
Jigsaw Strategy as a Cooperative Learning Technique: Focusing on the Language Learners

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Abstract

Jigsaw is a cooperative learning technique that has been studied in various ways by a number of researchers and teachers in classes of different levels and subjects. Unlike previous studies, the present research aimed to find out whether the jigsaw technique could be successfully used to fulfill the intended task in the college English class, integrating all four skills in the process. Questionnaire surveys were made after the experiment. Findings were analyzed and reflections on jigsaw were offered. Implementing jigsaw technique in the EFL classroom made it possible for the teacher to focus on language learners and thereby language learning became interdependent. A conclusion was drawn that jigsaw technique is an effective way to promote student participation and enthusiasm as well as a useful technique for language learners to accomplish learning tasks in the EFL classroom.

Key words: jigsaw; cooperative learning; language learners; EFL classroom; L+ four R's + W

1. Introduction

The jigsaw classroom, originally developed by Elliot Aronson in 1971 in Austin, Texas, was considered effective in increasing positive educational outcomes. As a cooperative learning technique, it has been greatly studied abroad and has been explored in various ways by a number of researchers and teachers in classes of different levels and of different subjects (see Aronson, Blaney, Stephin, Sikes & Snapp, 1978; Bafile, 2008; Hedeem, 2003; Holliday, 2002; Joe, 2008; Johnson & Johnson, 1995; Johnson, Johnson & Smith, 1991; Slavin, 1983).

Several modifications have been introduced to account for concerns of both teachers

and students who have participated in the classroom technique. In the original jigsaw, each member of a group was assigned a different part of material. Then all the students from different groups who had the same learning material gathered together and formed an “expert group” to discuss and communicate with each other until they all mastered the material. Later, the students returned back to their home group to teach the material to other members of their group. Jigsaw II, which was suggested by Slavin in 1978 (Wang, 2002), attached more importance to familiarity of all the group members with the whole task. Another variation of the original technique required that students complete “expert sheets” that provide notes for introducing the material back to the home group and be given individual assessments as opposed to a group evaluation. Later, Holliday (2002) introduced jigsaw IV by adding “several additional features such as teacher introduction of material, expert group quizzes, review process prior to individual assessment and re-teaching of any material that wasn’t adequately explored in the collaborative group work” (Online ERIC ED 465687).

Though theories of cooperative learning were introduced to China only recently, there are indeed some Chinese teachers and researchers who have studied cooperative learning (see Che & Xia, 2009; Lin, 2008; Lu, 2005; Ma, 2008; Qu, 2008; Wang, 2002; Wu, 2009; Yuan, 2002; Zhang, 2009; Zheng, 2006). Some teachers have also explored the use and application of cooperative learning techniques, the jigsaw technique in particular, in the Chinese classroom (see Hu, 2009; Hua, 2007; Liu, 2009; Meng, 2003; Zhao, 2008; Zheng, 2006).

Unlike previous studies, the present research aimed to find out whether the jigsaw technique could be used in the College English class to arouse students’ interest and enhance the classroom efficiency while fulfilling the intended task successfully, i.e., integrating listening; reading, repeating, reciting & retelling; and writing (L + four R’s + W) into the process.

2. Jigsaw Strategy

As “each member of a group has a piece of information needed to complete a group task” (*Longman Dictionary of Language Teaching and Applied Linguistics*, 1998) in the EFL classroom, jigsaw is a cooperative learning technique that requires everyone’s cooperative effort to produce the final product. Just as in a jigsaw puzzle, each piece—each student’s part—is essential for the production and full understanding of the final product. If each student’s part is essential, then each student is essential. That is precisely what makes this strategy so effective.

Jigsaw is said to be able to increase students’ learning since “a) it is less threatening for many students, b) it increases the amount of student participation in the classroom, c) it reduces the need for competitiveness and d) it reduces the teacher’s dominance in the classroom” (*Longman Dictionary*, 1998). Consequently, jigsaw strategy can successfully reduce students’ reluctance to participate in the classroom activities and help create an active learner-centered atmosphere.

