The CATESOL Journal

**WANGMEI ZHOU**
*University of San Diego*

# How Collaborative Learning Supports ESL Learners' Development of Higher Order Thinking Skills

**Abstract**

**The effects of collaborative learning have been well studied in the context of students' developing reading proficiency. However, only a handful of scholars have examined the impact of collaborative learning on students' development of higher order thinking skills (Chapman, Ramondt, and Smiley, 2005; Lehtinen et al., 1999; Ma 2009). This article reports a case study that explored how collaborative learning supports English as a Second Language (ESL) learners' development of higher order thinking skills in a traditional ESL grammar class. To collect data, the researcher employed interviews, audio recordings, and class observations. It is hoped that through understanding this relationship not only will ESL learners develop their higher order thinking skills while acquiring a second language, but also school directors and instructors will be inspired to create effective collaborative learning activities.**

Since the emergence of communicative language teaching, in which interaction is both the means and the goal of learning, schools and instructors in most parts of the world have increasingly incorporated more collaborative learning activities into their classrooms. Collaborative learning is an approach in which a small group of learners work together to complete a task, solve a problem, or produce a product (MacGregor, 1990).

A plethora of research has studied the effect of collaborative learning or technology-supported collaborative learning on students' literacy development and reading proficiency (Breiner, Vaughn, Clapper, & Kim, 2002; Commander & de Guerrero, 2013; Klingner & Vaughn, 2000; Lan, Sung, & Chang, 2007; Meyer, 2010; Momtaz &

Garner, 2010; Wiseman & Belknap, 2013; Wright, Zyto, Karger, & Newman, 2013). However, only a handful of scholars (Chapman, Ramondt, and Smiley (2005); Lehtinen et al. (1999); Ma (2009)), have paid attention to the effect of these learning approaches on students' development of higher order thinking skills. Higher order thinking skills include the ability to analyze, evaluate, and synthesize information. Consequently, it remains an open question regarding how collaborative learning supports students' development of higher order thinking skills. Of these few studies, most have been focused on reading skills, leaving room for research into the other language skills such as grammar acquisition. Research on how collaborative learning supports the development of higher order thinking skills in a traditional English as a Second Language (ESL) grammar class context remains scarce.

The benefits of collaborative learning are likely to be experienced by both native English speakers in their development of reading skills and ESL students in their development of higher order thinking skills while learning grammar. Within the social constructivist framework, "Knowledge is constructed by the learners, but its focus is on the role of social interactions and situations as the key driving force for knowledge development" (Inoue, 2012, p. 95). In social interactions, learners express ideas and exchange perspectives with each other to construct the meaning of some certain knowledge. The scarcity of information on how to foster students' higher order thinking skills by using collaborative learning activities in a traditional grammar classroom is regrettable because it is the sort of knowledge schools and teachers need to have if they intend to better promote ESL students' learning outcomes. The purpose of this study was to contribute to the knowledge base by exploring how collaborative learning activities support ESL students' higher order thinking development in a traditional grammar class.

## Literature Review

Higher order thinking emerging from Bloom's Taxonomy helps educators gain insight into student thinking and learning. Bloom's Taxonomy became known to the public with the publication of *Taxonomy of Education Objectives: The Classification of Educational Goals* (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956) and was further developed in 1990s by Lorin Anderson to meet the developing needs of twenty-first century teachers and students (Forehand, 2010). In Bloom's Taxonomy, thinking skills are categorized into remembering, understanding, applying, analyzing, evaluating, and creating. These thinking skills are grouped into two categories: lower order thinking and higher order thinking (Surgey, 2012). Higher order thinking is defined as the ability to apply, evaluate, and synthesize information. "Higher order thinking occurs when a person takes new information and information stored in memory and then interrelates and/or rearranges and extends this information to achieve a purpose or find possible answers in perplexing situations" (Lewis and Smith, 1993, p. 136, emphasis removed). Learners develop their higher order thinking skills when they connect new knowledge to their prior knowledge and decide what to store and what to abandon. Thus, higher order thinking skills are necessary for successful and independent learning.

Dede (1990) suggested that higher order thinking skills are best acquired when learners construct knowledge, rather than passively receive knowledge, and collaboratively interact with their peers. Vygotsky (1978) conceptualized that learners can move beyond their current level by engaging in collaborative learning activities with those who are more proficient in a certain skill. Learners' understanding of specific knowledge can be strengthened with the assistance of more proficient peers. In other words, social interactions contribute to learners' comprehension and movement toward higher order thinking because they activate their existing knowledge or construct new knowledge to subsume a new cognitive structure (Palinscar, 1998). Ma (2009) found that high quality social interactions in the collaborative learning activity, i.e., negotiation of meaning, testing tentative constructions, and applications of newly constructed meaning, established a learning community in which higher order thinking skills were fostered. Likewise, students in an ESL grammar class can enhance their grammar knowledge and foster their higher order thinking development through social interactions in a collaborative learning activity.

