

## **Students' Perceptions of Reading Through Peer Questioning in Cooperative Learning**

February 2016– Volume 19, Number 4

### **Makiko Tanaka**

Kanda University of International Studies  
<tanaka@kanda.kuis.ac.jp>

### **Edward Sanchez**

Tokyo, Japan  
<sanchez.edward@gmail.com>

### **Abstract**

This study investigated perceptions of a class of 20 first-year Japanese college students on peer questioning in cooperative reading activities. After the instructor gave an hour of interactive explanations of the reading, in which students were encouraged to interact actively with the instructor in interpreting the reading material, students were then guided through three steps: 1) individually writing questions on points in the text they found difficult to understand, 2) peer questioning in pairs/groups using those questions, and 3) writing answers to their own questions. After four sessions of such treatment, a questionnaire was administered to see if they perceived an improvement in their reading comprehension. The results suggest that students perceived peer questioning positively. They claimed that it helped them understand the content better and that it improved their speaking skills as well. Students stated that cooperative learning also helped them to discover elements in the text they would not have seen unless otherwise asked, and it raised students' metacognitive awareness.

Keywords: cooperative learning, reading comprehension, peer questioning

### **Introduction**

Studies on cooperative learning suggest that it can help students learn better (Slavin, Hurley, & Chamberlain, 2003), and studies on cooperative learning in reading have found significant positive effects on comprehension (e.g., Pan & Wu, 2013). Researchers claim that cooperative reading activities that are designed to develop students' ability to interpret text collaboratively have been successful (Gambrell, Mazzoni, & Almasi, 2000), and they improve higher-order reading skills (Stevens, 2003). Studies also show that reading that incorporates cooperative learning brings positive results, such as deeper understanding of content and increased overall achievement, as measured by grades (Ghaith, 2003; Ghaith &

Yaghi, 1998). Other research suggests that cooperative learning motivates students to learn (Nichols & Miller, 1994), and also it specifically increases students' reading motivation (Guthrie, et al., 2004).

This study examined students' perceptions of cooperative learning in reading in an English as a Foreign Language (EFL) class of 20 first year college students in Japan. It specifically focused on the effect of peer questioning; that is, asking questions about the parts of the text individuals found difficult to understand, first in pairs and later in groups of three or four if answers were not found. These reading activities were structured and supervised by the instructor, as research indicates encouraging students to participate in cooperative learning activities with minimal guidance is less effective and less efficient, and that it is less likely to help students achieve better results (Cohen, 1994; Kirschner, Sweller, & Clark, 2006; Meloth & Deering, 1999; Stevens, Slavin & Farnish, 1991).

This paper first reviews the theoretical underpinnings of cooperative learning, and then it introduces the peer questioning activity used in the present study. A peer questioning activity is a cooperative reading activity characterized by positive interdependence in that their understanding of the reading material depends on the learners' contributions to asking and answering each other's questions to help each other out. The paper then reports and discusses the treatment's effects as measured by a questionnaire that investigated students' perceptions on the peer questioning activities.

## **Theoretical Underpinnings**

### **Cooperative Learning**

Cooperative learning is an instructional method where students interact with and help each other to solve problems, complete a project or task to maximize their learning to achieve mutual goals (Johnson, Johnson, & Smith, 1998b). The key concept of cooperative learning, as presented by Johnson, Johnson, and Smith (1998a), is positive interdependence, in which team members perceive that they need each other to complete a task. Instead of individuals working against each other or working by themselves, they pool resources to promote each other's learning.

Cooperative learning is also influenced by Vygotsky's (1978) social constructivism that views knowledge as a social construct. Vygotsky claimed that learning takes place through social interactions with others and that the learning occurs in a "zone" when scaffolded by or working in collaboration with more capable peers. This zone is technically called the "zone of proximal development" or ZPD and is stated as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). The ZPD suggests that a difficult task for individuals can be accomplished with the assistance of more knowledgeable others, which is the paramount contribution to cooperative learning. Vygotsky held that social interaction would result in an increase in understanding of diverse perspectives and lead to the development of higher-level thinking as well as oral communication.