Studies showed that it was only under certain conditions that cooperative efforts may be expected to be more productive than competitive and individualistic efforts. Johnson, Johnson and Holubec (1993) put forward five principles for jigsaw strategy:

a. Positive interdependence

Each group member's efforts are required and indispensable for the group success. Each group member has to make unique contributions to the joint effort.

b. Face-to-face promotive interaction

Group members have to orally explain how to solve problems, teach one's knowledge to others, check for understanding, discuss concepts being learned and associate the present learning with the past one.

c. Individual and group accountability

The size of the group should be kept small, for the smaller the size of the group is, the greater the individual accountability may be.

The teacher is expected to give an individual test to each student, randomly examine students by asking one student to present his or her group's work orally to the teacher (in the presence of the group) or to the entire class, observe each group and record the frequency with which each member contributes to the group's work, appoint one student in each group as the leader, who is responsible for asking other group members to explain the rationale underlying the group answers, and monitor students to teach what they've learned to the others.

d. Interpersonal skills

Social skills are a necessity for the success of jigsaw learning in class. Social skills include leadership, decision-making, trust-building, communication, conflict-management skills and so on.

e. Group processing

Group members discuss how well they are achieving their goals and maintaining effective working relationships, describe what member actions are helpful and what are not, and make decisions about what behaviors to continue or change.

Jigsaw learning makes it possible for students to be introduced to material and yet bear a high level of personal responsibility. It helps develop teamwork and cooperative learning skills within all students and a depth of knowledge not possible if the students learn all of the material on their own. Finally, since students are supposed to report their own findings to the home group in jigsaw learning, it quite often discloses a student's own understanding of a concept as well as reveal any misunderstandings.

3. A Study into Jigsaw in the College English Class

i. Purpose and Questions of the Study

Jigsaw has been practiced in many ways in the present researchers' College English tutorials. The present jigsaw, somewhat different from the one implemented by Elliot Aronson, was adopted so as to carry out a variety of classroom activities for different

language learning tasks. It combined several important aspects of collaborative learning, including listening, oral reading, reading comprehension, writing and oral presentation. Its purpose was to find an effective way to promote student participation as well as a useful technique to focus on language learners in the EFL classroom where students can experience success, which in turn can contribute to positive motivation and lead to still greater success. The present jigsaw research was intended to explore the following questions:

First, is the jigsaw technique suitable for college students in English classes?

Second, is the jigsaw technique an effective means to integrate listening, reading, repeating, reciting, retelling, and writing into one English class?

Third, can the jigsaw reading serve the purpose of cooperative learning and produce positive reactions from the students?

ii. Participants

Ninety-five students in two College English classes were divided into 8 tutorial classes of 11 to 12 each and met every week. The jigsaw strategy was conducted in these tutorial classes for 10 weeks.

iii. Procedures

The following is the case of jigsaw performed in seven steps in the researchers' tutorials. The technique was aimed to help fulfill the task of integrating L + four R's + W.

Step 1: Choosing a passage

The researchers chose a passage with three or four paragraphs of nearly the same length for the jigsaw in advance.

Step 2: Dividing the students into jigsaw groups (Time required: 1 min.)

In class, the researchers first divided the students into 3-person jigsaw groups since the sample passage (see Appendix 1) chosen by the researchers consisted of three paragraphs, but sometimes into 4- or 5-person groups depending on the material chosen for the activity. The groups would be better if diverse in terms of language proficiency, personality and gender. Then the researchers appointed one student from each group as the group leader, and each student in a jigsaw group was given an assignment sheet—a different paragraph of the passage. Then the jigsaw groups follow the pattern: ABC, ABC...

Step 3: Studying new words (Time required: 2 mins.)

The researchers listed and explained the new and unfamiliar words and expressions in the passage on the blackboard, such as *as good as*, *with all their might*, and *took heed to*, in order to remove some of the barriers of the material and ease the flow of the jigsaw activity in the groups.

Step 4: Involving the whole class in an activity for general comprehension (Time required: 4 mins.)