Collaborative learning is an educational approach where learners are put into small groups to work together to solve a problem, complete a task, or create a product. Collaboration is a process by which learners negotiate and co-construct meaning of new knowledge "together" (Dillenbourg, 1999, p. 8). The social activity in the collaborative learning provides a platform for learners to develop their cognitive intelligence. In social interactions, learners express ideas and exchange perspectives with each other to construct meaning of certain knowledge.

In summary, it is crucial for all learners to develop higher order thinking skills (Lewis & Smith, 1993), rather than limiting higher order thinking to a particular group of students or a particular classroom. As set forth above, although numerous studies have investigated the effect of collaborative learning (in the classroom or online) on students' reading skills, a lack of research on the dynamics between collaborative learning in traditional grammar classrooms and ESL students' higher order thinking skills exists. Therefore, the rationale for this research is to understand how collaborative learning in traditional classrooms supports ESL learners' higher order thinking in grammatical knowledge.

## Methodology

The case study aimed to closely explore how collaborative learning in a traditional classroom supports ESL learners' development of higher order thinking in grammatical knowledge. Through interpreting and analyzing triangulated data, the study was expected to enable other instructors to understand the following questions:

1. How does collaborative learning support ESL learners' development of higher order thinking skills?
2. What aspects of collaborative learning activity support ESL learners' development of higher order thinking skills?

### *Participants and Context*

All 11 participants in this case study were in an intermediate grammar class at the English Language Institute whose instructor tended to teach grammar interactively. Eight of the participants were from Saudi Arabia and three were from China. There were only three female students, two from Saudi Arabia and one from China. Ten of these students expressed a desire to enter a four-year US university or college. The remaining student, who was from Taiwan, China, came to improve his general English during his six-month vacation in the US. All these students were at the intermediate proficiency level based on their scores on the placement examination taken on the first day of the Spring 2015 semester. In this semester, the students met from 1:30 to 2:30 p.m. every Monday, Wednesday and Friday to learn verb tenses, nouns, questions, gerunds, and infinitives.

### *Data Collection*

In this study, data were collected via interviews, audio recordings, and classroom observations. Audio recordings were made as participants engaged in collaborative learning activities during the grammar class, which was crucial to understanding how collaborative learning supports ESL learners' development of higher order thinking skills about grammatical knowledge. After collecting the data, the author transcribed and coded the recorded interactions using conversational analysis. The way students interacted with their peers about the project/task, the eliciting questions they posed their peers, and the moments when they reached agreement on grammar meaning construction informed the author on those aspects of collaborative learning that benefited students' development of higher order thinking skills in the grammar classroom context, and in which ways.

Classroom observations complemented the audio recording transcripts to uncover the context of collaborative learning activities in the grammar class. Observation notes were used in this study to gather information about the set-up, the task, and the types of collaborative learning activity. The observation also served as a complementary tool to recall accompanying actions around the interactions in the collaborative learning activities, which filled in the blanks in the transcripts of recorded interactions.

This study also employed semi-structured interviews (see Appendix A) to explore how learners perceive the role of collaborative learning in enhancing their higher order thinking development. As the participants were intermediate ESL learners, the complicated words (e.g., collaborative learning activities and higher order thinking) were less comprehensible for them. These words were replaced with more simple and comprehensible words, such as "group work" and "learning," respectively. These two words were chosen to replace "collaborative learning" and "higher order thinking" mainly because: 1) they are the words that students usually hear and are familiar with; and 2) collaborative learning usually takes place in group work and learning often subsumes some higher order thinking

skills. Interview questions concerned the ways in which a collaborative learning activity supports higher order thinking, the types of collaborative learning activities that support their learning, and the mutual influence among peers during the collaborative learning activities. Follow-up questions were posed to participants during the interviews when they mentioned something interesting about group work or thinking skills.

## Findings

### *Finding 1: Students Described How They Construct Grammatical Knowledge In Collaborative Learning*

The findings in Table 1 depict how ESL learners construct grammatical knowledge, including, but not limited to, explaining grammar structure, telling differences and similarities between grammar structures, and illustrating grammar by example sentences. Group members' explanations of a grammar point contributed to the ESL students' development of the analysis skill, because group members usually constructed knowledge by demonstrating sample sentences or by explaining the similarities and differences between grammar structures. For instance, in response to the question "How do your group members help you learn a grammar structure," one interviewee replied, "Like, we open the exercise in the book, and explain how to, and how he [interviewee's group work partner] answered the question in that book, and show me the differences between old subject [knowledge] and new subject [knowledge]."