According to Edwards (2005, p. 833), “Much of the theoretical basis for a pedagogical approach using small group work in classrooms comes from the socio-cultural, neo-Vygotskian field.” Ideas such as the Zone of Proximal Development and scaffolding are linked to collaborative group work, and neo-Vygotskians focus on interpersonal relations and its effect on learning in specific social contexts (Mercer & Fisher, 1997). Neo-Vygotskians such as Donato (1994) claim that peers could scaffold and benefit learning from each other regardless of their capability. The social constructivist perspective corresponds to the nature of cooperative learning as it emphasizes the importance of reciprocal interaction to obtain a shared goal through positive interdependence.

### **Cooperative Learning in Reading**

Consistent with social constructivism, the use of cooperative learning in reading instruction links to the belief that students learn better if appropriately guided through the ZPD when working with peers. The premise is that each group member may have skills and knowledge other group members may not have, and by making a joint effort, they can complement and build on each other’s skills and knowledge.

Students may lack reading skills or domain-specific knowledge to understand the reading material. This may cause uncertainty and conflict, or a state of disequilibrium, to use Piaget’s terminology (1952). Piaget claimed that when exposed to a cognitive conflict, learners would seek a state of equilibration thus leading to cognitive development. In the process of working in cooperation with others, students can teach each other by addressing misunderstandings and clarifying misconceptions, thus bringing about a state of equilibration. In order to solve the problem or to make sense of the reading material, they need to work together to reach a joint agreement. They also have to be able to reason while giving feedback and answers to each other. This process contributes to the development of higher-order thinking skills hence leading to learning.

### **Method**

The objectives of this paper are to introduce the cooperative peer questioning activity and to present the study that investigated if the students perceived cooperative peer questioning activity effective in improving their English reading and speaking skills. It also examined what the students perceived they learned from the activity.

### **Participants**

The study was conducted with a class of 20 first-year Japanese college English major students, five males and 15 females, whose English proficiency level varied between 490 and 560 on the TOEFL ITP test. This class was one of the top classes among the 22 freshman classes at the university at which this study was conducted. Based on the first author’s observations of students’ attitudes in class, the students were all highly motivated. The class met twice a week for an hour and half each time. For this class, the students were taught in English only, as it is the university’s English education policy, and they all spoke only in English during class time.

## **Reading Material**

In this class students read passages of about 400 words in an EFL textbook called *Practical Psychology: Information and Advice* (Knudsen, 2014). Judging from its content, the textbook is of intermediate to advanced level, and it comes with vocabulary exercises and comprehension questions for each chapter. The class covered one chapter in about 2.5 hours (the first full 90-minute class and one hour in the following 90-minute class). The data for this study are from four passages, the topics of which are as follows: Lesson 13 So Sad: Depression in Japan; Lesson 14 Color Blind: Overcoming Prejudice; Lesson 15 For the Children's Sake: Effective Parenting; and Lesson 16 It's All Good: Happiness and Positive Psychology.

## **Process of Cooperative Reading Activity**

Students were given structured guidance as to how to proceed in the reading activities and what they were expected to do. They were told to be responsible for their own learning and that the contribution to the class was important. The process revolved around three major steps: (a) a whole-class activity, (b) peer questioning activities, and (c) a whole-class discussion. Prior to the whole class activity, students were required to read a passage and do the vocabulary exercises as homework.

In the whole-class activity, the instructor (the first author) explained the reading interactively to the whole class asking questions that required different cognitive levels of thinking (Airasian, et al., 2001).

The peer questioning activities consisted of three stages: (a) students wrote questions they wanted to ask from the reading materials that required critical thinking such as applying, analyzing, and evaluating parts of the texts; (b) students discussed their questions in pairs; and (c) individually students wrote answers to their own questions.

In the first stage of the second step, students were asked to write questions on a worksheet that was divided in half, with space to write questions on the left and space to write answers on the right. The students were told to write at least three questions. Specifying the number of questions was important because students might have otherwise generated only one question. It was hoped that coming up with three questions would lead to more careful and deeper reading.