The researchers read the passage twice to the whole class so that the students could grasp the main idea of the passage. Then they asked wh-questions concerning the passage, which may help the students organize their thoughts for better preparation.

Step 5: Forming “expert groups” (Time required: 8 mins.)

The researchers asked the students to move to the “expert groups”, each of which was dealing with one paragraph of the reading passage.

Again, the researchers appointed one student from each “expert group” as the group leader, and the leader organized the group to discuss the assigned paragraph, including summarizing the main idea and comprehension of all sentences. By means of a variety of practices, such as listening, reading, repeating, asking & answering, reciting, and retelling, every student was supposed to gain a thorough understanding of the paragraph. At last, each of the group members was asked to retell the paragraph in front of the rest of the group. The reteller may receive hints from the others if he or she paused for help, but no correction was permitted before the retelling was finished.

Step 6: Students returning to their jigsaw groups (30 mins.)

Since each member of the “expert group” might now have become an “expert” on the assigned paragraph, the researchers asked all the students to return to their original jigsaw groups. Now each student in a jigsaw group had unique information, so the members of each jigsaw group had to teach each other their assigned paragraphs respectively. This was where the jigsaw merged into the final cohesive whole. It was carried out in the following four steps:

A. Reading and listening (Time required: 1 mins.)

First, the “expert” read the paragraph and the rest listened and achieved a general comprehension of the target paragraph.

B. Reading and repeating (Time required: 3 mins.)

The expert read the paragraph again and others were required to repeat after him or her. One thing that should be noted is that only some sentences were repeated. For instance, when the expert read:

A group of frogs were traveling through the woods, and two of them fell into a deep pit. When the other frogs saw how deep the pit was, *they told the two frogs that they were as good as dead...*

the listeners were only expected to repeat the part in italics. Then the expert explained the difficult points and the others could ask questions to clarify difficulties with comprehension. After this step, students may realize that it might be more difficult to explain a point than to understand it.

C. Reciting (Time required: 2 mins.)

After several rounds of the reading-and-repeating practice, the students read the paragraph twice independently, trying to memorize as much as possible.

D. Retelling (Time required: 4 mins.)

Then each student was required to retell the paragraph in his or her own words or add some additional information. During this time, other students may jot down some notes so that they could borrow some language from what the previous speakers had used for their own retelling task.

By the time all the three students in a jigsaw group finished teaching their assigned paragraph by means of the above four steps, all the students had gained a better understanding not only of their assigned paragraph, but also the whole passage as well.

Step 7: Writing a summary (Time required: 10 mins.)

The researchers required all the students to conduct creative writing about the passage they had just learned in order to check their understanding of the whole passage.

iv. Questionnaire Results

After the experiment, a questionnaire survey about the jigsaw (See Appendix 2) was made in order to find out whether the principles of cooperative learning were manifested in the experiment, whether the students felt satisfied with their learning, and how the students themselves evaluated their learning. The questionnaire was designed in accordance with the five basic principles of jigsaw strategy. Of the 95 students in the tutorial, 90 took part in the questionnaire survey. The results and analysis of the questionnaire are as follows.

As to whether the students were positively interdependent on each other in the jigsaw learning, the questionnaire results showed that 82% of the students believed that in most cases (Always True (AT) and Usually True (UT)) each group member's efforts were required and indispensable for the group success; 71% agreed that the motivation to communicate with others and accomplish the task together was of great importance in jigsaw; and 82% thought that each group member had a unique contribution to make to the joint effort because of his or her specific role and responsibilities. In regards to student independence in language learning, only 8 students might support for learning on their own and 79% preferred to be interdependent rather than independent in solving problems in learning.

It was clear from the questionnaire results that the students held a positive attitude toward face-to-face interaction. Of them, 76% always or usually felt better and learnt better while learning in groups. Only 9% seldom or never enjoyed discussions in jigsaw. In conclusion, most of the students agreed that face-to-face interaction in jigsaw could promote each other's success.