**Table 1**
**How Collaboration Supports Participants'**
**Development of Higher Order Thinking Skills**

| **Thinking skill (from lower to higher order)** | **The ways collaborative learning supports ESL learners' development of higher order thinking skill** |
|---|---|
| Analyzing | • explaining grammar among group members<br>• illustrating of example sentences<br>• explaining grammar to help others understand and use grammar<br>• telling similarities and differences between old knowledge and new knowledge |
| Evaluating | • comparing and contrasting of sentences<br>• evaluating one's own sentences<br>• telling others if their example sentences are right |
| Creating | • finding new information when explaining grammar to group members<br>• encouraging organization of ideas among group members'<br>• summarizing all the learned grammatical knowledge to make sentences, write a paragraph<br>• explaining and presenting grammar in sentences |

Similarly, ESL learners' higher order thinking skill of "evaluating" was also supported when interacting in a collaborative learning activity. Learners compared and contrasted example sentences and evaluated their own or other group members' sentences. For example, one interviewee commented,

> So sometimes I think, you think this works, but actually it's not. And when you share your group, they may tell you this is wrong. This is very helpful. And now, another thing is maybe your group, somebody in the group make a mistake and you can also think about it, so what this mistake is about. Will I make this mistake again? So this is really helpful. You think about it. You evaluate it.
> ***Note***: Excerpt from the sixth interviewee, S6

The interviewees' responses also revealed that learners find new information about a grammar structure or organize ideas in different contexts when they learn or use a grammar structure in a collaborative learning activity. An excerpt from one interviewee's interview transcript included below demonstrated how a collaborative learning activity helped the participant develop the thinking skill of "creating":

S3: That's past continuous. I thought we can't use the past continuous twice. "I was going to the hospital." We can't use the verb with *–ing*, past continuous again. I thought, just past simple and past continuous. When I explained it to someone, I figured out that we can use the past continuous twice in the same sentences. Yes. You know what, this's my first time see that. So you can use that together in same sentences.

I: So it happened when you explain to others. You find, "Oh, I can use past continuous twice in a same sentence."

S3: Yeah, yeah. I found it after I explained that grammar to someone…

***Note:*** S3=the third interviewee; I=Interviewer

**Finding 2: During Groupwork, Some Students Tended to Co-construct Knowledge by Explicitly Asking for Explanations or Asking Thought-provoking Questions, Whereas Some Tended Not**

Another major finding is that in collaborative learning activities, some participants succeeded in co-construction of knowledge and moved forward to the next level of thinking, whereas some failed to co-construct knowledge. When participants attempted to co-construct knowledge, they tried methods such as repeating questions, recasting others' words, implicitly requesting clarification or explanation, and providing additional examples to discuss certain grammatical structures. However, the discussion was not further extended to help participants understand or analyze the grammatical structure, which could be a result of participants either not noticing group members' intention to co-construct knowledge or their unwillingness to extend the discussion at all. In contrast, explicitly asking for an explanation of grammatical structure and posing thought-provoking questions was crucial to furthering the social co-construction of grammatical knowledge and the development of participants' higher order thinking skills.

In the first collaborative learning activity, one student from Group A tried to recast the question that his partner had just posed, but his partner failed to co-construct the knowledge by simply responding with "okay":

S1: What, what are you have breakfast tomorrow?

S2: What are you going to bave?

S1: Okay.

***Note:*** Excerpt from Group A discussion; S1=student 1, S2=student 2

In this interaction, although Student 2 "attempted" to clarify the question for deeper understanding, this attempt was abandoned in the sense that Student 1 did not respond to the question or acknowledge true understanding of the purpose of the recast of the grammatical form under investigation *going to have*. In the same group, Student 1 asked his partner how to form a question with *be going to* and Student 2 tried to help Student 1 by using *be going to* in his answer, as exemplified here:

S1: How are you can improve your English skills?

S2: I am going to…(*not finishing*)

S1: How are, (*pausing*). How to make a question for this? How are you…How can?

S2: I am going to.

S1: How are you going to (improve your English skills)? Okay. What is your answer?

S2: I am going to listen to music.

As shown in these two examples, recasting one's words as one of the common ways in which this group attempted to co-construct knowledge failed to extend the discussion of a grammatical structure. On the other hand, asking a group partner an explicit question about how to deal with a particular question extended the discussion to co-construct knowledge in the collaborative learning activity.

In the recorded activities, the students had a tendency to use "ok" and "yeah" to express agreement. Such expressions hindered the group's further exploration of knowledge. The following is one excerpt of a conversation from Group A in the second activity:

S1: Okay. After, after school, Mia babysits two young children in the neighborhood. I didn't know if it's correct or not.
S2: After school or after the school?
S3: After school.
S1: After the school?
S3: No, no, no. After school. No *the*.
S1: Okay. After school (*circling* the *in her textbook*). Then *the*.
S3: Yeah.
S1: Okay.

