,81)} = 15.15$, $p < 0.05$). To locate the differences among the means, a post hoc Tukey HSD' test procedure was used. The results are summarized in Table 6.

Table 6: Multiple comparison of means for the ANOVA on Vocabulary Production

(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Jigsaw	Rotating circles	-.91	.85	.822	-3.28	1.46
	Snowball	-3.18*	.83	.002	-5.50	-.86
	Think-Pair-Square	-1.25	.87	.606	-3.70	1.18
	Word webbing	-5.83*	.86	.000	-8.24	-3.43
	Snowball	-2.27*	.79	.041	-4.48	-.06
Rotating circles	Think-Pair-Square	-.34	.83	.994	-2.68	1.98
	Word webbing	-4.92*	.82	.000	-7.22	-2.62
	Think-Pair-Square	1.92	.81	.139	-.35	4.20
Snowball	Word webbing	-2.65*	.80	.012	-4.89	-.41
Think-Pair-Square	Word webbing	-4.58*	.84	.000	-6.94	-2.21

*. The mean difference is significant at the 0.05 level.

Table 6 makes it clear that the participants of snowball and word webbing groups have performed significantly better than the participants of both jigsaw and rotating circles groups. In addition, the participants of word webbing group have outperform those of snowball and think-pair-square groups, suggesting that word webbing is the most effective technique in vocabulary production.

Discussion

There are few studies on the comparisons among collaborative techniques. Most researchers have investigated only one collaborative technique or have compared one technique with the traditional method. One of the techniques used in the present study was jigsaw. It is one of the most popular and well-known collaborative techniques (Jacobs & Hannah, 2004; Littlewood, 2009). Walker and Crogan (1998) reported that jigsaw improves academic performance. Their findings somehow contradict the results of the present study because in the present study jigsaw turned out to be the least effective technique on both vocabulary comprehension and production. Hanz and Berger (2007), however, could not show the positive effect of jigsaw on academic performance. To Moskowitz, Malvin, Schaeffer, and Schaps (1985), jigsaw has no positive effects on students. The findings of the present study support their results. It seems that the use of jigsaw could not improve vocabulary comprehension and production in the present study. Jigsaw is like a puzzle; all students are responsible for completing this puzzle. Expert groups encourage individual accountability among students (Jacobs & Hannah, 2004). However, sometimes one of the students in the expert groups cannot convey information well or does not listen to others correctly, and this affects all his/her teammates and the technique fails. This may be one of the reasons why jigsaw had no positive effect in the present study and was not successful.

Rotating circles is a newer collaborative technique and is not as popular as jigsaw. The rotating circles group did not have good results on vocabulary comprehension and production posttests. This might have been because the teacher and students were less familiar with this technique. The teacher could have failed to apply this technique like other collaborative techniques in the present study. This technique is based on physical movement (Littlewood, 2009). The findings of Littlewood's study are different from the results of the present study. He showed that the rotating circles technique could decrease social loafing and improve the learning process. However, Iranian students are not used to physical movement in their classrooms. They learn to sit without many movements and listen to their teachers. This might explain why the rotating circles group failed in the present study. In addition, physical movement may not be suitable for all levels of students. It may be better for kids but not necessarily for older learners.

In addition, snowball turned out to be the second best technique in vocabulary comprehension and production. This finding lends support to Farrell and Jacobs (2010), who believe that students like this technique and take part in this activity eagerly.

Another collaborative technique used in the present study was think-pair-square. It led to good results, but not as good as snowball and word webbing groups. Littlewood (2009) points out that think-pair-square decreases premature closure in group activities. Walsh and Sanchez (2010) compared think-pair-square with other collaborative techniques for child development. The results were the same as the results of the present study.

The last and one of the best techniques in the present study was word webbing. Pierson, Cerutti, and Swab (2006) believe that word webbing is suitable for developing and reviewing vocabulary. The results of the present study support their opinion. Word webbing had the best effect on vocabulary comprehension and production in the present study. This technique is more visual, so it is useful for vocabulary learning. This technique shows how ideas are connected to other ideas and how they are organized. This technique was new for Iranian students. They liked to try it. So, part of the beneficial effects of this technique could be attributed to its novelty.

There are some factors, which may have affected the results of the present study, like quality of interaction among students, level of proficiency, culture, and so on. Tinzmann, et al. (1990) point out that there are three conditions for collaborative classrooms. They believe without these three conditions collaborative learning fails. First, students should accept their responsibility in their group. Second, they should learn to face to face interact and help their teammates. Third, they need to learn group process skills. Not all these conditions were present for all the five groups in the present study. These conditions were not equal in the five collaborative groups. This may partly explain the differential performance of the participants of these groups on the posttests.

Another possible reason could have been teachers' ability to implement each of the five collaborative techniques. Some of these techniques may have been hard for teachers to implement in class. Jigsaw was probably more familiar for teachers, hence more easily applicable. However, rotating circles was hard for teachers. This could be the reason why the rotating circles group did not produce good results.

Another factor may be interaction among students. The nature of collaborative techniques requires that students be active in their classes. However, some students may avoid group work. All these factors create an unfavorable condition in collaborative classrooms. The present study faced with the last problem, especially in the jigsaw group. This could be one of the reasons why the jigsaw group failed.

Still another factor which could have contributed to the obtained results may have been the learners' proficiency level. As an example, in the course of the treatment, it was observed that rotating circles was not suitable for students' level of proficiency and students were not serious about following this and were not comfortable with this technique. They thought the teacher did not support them. DelliCarpini (2009) is of a similar opinion. Along the same line, Letendre (2009) argues that jigsaw is a collaborative technique useful for advanced learners.

CONCLUSION

To conclude, based on the obtained results it appears that collaborative techniques are not equally beneficial. They seem to have differential effects on various language skills and components. It can also be concluded that there are a multitude of factors which can potentially influence or moderate the effect of each of the aforementioned collaborative techniques on language learning.

The findings of the present study can have implications for teachers and learners. The present study can help teachers and learners to understand the importance of collaborative techniques in language learning. Not only do they help learners to be stronger, but also they make vocabulary learning more enjoyable. Snowball and word webbing are powerful techniques for improving vocabulary learning.

The knowledge of how collaborative techniques affect various language skills and components may enable teachers to find new ways of teaching by collaborative techniques and increase students' motivation and attitude for attending classes. These techniques can increase learners' motivation to learn and make the learning process more meaningful.

The findings can have implication for learners, too. Students can be more active in the learning process by collaborative techniques. They learn more by less effort. They become responsible for their teammates. They also learn how to investigate, solve a problem, make a decision, interact, and share their knowledge and responsibility.

All in all, this study may have shed some light on some of the issues surrounding collaborative learning techniques and the effect they exert on language learning. At the same time, it has to be acknowledged that this study might have had several limitations. For one thing, the four vocabulary tests (KET, vocabulary pretest, vocabulary comprehension, and vocabulary production) were not validated. The reason was that the psychometric characteristics of the KET test were taken for granted because it was used as an already established criterion. The validity and reliability of the three other tests were not checked because they were all directly based on the specific treatment, so they were assumed to be content valid. Nonetheless, the psychometric characteristics of the data collection instruments could have affected the outcome of the study. Another point to be acknowledged is that due to time constraints, the participants received treatment for only a semester. It may be cogently argued that some of these techniques may have long-term effect. So, their effect may not be evident immediately after instruction. This acknowledgment, coupled with the controversies already surrounding this issue, may warrant further research in an area waiting to be further explored.

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