The instructor made it clear that the purpose of writing questions was not to “test” their peers, but to clarify uncertainty students had in the reading material with the help of their peers. The instructor repeatedly told the students to take advantage of this opportunity and ask questions that will help them learn. Students produced questions such as: What's the meaning of “diminished self-efficacy?” What's “benign neglect” in parenting?; Is “materialism toxic for happiness?”; “Does the following question apply today: ‘Has this come about because seeing a therapist no longer carries the stigma it once did?’”

In the second stage of the second step, students formed pairs and were encouraged to actively engage in discussion in English so that both would produce answers to each other's questions. They worked in pairs because smaller groups produce higher achievement than groups with more members (Levine & Moreland, 1990; Lou, et al., 1996; Webb, 1989). If, however, answers were not found, the pair was asked to form a larger group with another pair and discuss answers to the remaining unanswered questions. The teacher instructed the students to help each other out so that they would both understand the passages better and be able to write answers to their own questions individually after the discussion.

In the third stage of Step 2, students wrote answers to their own questions on the worksheet. Since the purpose of peer questioning is not to test their peers' reading comprehension but rather to ask peers to help them with questions they wanted to ask, students did not have to write answers to their peers' questions. Writing answers to their own questions, which is made possible through discussion with the help of others, now becomes purely for the benefit of the question-maker. Their cognitive conflict ideally would be reduced by writing answers to their own questions. According to Piaget, their states of disequilibrium are brought to states of equilibrium leading to learning (Piaget, 1952).

In the final step, whole-class discussion, the teacher picked up questions students could not answer in the group discussions and helped them solve the problems together in class as a whole.

## **Data Collection**

After finishing four lessons (Lessons 13-16), students were asked about their perceptions on the peer questioning activities (see Appendix). All 20 students responded to the questionnaire. They were required to write their names so that they would be responsible for their comments. In order to avoid a negative halo effect, the instructor made sure that what they wrote would not affect their grades. The students were also told that their honest comments would help the instructor know if the activities improved their understanding. The questionnaire was divided into five parts. The first four parts were: (a) preparing questions individually (three items), (b) answering their peer's questions in pairs/groups (three items), (c) writing answers to their own questions after the discussion (three items), and (d) peer questioning activity as a whole (six items). Students were asked to rate the statements in the questionnaire using a 5 point Likert scale, 1 being "I don't think so at all" and 5 being "Yes, I think so very much." For example, students could answer the question, "Is preparing questions individually a difficult task to do?" by selecting 1 "I don't think so at all." After each part, students were asked to write their opinions about the part. In the fifth part, students were asked to provide free comments on overall peer questioning activities. The next section presents the results of the questionnaire.

## Results

### Students' Responses to the Questionnaire

This section summarizes the results of the questionnaire administered to the students at the end of the four passage readings. The questionnaire was collected from all 20 students for later analysis.

**Preparing questions individually.** In the first part, students were asked to what extent preparing questions individually: (a) was a difficult task, (b) helped students read critically, and (c) helped them understand the content of the reading. In Table 1, Item 1a shows 13 out of 20 or 65% of the students responded they did not have a difficult time preparing questions individually (five out of 20 stated it was not a difficult task at all, and eight out of 20 stated it was not particularly difficult). In Item 1b, 14 out of 20 of the students replied that their critical reading improved due to preparing questions (12 stated it helped them read critically and two stated it helped them read critically to a large extent). For Item 1c, 19 out of 20 students reported that preparing questions had improved their understanding (10 stated it helped, and nine stated it helped greatly). Students reported that preparing questions was not a difficult task and that it helped them read critically and understand the content of the reading better.

**Table 1. *Preparing Questions Individually***

Items	1		2		3		4		5	
	n	%	n	%	n	%	n	%	n	%
Preparing questions individually...										
(1a) was a difficult task	5	25	8	40	5	25	1	5	1	5
(1b) helped me read critically	0	0	2	10	4	20	12	60	2	10
(1c) helped me understand the content of the reading	0	0	0	0	1	5	10	50	9	45

*Note.* 1 = I don't think so at all; 2 = I don't think so; 3 = Neither; 4 = I think so; 5 = I think so very much.