As shown here, the co-construction was likely to happen when Student 1 elicited an opinion about the sentence. Student 3 told the group that it should be "after school," not "after the school." A thought-provoking question, like "Why not 'after the school'?" would have spurred the group to dig into the grammatical rules. However, they stopped discussing why they needed to use "after school" rather than "after the school" when Student 1 responded "Okay". In Group B, however, one asked "why" in addition to expressing agreement to negotiate the meaning, as exemplified here:

S1: Gina sent me. (*sentence read simultaneously*)
S2: Gina sent me. (*sentence read simultaneously*)
S1: A text message.
S2: (*silence for a while*). W-h-y?
S1: We can't say, "Gina sent me the text message." We don't know which one. "A (*stressing*) text message when I got home."
S2: Hm…(*looking at the sentence, silent for a while*) Okay. Emily left (*pausing*) an empty water.

A member in the third group also posed a similar question, "Why don't you use…", to further extend the discussion. Thus, explicitly asking for an explanation and posing thought- provoking questions, such as "why?" and "why you don't use…?", were crucial for the students to further construct grammatical knowledge and move to next level of thinking. Simple comments "okay" and "yeah" usually ended the discussion for the segment without providing insight into whether or not the students truly understood the grammatical forms.

**Finding 3: Collaboration Efficiency Depends on the Design of Collaborative Learning Activities**

Students' development of higher order thinking skills was supported by the social co-construction in the collaborative learning activities. However, not all the groups in a collaborative learning activity participated in the co-construction of knowledge. With reference to Table 2, all of the groups participated in the co-construction of knowledge that supported higher order thinking skills in the second activity. However, only 60% and 75% of the groups engaged in social negotiation of meaning in the first and third activity, respectively. As shown in Table 2, the following aspects of collaborative learning may affect participants' co-construction of grammatical knowledge that supports higher order thinking development: 1) time; 2) type of collaborative learning activity; 3) group member(s); 4) the use of native language; and 5) teacher set-up and "push" to work together.

**Table 2: Descriptions of Three Collaborative Learning Activities**

| | **Collaborative Learning Activity #1** | **Collaborative Learning Activity #2** | **Collaborative Learning Activity #3** |
|---|---|---|---|
| Percentage of groups that co-construct knowledge | 60% | 100% | 75% |
| Time | 12 minutes | 9 minutes | 3 minutes |
| Task | Complete the worksheet with "be going to" questions by asking and answering | Complete a grammar exercise in the textbook by circling the correct article | Correct sentences with errors involving articles. |
| Group Member(s) | 3 homogenous groups 2 heterogeneous groups | 1 homogeneous group; 2 heterogeneous groups | 2 homogeneous groups; 2 heterogeneous groups |
| Use of the Native Language | 1 group used native language | 1 group used native language to co-construct knowledge | 2 groups used native language to co-construct knowledge |
| Teacher Set-up and "Push" | The teacher emphasized that people use "be going to" to express future plans and modeled the activity. The students formed their groups by themselves. | The teacher just taught the use of articles and asked students to work with the student next to them. The teacher asked the students to think about why they chose that particular article. | The teacher reviewed uncountable nouns, countable nouns, and articles. The teacher helped students to form groups and asked them to think about the reasons why the article was used incorrectly in each sentence. |

***Note***: "Push" here means the extent to which the teacher required the students to work together to solve a problem or complete a task.

Among the three activities, the second type of collaborative learning activity may be the best to support students' development of higher order thinking skills via co-construction of knowledge. The first activity of asking and answering questions, however, provided the least opportunity for the students to reason the use of "be going to" in sentences. The duration of the second activity allowed students to delve into each sentence and talk about the reason why they chose a particular article. In the third activity, the teacher asked students to think about why the article was used incorrectly, which enabled the students to co-construct knowledge. However, the short time in the third activity may have caused students to focus more on correcting the sentences without discussing the reasons why the article was used incorrectly. In the interview, the participants were asked to recognize the aspects of collaborative learning that may influence their understanding of grammar. These aspects were classified into six categories: group member(s), type of collaborative learning activity, the use of native language, teacher's group work set-up and "push" to work together, size of group work, and learning style. *Figure 1* shows each aspect as mentioned by the percentage of interviewees. Sixty-seven percent of the students pointed to group member(s) as an important factor that influenced whether a collaborative learning activity supported higher order thinking skills. Forty-four percent of the interviewees stated that the type and the teacher's set-up of collaborative learning activities also played a crucial role in whether these activities supported learners' higher order thinking skills. Other important factors,

including the use of native language, time, size of group work, and learning style, were also found to be important for teachers to consider when designing a collaborative learning activity that aims to support ESL learners' development of higher order thinking skills.