As for individual and group accountability, it was found that 82% of the students preferred to be grouped according to their language proficiency and personality, although with different students of different proficiency levels and personalities, jigsaw activities could be carried out as expected to fulfil peer teaching. Moreover, randomly examining students orally by asking one student to present his or her group's work to the teacher (in the presence of the group) or to the entire class was accepted by 72% of the students. Furthermore, they were also eager to share with each other what they had learned in

jigsaw since 72% of them admitted they always or usually preferred to teach what they had learned to someone else. It could be seen that checking for accuracy and fluency by other members in the jigsaw group as well as by the teacher was always or usually considered important and only 13% of them argued this was seldom or never needed.

As was revealed from the results, most of the students gained more confidence in their interpersonal skills after the jigsaw learning. Of them, 70% felt confident while speaking English in front of their peers even though they previously had been doubtful about their ability to communicate with others in English. Additionally, 73% of them reported that they could always or usually develop new relationships with each other when learning English in jigsaw groups.

Most of the students claimed the importance of group members discussing how to achieve their goals and how to maintain effective working relationships and 67 % of the members admitted that the discussion was very necessary.

4. Assessment

The group's work in the expert groups and the jigsaw groups needs to be assessed to assure everyone's participation. This assessment...evaluates the cooperation of the students while working in these small groups. The assessment takes the form of self-evaluation and teacher evaluation. Evaluation forms need to be created so as to evaluate the cooperation of the students while working in small group work. (Holliday, 2002: Online ERIC ED 465687)

The Teacher's Evaluation (See Appendix 3) was made by the present researchers according to the jigsaw classroom record kept during the successive ten weeks of tutorials, i.e., two periods x 10 weeks = 20 total periods of instruction. The items in the Appendices 3 and 4 were taken from The Assessing of Cooperation Learning (Holliday, 2002 Online).

According to the teacher's record, nine out of ten students could concentrate quite well on the jigsaw. In the presence of the researchers, the students seldom or never wandered off the point. As for Item 2, the researchers found that 61% of the students could always or often share what they had learned in the jigsaw activity. This percentage was a little lower than that in Item C (3) of the former Questionnaire (72%). The reason may be that the actual sharing of knowledge (in the Teacher's Evaluation) is not the same as the preference to share knowledge (in the Questionnaire). Members in the jigsaw class preferred to share in group work, but their ability hindered them from realizing their expectations and from making progress. Finally, for Items 3 and 4, nearly all the students took turns and supported each other.

Student Self-evaluation (see Appendix 4) revealed that a large number of them affirmed that they were able to grasp what was required in the jigsaw. Few of them said they could understand nothing. 85% of them claimed, in Item 2, that they could always or often be on the task, and none of them were absent-minded from the task in the jigsaw. As for Item 3, the task in the jigsaw was not finished in some cases (7%) not because the students were apathetic or unable to deal with the task but because the time given in the tutorials was limited. For Items 4 and 5, most members (more than 95%) in the jigsaw

worked well and helped each other.

As a whole, both the teacher evaluation and student self-evaluation evaluation of the group work indicated that the jigsaw class was successful in implementing cooperative learning.

5. Findings and Reflections

Some findings from and reflections on the jigsaw experiment are summarized as follows.

i. Teacher's Role in the Jigsaw

In a jigsaw classroom, the teacher organizes practice and communicative activities, but this does not mean leaving the students to learn all by themselves. Instead the teacher should try to help the students take greater control over their learning by becoming actively involved. The primary role of the teacher is to choose learning material, structure the groups, explain the cooperative nature of group work, provide an environment conducive for this type of work, monitor group work and assist students in working with the material. "The teacher needs to float from group to group in order to observe the process. Intervene if any group is having trouble such as a member being dominating or disruptive. There will come a point that the group leader should handle this task. Teachers can whisper to the group leader as to how to intervene until the group leader can effectively do it themselves" (Jigsaw Classroom, Online).