**Answering peer's questions in pairs/groups.** The second part consisted of answering the questions students produced in pairs/groups. Students were asked to what extent answering peers' questions: (a) was difficult, (b) helped them talk about the content of the reading, and (c) helped them understand the content of the reading. In Table 2, Item 2a shows students' responses to be distributed somewhat evenly across the four choices. Item 2b shows that 15 out of 20 students reported that responding to peers' questions helped them talk about the content of reading (seven stated somewhat, eight stated greatly). Item 2c shows that all the students said it helped them understand the content of reading (six said somewhat and 14 said that it did so greatly). Overall, answering peer questions did seem to help students talk about and understand the content of the reading.

**Table 2. Answering Your Friend's Questions in Pairs/Groups**

Items	1		2		3		4		5	
	n	%	n	%	n	%	n	%	n	%
Answering your friend's questions in pairs/groups...										
(2a) was a difficult task	4	20	5	25	5	25	5	25	1	5
(2b) helped me talk about the content of reading	0	0	0	0	5	25	7	35	8	40
(2c) helped me understand the content of the reading	0	0	0	0	0	0	6	30	14	70

*Note.* 1 = I don't think so at all; 2 = I don't think so; 3 = Neither; 4 = I think so; 5 = I think so very much.

**Writing answers to their own questions after discussion.** The third part of the instrument asked students about writing answers to their own questions after the discussion. The three questions addressed were to what extent writing answers to their own questions: (a) was a difficult task, (b) helped them write in English, and (c) helped them understand the content of the reading better. For Item 3a in Table 3, 13 students expressed that writing answers to their own questions after discussions was easy, with six of them stating that it was very easy. For Item 3b, seven students stated that writing answers to their own questions after discussions helped them write better in English, and five additional students stated it helped them do this very well. For Item 3c, a total of 13 students said that it helped them understand the content better, with six of those students saying it helped them very much. The data suggested that students believed that writing answers to their own questions after peer discussion also helped students understand the content of the reading better, and it helped students' reading comprehension more than it helped their writing in English.

**Table 3. Writing Answers to Your Own Questions after the Discussions**

Items	1		2		3		4		5	
	n	%	n	%	n	%	n	%	n	%
Writing answers to your own questions after the discussions...										
(3a) was a difficult task	6	30	7	35	4	20	3	15	0	0
(3b) helped me write English	0	0	3	15	5	25	7	35	5	25
(3c) helped me understand the content of the reading better	0	0	1	5	6	30	7	35	6	30

*Note.* 1 = I don't think so at all; 2 = I don't think so; 3 = Neither; 4 = I think so; 5 = I think so very much.

**Peer questioning.** The fourth part of the instrument asked students about peer questioning as a whole. Questions were to what extent peer questioning: (a) was a fun activity, (b) helped

them understand content of the reading better, (c) helped them talk about the content better, (d) helped them improve reading skills, (e) helped them improve their speaking skills, and (f) helped them remember the content better.

For Item 4a in Table 4, six students said peer questioning was fun, and four students said it was much fun. For Item 4b, eight students stated that peer questioning helped them understand the content of the reading better, and 11 said it did so very much. For Item 4c, 18 students said it helped them talk about the content of the reading better, half of those saying it helped them greatly. For Item 4d, 10 students replied that peer questioning helped improve their reading skills, and three additional students replied that it helped improve their reading skills very much. For Item 4e, 18 students stated peer questioning helped them to improve their speaking skills, with eight of those saying it did so greatly. For Item 4f, 13 students claimed that peer questioning helped them to remember the content better, with eight of those students claiming it did so greatly. Overall, the students evaluated the peer questioning activity as effective in improving speaking skill and reading comprehension.