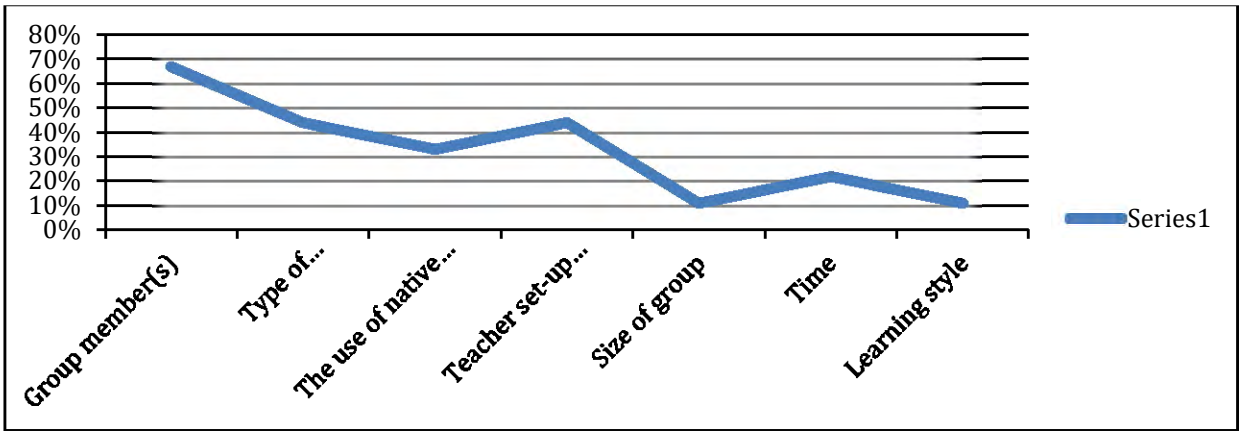



*Figure 1.* Percentage of the interviewees mentioning each influencing factor

Aspects of collaborative learning in group activities included, but were not limited to, time, design and purpose of the collaborative learning activity, the use of native language, and teacher set-up and "push" to work together. These impacted the collaborative learning opportunities in the group work tasks that supported the learners' higher order thinking skills.

## Pedagogical Implications

### *Implication 1: ESL Grammar Teachers Should Balance Grammar Instruction with Both Individual Leaning and Collaborative Learning Activities*

This study revealed that ESL learners' higher order thinking skills emerged out of effective negotiation of meaning in the collaborative learning activities such as grammar explanations and illustrations with personal examples or sentences. Applying the grammatical knowledge into practice is more important than being told by the teacher how to use the grammar. In other words, ESL grammar students should also have the opportunities to explain and illustrate the target grammar points with their examples or sentences, compare and contrast different grammar points or sentences, and present the specified grammar points.

As shown in this study, ESL learners in collaborative learning activities may succeed in co-constructing their knowledge and move forward to the next level, or fail to co-construct knowledge. This finding can inform ESL grammar instructors and ESL program directors to balance their teaching approaches. In other words, they should incorporate the teaching approaches of both collaborative learning and individual learning to promote students' learning because social co-constructions of knowledge is not guaranteed in all the collaborative learning activities. Providing ESL students the opportunity to work collaboratively with group members along with the opportunity to work individually can proximally enhance their grammar learning outcomes and higher order thinking skills as well.

### *Implication 2: ESL Grammar Teachers Should Start Collaborative Learning with Teaching ESL Learners the Academic Language to Effectively Co-construct Knowledge*

As shown in the finding, some students failed to negotiate meaning simply because they did not know the importance of collaborative learning. ESL grammar instructors could explicitly inform their students that the social negotiation of meaning in collaborative learning activities is very important for them to delve into grammatical knowledge and develop their thinking level. Another reason attributed to the failure of social co-constructions in collaborative learning might be that those ESL students lacked the academic language to collaborate with others.

Without the knowledge of how to ask thought-provoking questions, for example, students are likely to lose the opportunity to discuss and dig into the target grammar point. Thus, some academic language —such as how to agree/disagree with others, how to pose thought-provoking questions, how to check their peer's understanding— should be taught before or during the instructors embed collaborative learning activities into their lessons.

***Implication 3: ESL Grammar Teachers Should Tailor Collaborative Learning Activities Based on Their Students' English Proficiency and Interests***

With the goal of promoting students' grammar learning outcomes and higher order thinking development, ESL grammar instructors should tailor collaborative learning activities based on their students' English proficiency and interests. For a beginning level ESL grammar class, guided questions should be included when they discuss grammar exercises within a group. For instance, when asking students to choose the correct article for a sentence, grammar instructors are expected to provide some guided questions as follows: 1) What article do you choose for this sentence?; 2) Why do you choose that article (i.e., *an*) instead of other articles (i.e., *a, the*)?; 3) What if I want to create a sentence with *a* or *the*? Such guided questions scaffold students to apply, analyze, and create the target grammatical knowledge. It would not be hard to imagine the effectiveness of the collaborative learning activities if their interests are also considered. In other words, the grammar exercise on articles (*a, an, the*) that they need to deconstruct in the collaborative learning activity could be contextualized within a topic of high interest to the students. Such a collaborative learning activity provides students with the opportunity to apply, analyze, and create the grammatical knowledge, which is beneficial to both their grammar learning outcomes and their cognitive development.