ii. Motivating Students into the Jigsaw

As the questionnaire survey shows, 71% of the students confirmed the importance of motivating students to communicate and accomplish the task together in jigsaw. Some students who have never experienced jigsaw and who have been accustomed to the competitive model of traditional classroom might be skeptical of this model, so it is necessary to motivate the students at the opening stages of jigsaw activities. It has been observed that the researchers' remarks about the forthcoming activities could arouse high levels of interest and attention on the part of the students. Therefore the teacher should explain the method in detail, tell students that jigsaw is a cooperative learning technique which is characterized by interdependent learning rather than independent or dependent learning, and familiarize them with the benefits of jigsaw learning. In this way, students may become active, and thereby learning itself in jigsaw will be better on the way.

iii. Grouping Students Differently According to Language Proficiency and Personality

A majority of the students (82%) in jigsaw preferred to be grouped according to their language proficiency and personality (see Item C (1) in the Questionnaire) since they could learn just as much, if not more, from their peer "teachers"; By students moving around, the grouping changed, but more importantly students could work with different people and learn group work skills in addition to language skills. Clearly, language levels and personality differences, especially the former, will determine the most appropriate way for teachers to motivate students and for students to accomplish their tasks of jigsaw.

When grouped up in a proper way, students can sit side-by-side and face-to-face to carry out the classroom tasks as expected. The size of the group should be kept small, for the smaller the size of the group, the greater the individual accountability may be (Johnson & Johnson, 2008).

iv. Dominant Students and Weaker Students

Engaging students in expert groups keeps weaker students in at a pace with the rest of the class. When working in expert groups, students who typically lag behind on whole class assignments have the opportunity to discuss their task and modify it accordingly. Sometimes more talkative students tend to dominate discussions in the jigsaw groups. One strategy used by the present researchers was to curtail this dominance by assigning discussion leaders in each group on a rotating basis. The leader called on students in a “fair” manner and tried to keep the discussion moving around the assigned topics and tasks. In the researchers’ jigsaw tutorials, students seldom demonstrated boredom. Instead, more often than not, they were very energetic and active while performing the jigsaw tasks. Furthermore, even the students who worked at a faster pace were not bored because they were busy engaging other students in discussion.

v. Error Corrections for Accuracy, Fluency and Appropriateness

The most important thing to focus on in this context is that teachers are required to consider fluency, accuracy and appropriateness. Students can rely either on self-correction or on peer-correction. For self-correction, teachers can outline some mistakes and inform students about them. The peer-correction works while students are required to review each other’s work. Whatever technique is used to correct mistakes in the jigsaw class, it should be ensured that students will find the experience positive and will have the feeling that he is learning from error correction rather than being feeling singled out.

vi. Giving Applause and Compliments in Jigsaw

Applause and compliments are indispensable in jigsaw to motivate students’ self-esteem and self-confidence. When given applause and compliments after finishing the jigsaw activity, 84% of the students (in Item B (2) of the Questionnaire) seemed fairly content. Being encouraged, students will gain a greater sense of satisfaction, self-esteem and self-confidence during the whole process of jigsaw activities. As self-esteem and self-confidence are of essence for the accomplishment of the activities in the jigsaw classroom, applause and compliments should always be given both at the beginning and at the end of each participant’s performance. Only in this way can students’ enthusiasm, self-esteem and self-confidence be enhanced..

Jigsaw makes it possible for the students to work together to complete the assignment on their own. Therefore, “each member of a team is responsible not only for learning what is taught but also for helping teammates learn, thus creating an atmosphere of achievement. Students work through the assignment until all group members successfully understand and complete it” (Cooperative Learning, Online 2008).

vii. Benefits of the Jigsaw Strategy

The following are some of the advantages summarized from the experiment of the jigsaw strategy in the researchers' tutorials: students are eager participants in the learning process and are responsible for the work and achievement while being held accountable by their peers; students have more chance to appreciate differences and share experiences through individual participation and instruction; the jigsaw classroom stimulates students' motivation and increases enjoyment of the learning experience and promotes a great deal of negotiation for meaning; the jigsaw classroom reduces students' reluctance and anxiety to participate in the classroom activities while increasing self-esteem and self-confidence; finally, jigsaw is an effective strategy to integrate various language skills and translation in one English class with the teacher no longer the sole provider of knowledge. "When designed well, these tasks are challenging and engaging, and my students enjoy wrapping their minds around a problem. Since they are working in groups, no kids have to sink or swim on their own, they have the help of their peers" (Bafile, Online 2008).