**Table 4. Peer Questioning**

Items	1		2		3		4		5	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Peer questioning...										
(4a) was fun activity	0	0	3	15	7	35	6	30	4	20
(4b) helped me understand the content of reading better	0	0	0	0	1	5	8	40	11	55
(4c) helped me talk about the content of the reading	0	0	0	0	2	10	9	45	9	45
(4d) helped me improve reading skills	0	0	1	5	6	30	10	50	3	15
(4e) helped me improve speaking skills	0	0	0	0	2	10	10	50	8	40
(4f) helped me remember the content better	0	0	1	5	6	30	5	25	8	40

*Note.* 1 = I don't think so at all; 2 = I don't think so; 3 = Neither; 4 = I think so; 5 = I think so very much.

### Students' Comments on Cooperative Reading

Students were asked to write their comments concerning the activity. Following are some of these comments for each question. These are direct quotes written in English by students and were not edited or corrected by the researchers. Students' comments stated below correspond to the questions posed for this study: 1) if they perceived peer questioning activities to be effective in improving their reading and speaking abilities, and 2) what they perceived they learned from the activities. These comments were chosen because they provide insight into students' thinking, and they show evidence of positive interdependence.

**Preparing questions individually.** Among 18 students who commented, some stated that preparing questions helped them understand the content more deeply because they had to "read the text carefully." It also helped students "grasp" what they did not understand.

**Answering friends' questions in pairs/groups.** Seventeen students provided comments on this part. They stated that answering questions made them aware that they actually "didn't understand the text enough" because they themselves "did not come up with the question."

**Writing answers to one's own questions after the discussion.** With regard to this third part, 17 students responded with comments. They stated that writing answers to their own questions clarified their ambiguity and helped them understand the content of the text. One stated that writing was an effective task to improve reading comprehension: "I have never thought this task as one of the tasks that I make my understanding better."

**Peer questioning as a whole.** About the fourth part, 15 students provided comments. All comments were about the opportunity to practice speaking English, such as "I practice speaking English through this activity," and "This activity is helpful for me especially improve speaking skill."

**Other comments from students.** Thirteen students commented in the fifth part. One student wrote, "I can find my weak points after starting this activity, and I can understand the content of each passage by asking and answer questions with friends." If they had not had opportunities to discuss their questions with each other, mutual understanding would not have resulted.

## **Discussion**

### **Cooperative Peer Questioning and Reading Comprehension**

In the peer questioning activities, students perceived that (a) preparing questions individually and (b) answering each other's questions helped them comprehend the content of reading. Ninety-five percent of the students in preparing questions (Item 1c) and all the students in answering peers' questions (Item 2c) responded that it helped them understand the content of the reading. What is more significant in these two activities is that students realized that there were some parts in the passage that they believed they understood but in reality did not. As for answering peers' questions, students reported they recognized the parts they did not understand ("Sometimes I realize that I didn't understand the text enough when friends ask questions I didn't come up with."). Making questions individually and answering peers' questions led the students to metacognitive awareness about what is clear and what is not.

### **Cooperative Peer Questioning and Speaking Skills**

Worth noting is students perceived that peer questioning helped them talk about the content of reading (Item 4c, 90%) and improved their speaking skills (Item 4e, 90%). This perception of improvement in communication skills may result from the fact that asking questions is inherently a communicative activity. Since students had plenty of opportunities to speak in English, they may have felt that their speaking skills improved. However, what is important is that students had basis (reading material) on which they discussed, and that speaking became more worthwhile because the activity was done through the form of peer questioning in

which the goal was to talk and solve problems or questions they each had in cooperation with others.

### **Cooperative Peer Questioning and Writing Skills**

It seems that writing answers to their own questions (Item 3c) somewhat helped students understand the content of the reading better (65%) and helped them write English better (Item 3b, 60%). These relatively low positive ratings is no surprise considering that writing, especially in academic settings, requires more than answering questions in a few sentences. Writing answers to their own questions, however, led one student to the discovery that this new experience helped him understand the content better: “I have never thought this task as one of the tasks that I make my understanding better.” Writing answers seemed to help students clarify ambiguity, as they had to make sure they understood the answers.