Interviewing classmates with a particular grammatical point might work well for an intermediate ESL grammar class. For example, when tackling the simple past tense and the past continuous tense, grammar instructors could ask students to interview a partner about his/her last vacation. This collaborative learning activity allows ESL learners to consider the function, meaning, and form of the target grammar, apply the grammar into sentences, and exchange feedback immediately when disagreements emerge. When students present their interview, the whole class has another opportunity to question and discuss the similarities and differences between the simple past tense and the past continuous tense. It is safe to say that the students involved in such a collaborative learning activity have longer retention of the target grammar and build on their higher order thinking development.

Students with higher English proficiency have the ability to express their ideas and opinions more thoroughly in spoken or written form so they could be encouraged more to apply, illustrate, and present the undergoing grammar. Thus, for advanced students, ESL grammar instructors could incorporate more independent collaborative learning activities in their classrooms such as Information Gap (Richie, 2020), Gallery Walk, Jigsaw ("Jigsaw", 2020), and Snowball Writing (Hamer, 2019). Gallery Walk is a collaborative learning activity in which students work together to complete a task, walk through the classroom, and listen to other groups' grammar presentation. When teaching adjective clauses, grammar instructors could ask students to work in groups to write about their favorite vacation spot and then walk through the classroom to discuss the use of adjective clauses in their writing. By learning adjective clauses in such way, ESL learners may excel in overall English learning and higher order thinking.

***Implication 4: ESL Grammar Teachers Should Fully Consider Aspects of Collaborative Learning Activities and Create Appropriate Collaborative Learning Activities***

The overall design of a collaborative learning activity could also influence ESL learners' co-construction of knowledge and further affect their development of higher order thinking skills. The time allotted to complete a collaborative learning activity could, to some extent, determine how in-depth a group discussion becomes. When given sufficient time to think, students could dig into a question and extend the conversation with their group members. However, when given a very short time, they only discuss questions in more superficial ways. The *type* of collaborative learning activity also had a great impact on the quality of the social co-construction of knowledge in a collaborative learning activity. For example, the first activity, which was to ask and answer questions with *be going*

*to*, may not be demanding enough for the students to deeply explore the use of *be going to*, even though the participants were given 12 minutes to complete the task. The teacher's set-up and "push" of group work was another significant factor influencing whether a collaborative learning activity supported learners' higher order thinking skills. When the teacher taught or reviewed the grammar structure and modeled the collaborative learning activity to prepare the students for the activity, the students were more engaged in the social co-construction of the knowledge and facilitated each other's progress. Moreover, the teacher's "push," or encouragement to work collaboratively to delve into knowledge, also drove the students to think more deeply and develop their cognition. It is important for instructors to note that they need to help students form groups with students from different cultures, though sometimes the opportunity to use their native language may help students' learning. Aspects of collaborative learning such as time, purpose of the collaborative learning activity, use of native language, and teacher set-up and "push" to work together all influence the effectiveness of a collaborative learning activity and thus should be carefully considered when grammar instructors create collaborative learning activities.

## Conclusion

In the era of communicative language teaching, ESL grammar instructors frequently attempt to incorporate collaborative learning in their classrooms. The prerequisite knowledge for ESL grammar instructors in implementing collaborative learning is how collaborative learning supports ESL learners' development of higher order thinking skills. Social co-constructions of meaning in collaborative learning activities were found in this study to be effective in deepening students' understanding of particular grammatical knowledge when the activities themselves integrated certain criteria such as provision of time, clear directions, and learning expectations that went beyond exchanging answers and entailed thinking deeply about meaning and forms. In other words, collaboration and interactions should be used as a means of both grammar learning and higher order thinking development. ESL grammar teachers should create more opportunities for their students to use a particular grammar structure, explain grammatical knowledge to others, illustrate examples to others, and listen to others' explanation and analysis of a grammar structure in their classrooms. By doing so, negotiation of meaning is more likely to occur and thereby support the learners' development of higher order thinking skills.

To better support ESL learner's grammar learning and development of higher order thinking skills, ESL grammar teachers also need to design effective collaborative learning activities. In addition to conventional grammar activities, such as circling the correct article or correcting sentences with errors, ESL grammar teachers could ask students to collaborate on a writing assignment using a target grammar form and then explain the rules they applied in their product. They could also ask students to collaborate on a reading assignment and then illustrate when and how a target grammar form is used in the reading article. Viewing collaboration as a means to grammar learning and students' development of higher order thinking skills as a goal of grammar learning may inspire ESL grammar teachers to create collaborative learning activities that maximize effectiveness and the quality of social co-constructions in collaborative learning.