6. Conclusion

Many benefits were gained when jigsaw strategy was used in the researchers' tutorials. However, this does not imply that all classroom activities should be carried out in groups. Rather what is stressed here is that group activities should be a regular and significant part of EFL classroom. Implementing jigsaw strategy in the EFL classroom makes it possible to focus on language learners, and thereby language learning becomes "more interdependent than independent" (Benson, 2003: 292) and students' reluctance and anxiety to participate in the classroom activities is greatly reduced. "We do not feel nervous as we used to be," as some of the students put it, and "we enjoy it and are eager to participate in the jigsaw activities." Others noted that reading and discussing helped them better in forming their own opinions, and they enjoyed hearing more than just the instructor's voice. Still others noted that they "had" to learn the material by heart because they were expected to teach it.

In conclusion, as far as language learners are concerned, jigsaw strategy is, by trial and error, a proper way to promote learners' participation and enthusiasm as well as a useful technique to focus on the language use to accomplish learning tasks in the EFL classroom.

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Appendix 1 A Sample Passage

A group of frogs were traveling through the woods, and two of them fell into a deep pit. When the other frogs how deep the pit was, they told the two frogs that they were as good as dead. The two frogs ignored the comments and tried to jump up out of the pit with all their might. Finally, one of the frogs took heed to the other frogs and gave up. He fell down and died.

The other frog continued to jump as hard as he could. Once again, the crowd of frogs yelled at him to stop the pain and just die. He jumped even harder and finally made it out. When he got out, the other frogs said, “Did you not hear us?” The frog explained to them that he was deaf. He thought they were encouraging him the entire time.

There is power of life and death in the tongue:

An encouraging word to someone who is down can lift them up and help them make it. A destructive word to someone who is down can be something that kills them. Anyone can speak words that tend to rob another of the spirit to continue in difficult times. Special is the individual who will take the time to encourage another.

Appendix 2 The Questionnaire

Items	Opinions	Always True (AT)	Usually True (UT)	Sometimes True (ST)	Seldom or Never True (SNT)
A. Positive interdependence					
1. Each of us are indispensable for group success.					
2. I feel more responsible for jigsaw activities.					
3. It is necessary for the teacher to motivate students to communicate and accomplish the task together at the beginning of jigsaw.					
4. I think English learning should be more interdependent.					

Items	Opinions	Always True (AT)	Usually True (UT)	Sometimes True (ST)	Seldom or Never True (SNT)
B. Face-to-face promotive interaction					
1. I learn better and feel better in groups					
2. I feel good if there are applauses and compliments.					
3. I am reminded of the past learning by the others' presentations					
4. Discussion in tutorials is enjoyable.					
C. Individual and group accountability					
1. Properly grouping jigsaw is important.					
2. I would prefer to present what I have learned.					
3. I like to share with my group members the knowledge gained in jigsaw.					
4. I need to be checked and to check the others.					
D. Interpersonal skills					
1. I feel more encouraged and confident while challenging the others or being challenged.					
2. I know I am able to be the leader of 3 or 4.					
3. I have made some new friends in jigsaw.					
E. Group processing					
It is necessary to share the ideas about					
1. what to do and how to do it in jigsaw					
2. how to achieve learning goals and maintain effective working relationships					

Appendix 3 Teacher's Evaluation of the Group Work

Items	Always True (AT)	Usually True (UT)	Sometimes True (ST)	Seldom or Never True (SNT)
1. Group stayed on task				
2. Group members shared				
3. Group member took turns				
4. Group member supported each other				

Appendix 4 Student Self-evaluation of the Group Work

Items	Always True (AT)	Usually True (UT)	Sometimes True (ST)	Seldom or Never True (SNT)
1. We made sure that each person understood				
2. We stayed in our groups and were on the task				
3. We finished the task				
4. We worked together well				
5. We helped each other				

(Copy editing: Anthony ZAK)