### **Effects of Peer Questioning in Cooperative Learning**

Only ten students rated this activity as a fun activity (4a). This may be because the overall cooperative peer questioning activity was cognitively quite demanding: it required deep reading of thought-provoking, difficult passages, critical thinking skills, and responsibility to cooperate and solve problems in a strictly limited time schedule. As a whole, however, the data suggest that students perceived cooperative peer questioning rather positively. A large number of students reported that it helped them understand the content better and talk about it better. Cooperative learning was also reported to help students recognize points they would not have seen unless asked, and it raised students’ metacognitive awareness.

### **Educational Implications**

Cooperative learning provides an alternative to traditional teacher-centered instruction. In teacher-centered instruction, teachers check meanings of new words and phrases and gives explanations of grammar points in the reading passages (Wei, 1996). The problem with this teacher-centered lecturing is that it may not enhance students’ understanding. Not everything can be explained to students, and not all students may understand everything explained: Some miss hearing explanations and others misunderstand them. Cooperative learning in the form of asking questions to peers, or “peer questioning,” seems to work well, and this may be because questions are directed within each other’s zone of proximal development as questions are coming directly from students themselves. This activity helps students to clarify misconceptions and leads to understanding of the reading material.

Supervising group activities and monitoring the cooperative learning process is crucial if teachers are to conduct lessons efficiently. Teachers are advised to make clear the objectives of each activity, explain step-by-step procedures, as well as the goals of each step and students’ responsibilities in the cooperative learning activity. Teachers can enhance students’ metacognitive reading skills along with higher-order thinking skills by carefully preparing tasks, and by encouraging students to work collaboratively to solve problems. Students should also be made aware that peer questioning requires the contribution of each of the members and that each is held accountable to help each other learn. In other words, they are positively interdependent, which is the heart of cooperative learning.

Teachers should instruct students to write down questions about things they do not understand so that students' reading comprehension will be enhanced. Teachers may instruct students to prepare questions before they explain the content in class or after they explain it considering the students' English level and the difficulty of the passage. If the students' English level is low, teachers may explain the passage first, but if their English level is sufficiently high, teachers may ask students to prepare questions before they explain the passage. Also, if understanding the passage requires deep thinking, teachers may ask students to prepare questions at home as homework.

Teachers should have students recognize that answering each other's questions will help them see things from different perspectives and that working cooperatively serves to benefit those asking questions as well as those answering questions. Lastly, teachers need to inform students of the objectives of cooperative reading activities, i.e., to enhance not only their own reading comprehension and speaking skills but also others' and to help each other speak about the content matter they learned in the reading material.

This study was conducted involving a group of students who were roughly homogeneous as to English proficiency. Students, therefore, could negotiate with each other to address the questions they asked each other. However, had this activity been conducted in a class with a wide discrepancy in the students' L2 abilities, peer questioning may not have been as effective. Special care must be taken with regard to pairing students as students with lower proficiency who are paired with students with higher proficiency may not be able to answer questions students with higher proficiency pose, in which case the activity may end with few or no problems being solved for students of higher proficiency. A study with a group that has wider L2 ability variation may find if the peer questioning activity will bring about equal benefits to both parties.

### **Suggestions for Future Studies**

Our study did not observe if the students correctly answered questions raised by peers. In some cases, students may unknowingly agree on a wrong answer or may be convinced by a partner's unproven explanations. Investigation into the answers to students' questions may reveal whether they truly understand the reading material or not.

### **Conclusion**

This study investigated first-year Japanese college students' perceptions of reading through peer questioning in cooperative learning with the aim of introducing practical and effective reading practices that English teachers can conduct using cooperative learning methods. A questionnaire was administered to investigate the students' perceptions of peer questioning in reading. It was found that students perceived that peer questioning enhanced their understanding of the reading content, their ability to talk about the reading, their reading skills, and their speaking skills. From the analysis of the students' comments, peer questioning also helped them view reading material from various perspectives in addition to their own. Moreover, they reported that they were able to discover parts of the reading material that were not clear or that they misinterpreted. According to them, this awareness

would not have been possible had their peers not brought these points to their attention in the form of questions. This is a significant point of this study, as cooperative learning, in the form of peer questioning, promotes students' metacognitive awareness and can lead to the discovery of what students believe they understand but actually do not and therefore need to work on.