As shown in this study, however, some students succeeded in co-construction of knowledge while others did not take advantage of the opportunities provided. This could be simply because the student may not have had the language to be able to engage in this type of social co-construction of knowledge for learning. In order to maximize the potential for the social co-construction of knowledge built into the collaborative learning activities, ESL grammar instructors should explicitly teach students academic language, such as how to agree and disagree with others, how to check for understanding, and how to appropriately ask thought-provoking questions. The failure of co-construction of knowledge during collaborative learning may also be a result of the variables of the collaborative learning activity, such as number and diversity of group member(s), time, type of collaborative learning activity, native language usage, size of group, and teacher set-up and "push." ESL grammar instructors should prepare their students well for a collaborative learning activity by giving clear directions and expectations, modeling the activity, and helping form groups. They also need to give sufficient time for ESL learners to explore and delve into the knowledge they are intended to acquire in a collaborative learning activity. Furthermore, mingling learners from different cultures, without limiting their use native languages where possible, may be another strategy to involve ESL students in the co-construction of knowledge in a collaborative learning activity. ESL grammar instructors are also

encouraged to design and integrate different types of collaborative learning activities that are demanding enough for ESL learners to deeply explore certain grammatical knowledge. Thus, it becomes an important job for ESL grammar teachers to observe the moments when the students attempt to co-construct knowledge in order to diagnose what support their ESL students need.

This case study confirmed that collaborative learning supports ESL learners' development of higher order thinking skills in a traditional grammar classroom. Findings about social co-construction of knowledge in collaborative learning activities and aspects of collaborative learning (e.g., time, type of collaborative learning activity, and group set-up) which impact learners' development of higher order thinking skills are important insights for all ESL grammar instructors wishing to maximize their students' learning outcomes. The application of these findings in the grammar classroom will promote students' learning. The limited data sample and time of this study, however, may, to some extent, affect the understanding of how collaborative learning supports learners' higher order thinking skills. Future studies are suggested to explore this topic with a larger data sample over a longer period of time.

## Author

*Wangmei Zhou earned her Master of Education in TESOL, Literacy, and Culture from University of San Diego. She is currently working as an ESL teacher at Menaul School Qingdao and a freelance Language Teacher at Learnship. She is interested in understanding how people learn a second language and develop higher order thinking skills.*

### *References*

Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). *Taxonomy of educational objectives: Handbook I: Cognitive domain.* New York, NY: David McKay.

Bremer, C. D., Vaughn, S., Clapper, A. T., & Kim, A. (2002). Collaborative strategic reading (CSR): Improving secondary students' reading comprehension skills. *Research to Practice Brief, 1*(2), 1-2.

Chapman, C., Ramondt, L., & Smiley, G. (2005). Strong community, deep learning: Exploring the link. *Innovations in Education and Teaching International, 42*(3), 217-230.

Commander, M., & de Guerrero, M. M. (2013). Reading as a social interactive process: The Impact of shadow-reading in L2 classrooms. *Reading in a Foreign Language, 25*(2), 170-191.

Dede, C. (1990). Imaging technology's role in restructuring for learning. In K. Sheingold & M.S. Tucker (Eds.) *Restructuring for learning with technology* (pp. 49-72). New York: Center for Technology in Education, Bank Street College of Education, National Center on Education and the Economy.

Dillenbourg, P. (1999). What do you mean by "collaborative learning"? In P. Dillenbourg (Ed.), *Collaborative learning: Cognitive and computational approaches* (pp. 1-16). Amsterdam, NL: Pergamon, Elsevier Science.

Forehand, M. (2010). Bloom's taxonomy. *Emerging Perspectives on Learning, Teaching, and Technology, 41*, 47.

Hamer, B. (2019, March 19). *Snowball writing: Collaborative writing activity.* Presto Plans. Retrieved from https://prestoplans.com/2016/09/20/snowball-writing-collaborative-writing-activity/

Inoue, N. (2012). *Mirrors of the mind: Introduction to mindful ways of thinking education. Educational psychology: Critical pedagogical perspectives. Volume 19.* New York: Peter Lang.

*Jigsaw | Classroom strategy.* (2020, March 13). Retrieved from https://www.readingrockets.org/strategies/jigsaw

Klingner, J. K., & Vaughn, S. (2000). The helping behaviors of fifth graders while using collaborative strategic reading during ESL content classes. *TESOL Quarterly, 34*(1), 69-98.

Lamon, M., Reeve, R., & Scardamalia, M. (2001). Mapping learning and the growth of knowledge in a knowledge building community. Paper presented at the *American Educational Research Association Meeting* 2001. Seattle, Washington. Retrieved July 2006 from http://ikit.org/lamon/mapping.html

Lan, Y. J., Sung, Y. T., & Chang, K. E. (2007). A mobile-device-supported peer-assisted learning system for collaborative early EFL reading. *Language Learning & Technology, 11*(3), 130-151.

Lehtinen, E., Hakkarainen, K., Lipponen, L., Rahikainen, M., & Muukkonen, H. (1999). Computer supported collaborative learning: A review. *The JHGI Giesbers Reports on Education, 10.*

Lewis, A., & Smith, D. (1993). Defining higher order thinking. *Theory into Practice, 32*(3), 131-137.