## About the Authors

**Makiko Tanaka** is a professor at Kanda University of International Studies, Japan. She received her Ph.D. (Education with emphasis on Applied Linguistics) from the University of California, Santa Barbara. Her research interests include discourse analysis, teaching English to young learners, and teacher education.

**Eddie Sanchez** completed his MA in TESOL from Teachers College, Columbia University in 2012. He taught in Seoul, Korea for 4 years and has been teaching in Tokyo, Japan for five years. He currently works at Sophia University and Tokyo University of Foreign Studies. His research interests are instructional design, online learning, and academic writing.

## References

- Airasian, P. W., Cruikshank, K. A., Mayer, R. E., Pintrich, P. R., Raths, J., & Wittrock, M. C. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. L. W. Anderson, & D. R. Krathwohl (Eds.) New York, NY: Pearson.
- Cohen, E. G. (1994). Restructuring the classroom: Conditions for productive small groups. *Review of Educational Research, 64*(1), 1-35. doi:10.3102/00346543064001001
- Donato, R. (1994). Collective scaffolding in second language learning. In J. P. Lantolf & G. Appel (Eds.). *Vygotskian approaches to second language research* (pp. 33-56). Norwood, NJ: Ablex.
- Edwards, J. (2005). Exploratory talk in peer groups: Exploring the zone of proximal development. Proceedings from CERME 4: *4th Congress of the European Society for Research in Mathematics Education*, 831-840. Sant Feliu de Guixols, Spain: ERME.
- Gambrell, L. B., Mazzoni, S. A., & Almasi, J. F. (2000). Promoting collaboration, social interaction, and engagement with text. In L. Baker, M. J. Dreher, & J. T. Guthrie (Eds.), *Engaging young readers: Promoting achievement and motivation* (pp. 119-139). New York: The Guilford Press.
- Ghaith, G. (2003). Effects of the learning together model of cooperative learning on English as a foreign language reading achievement, academic self-esteem, and feelings of school alienation. *Bilingual Research Journal: The Journal of the National Association for Bilingual Education, 27*(3), 451-474. doi:10.1080/15235882.2003.10162603
- Ghaith, G. M., & Yaghi, H. M. (1998). Effect of cooperative learning on the acquisition of second language rules and mechanics. *System, 26*, 223-234. doi:10.1016/S0346-251X(98)00005-0
- Guthrie, J. T., Wigfield, A., Barbosa, P., Perencevich, K. C., Taboada, A., Davis, M. H., & Tonks, S. (2004). Increasing reading comprehension and engagement through concept-oriented reading instruction. *Journal of Educational Psychology, 96*(3), 403-423. doi:10.1037/0022-0663.96.3.403