Ma, A. (2009). Computer supported collaborative learning and higher order thinking skills: A case study of textile studies. *Interdisciplinary Journal of E-Learning and Learning Objects, 5*, 145-167.

MacGregor, J.T. (1990). Collaborative learning: Shared inquiry as a process of reform. In Svinicki, M.D. (Ed.), *The changing face of college teaching*, New Directions for Teaching and Learning No. 42. San Francisco; USA, Jossey-Bass Publishing

Meyer, K. E. (2010). A collaborative approach to reading workshop in the middle years. *The Reading Teacher, 63*(6), 501-507.

Momtaz, E., & Garner, M. (2010). Does collaborative learning improve EFL students' reading comprehension. *Journal of Linguistics and Language Teaching, 1*(1), 15-36.

Richie, J. (2020, August 28). *How to use information gap activities for authentic communication.* Retrieved from https://everydayesl.com/blog/2017/11/28/how-to-use-information-gap-activities-for-authentic-communication

Surgey, G. (2012, September 15). *Bloom's taxonomy: A practical approach for deeper learning.* Retrieved from http://www.pedagoo.org/author/garethsurgey/

Vygotsky, L. S. (1978). *Mind in society. The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

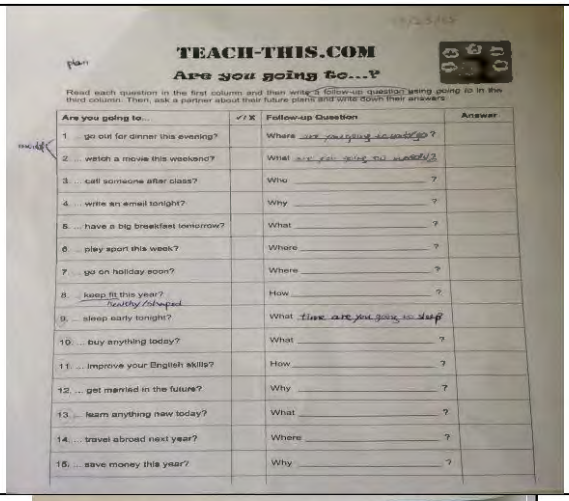
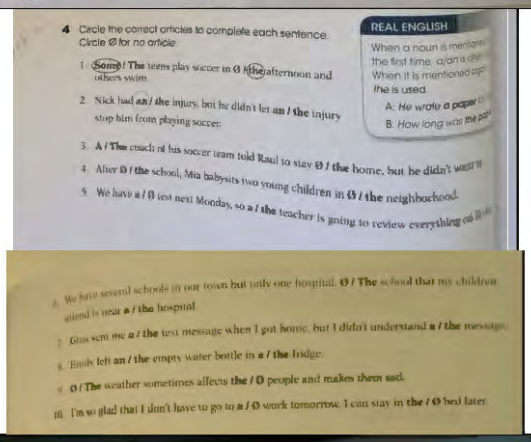
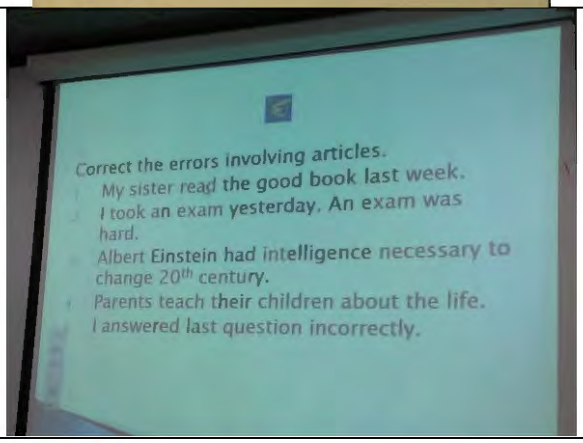
Wiseman, C. S., & Belknap, J. P. (2013). Wikis: A knowledge platform for collaborative learning in ESL reading. *TESOL Journal, 4*(2), 360-369.

Wright, L., Zyto, S., Karger, D., & Newman, D. (2013). Online reading informs classroom instruction and promotes collaborative learning. *Journal of College Science Teaching, 43*(2), 44-53.

## Appendix A
## Interview Guide for Collaborative Learning and Higher Order Thinking skills

What do you think is the purpose of group work?
How do you think group work supports your grammar learning?
How do you think group work doesn't support your grammar learning? (Why do you think it doesn't support work)
What kinds of group work do you enjoy?
What kinds of group work do you dislike?
What kinds of group work help you learn grammar? How does it help you learn?
What kinds of group work do not help you learn? (Why?)
How do your classmates help you learn a grammar structure better?
What do you think are the reasons that students do not participate in the group work in our grammar class?

## Appendix B
## The Recorded Collaborative Learning Activities

| | |
|---|---|
| Activity#1: Worksheet of *Be Going To* |  |
| Activity#2: Grammar Exercise 4 |  |
| Activity#3: Correcting Sentences |  |