- Johnson, D. W., Johnson, R. T., & Smith, K. A. (1998a). *Active learning: Cooperation in the college classroom*. Edina, MN: Interaction Book Company.
- Johnson, D. W., Johnson, R. T., & Smith, K. A. (1998b). Cooperative learning returns to college: What evidence is there that it works? *Change: The Magazine of Higher Learning*, 30(4), 26-35. doi:10.1080/00091389809602629
- Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist*, 41(2), 75-86. doi:10.1207/s15326985ep4102\_1
- Knudsen, J. (2014). *Practical psychology: Information and advice*. Tokyo, Japan: Nan'un-do.
- Levine, J. M., & Moreland, R. L. (1990). Progress in small group research. *Annual Review of Psychology*, 41, 585-634.
- Lou, Y., Abrami, P. C., Spence, J. C., Poulsen, C., Chambers, B., & d'Apollonia, S. (1996). Within-class grouping: A meta-analysis. *Review of Educational Research*, 66(4), 423-458. doi:10.3102/00346543066004423
- Mercer, N., & Fisher, E. (1997). The importance of talk. In R. Wegerif, R & P. Scrimshaw (Eds.), *Computers and talk in the primary classroom* (pp. 13—21). Clevedon: Multilingual Matters.
- Meloth, M. S., & Deering, P. D. (1999). The role of the teacher in promoting cognitive processing during collaborative learning. In A. M. O'Donnell, & A. King (Eds.), *Cognitive perspectives on peer learning* (pp. 235-255). Mahwah, NJ: Lawrence Erlbaum Associates.
- Nichols, J. D., & Miller, R. B. (1994). Cooperative learning and student motivation. *Contemporary Educational Psychology*, 19(2), 167-178. doi:10.1006/ceps.1994.1015
- Pan, C. Y., & Wu, H. Y. (2013). The cooperative learning effects on English reading comprehension and learning motivation of EFL freshmen. *English Language Teaching*, 6(5). doi:10.5539/elt.v6n5p13
- Piaget, J. (1952). *The origins of intelligence in children* (M. Cook, Trans.). New York: International Universities Press.
- Slavin, R. E., Hurley, E. A., & Chamberlain, A. (2003). Cooperative learning and achievement: Theory and research. In *Handbook of psychology* (pp. 177-198). Wiley Online Library. doi: 10.1002.0471264385.wei0709 Retrieved from <http://onlinelibrary.wiley.com.ezproxy.cul.columbia.edu/doi/10.1002/0471264385.wei0709/full>
- Stevens, R. J. (2003). Student team reading and writing: A cooperative learning approach to middle school literacy instruction. *Educational Research and Evaluation: An International Journal on Theory and Practice*, 9(2), 137-160.
- Stevens, R. J., Slavin, R. E., & Farnish, A. M. (1991). The effects of cooperative learning and direct instruction in reading comprehension strategies on main idea identification. *Journal of Educational Psychology*, 83(1), 8-16. doi:10.1037/0022-0663.83.1.8
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Webb, N. W. (1989). Peer interaction and learning in small groups. *International Journal of Educational Research*, 13(1), 21-39. doi:10.1016/0883-0355(89)90014-1

Wei, C. L. (1996). Cooperative English learning activities: Perceptions of Taiwanese college students. *Educational Research*, 4, 13-26.

## Appendix

### Questionnaire about peer questioning

The following questionnaire was used to investigate if peer questioning was helpful in learning English.

Name \_\_\_\_\_ ID # \_\_\_\_\_ Date \_\_\_\_\_

Please answer the following questions.

- 1 = I don't think so at all.
- 2 = I don't think so.
- 3 = Neither.
- 4 = I think so.
- 5 = I think so very much.

#### 1. Preparing questions individually

- a) was a difficult task. 1 2 3 4 5
- b) helped me read critically. 1 2 3 4 5
- c) helped me understand the content of reading. 1 2 3 4 5

Please write your comments about preparing questions individually.

#### 2. Answering your friends' questions in pairs / groups

- a) was a difficult task. 1 2 3 4 5
- b) helped me talk about the content of reading. 1 2 3 4 5
- c) helped me understand the content of reading. 1 2 3 4 5

Please write your comments about answering your friends' questions.

#### 3. Writing answers to your own questions after the discussion

- a) was a difficult task. 1 2 3 4 5
- b) helped me write English. 1 2 3 4 5
- c) helped me understand the content of readings. 1 2 3 4 5

Please write your comments about writing answers to your own questions.

#### 4. Peer questioning

- a) was a fun activity. 1 2 3 4 5
- b) helped me understand the content of reading. 1 2 3 4 5
- c) helped me talk about the content of reading. 1 2 3 4 5
- d) helped me improve reading skills. 1 2 3 4 5
- e) helped me improve speaking skills. 1 2 3 4 5
- f) helped me remember the content better. 1 2 3 4 5

Please write your comments about peer questioning

#### 5. Please write any additional comments about the activities.