



Peer Interaction as a Bridge to Critical Thinking for Chinese EFL Learners

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Abstract. There is a growing emphasis on critical thinking skills for English learners in Chinese universities. This paper intends to study the effects peer interactions have on the improvement of students' argumentative structure in written work. Peer interactions are organized under the teacher's guidance throughout the 16-week semester, and the data are collected from the tests at the beginning and the end of the semester. Indicator words of reasoning, conclusion, logical order, and intensifier are filtered out through the wordlists produced by AntConc. The analysis of the data reveals the progress students have made in terms of more inclusion of alternate views, clearer marking of the conclusion, and more precise expression of opinions at the end of the semester.

Keywords: peer interaction · critical thinking · indicator words · argumentation

1 Introduction

Peer interaction is a major classroom activity and favored by many foreign language teachers. Peer interaction, together with teacher-student interaction, benefits language learners in terms of getting more practice and steady improvement in language abilities [1]. In addition, cooperative learning would promote cognitive development [2] and higher achievement of cognitive reasoning strategies compared with competitive and individualistic learning [3].

Studies [3, 4] have shown the close links between peer interaction and critical thinking skills. Critical thinking skills are often cited not only by educational institutions but also enterprised employers as one of the most important abilities among college students. Previous studies have revealed the research results in various ways, ranging from experiments of shorter sessions or virtual communications [5]. This paper intends to conduct a study on the relationship between peer interactions in classroom and improvement in critical thinking skills in writing output.

2 Literature Review

2.1 Current Studies on Peer Interaction in China

Scholars in China have studied peer interaction from various perspectives. Xu et al. [6] investigated the patterns of small-group interaction in college English classrooms and

identified four patterns: collaborative pattern, alternate pattern, dominant / passive pattern and expert / novice pattern. Li [7] studied the features of scaffolding in peer collaboration of a writing task, including providing feedback, confirmation and comprehension check, and clarification request. While Xu [6] and Li [7] mainly based their studies on the linguistic output during peer interaction, Hai [8] investigated the relationship between peer interaction and classroom anxiety according to the analysis of questionnaires. She found that peer interaction could reduce students' anxiety and encourage participation in classroom activities.

2.2 Peer Interaction and Critical Thinking Skills

The notion of critical thinking encompasses a wide range of skills, and some scholars even present a list of more than one hundred specific subskills [9]. This study intends to focus on a more general perspective, i.e. how the argumentation is achieved by lexical means.

Kuhn et al. study [10] revealed a relationship between peer interaction and critical reasoning. After a five-week-period peer discussion on a particular topic, the participants demonstrated more inclusive views and obvious improvement in critical reasoning. A longer period of exercises showed the peer interactions had an impact not only on students' dialogues but also on written work [11]. Both studies are conducted under a restricted circumstance when peer discussions are centered on a specific topic or project.

Our research aims to try peer discussion on a variety of topics in the reading class of university students, and analyze the lexical means in the support of argument structure in the tests.

As described above, the studies in China were oriented towards peer interaction itself. The linguistic data collected during peer interaction were used as a means to study how peer interaction works, which indicated that peer interactions were treated as a product. In our paper, we intend to put peer interaction in the position of a process, and investigate the effects it exerts on students' linguistic ability, the expression of argumentation in particular. The practice of peer interactions in our study is conducted in Reading Class when EFL learners read a variety of topics, in contrast to restricted topics in previous studies [10, 11]. Our research questions are:

- (1) Does the classroom peer interaction contribute to the argumentative development in written task?
- (2) How is the argument structure represented with lexical means in written task?

3 Research Method

3.1 Participants

The study was carried out among 28 English majors in a Chinese university over one academic semester which lasted 16 weeks. Among the 28 participants, there were 22 girls (78.6%) and 6 boys, aged between 18 and 20.

3.2 Design

The data came from the tests in the reading class for English majors in the second semester. Based on the Chinese teaching tradition in high school, peer interaction is an unlikely characteristic in English class. Thus during the first semester, students were helped to develop the habit of interaction and discussion in reading class, as Anderson [12] suggested that “peer-based component ... would have to be introduced gently”. At the end of the first semester, students were supposed to have been used to cooperative learning. Reading class was given once a week, with 15 min or so devoted to peer interactions during the two-hour session. The peer interactions mainly focused on the discussions of the reading passages, under the guidance of the comprehension questions assigned by the teacher before class. This group discussion activity enabled the students to get involved in the dialogic interactions while they negotiated their point of view.

3.3 Data Collection

Tests were set up to evaluate students' interpretation and reasoning abilities, two essential aspects concerned with critical thinking. During tests, students were asked to read the passage at the standard speed required by the national teaching syllabus for university English majors and give short answers to the questions on the passage. The tests were arranged across the semester so that the students should be used to this type of test assignment and give natural responses to the test questions. We have collected the test answers of the initial and final tests at the semester, for each time the students answered two “why-questions”. The answers of the 28 students were pooled together for each test, the spelling mistakes in the script were corrected, and the two data sets were loaded into AntConc (Version 3.5.8) to get wordlists. At the beginning of the semester, the answers collected consist of 3,168 tokens and 532 types (Data 1), and at the end of the semester the answers collected consist of 4,566 tokens and 780 types (Data 2).

4 Results and Discussion

Students' answers to comprehension questions in reading class are relatively shorter than an essay. Even though students have given longer answers at the end of the semester, as there are more tokens in Data 2, it is still not feasible to look for a fully-developed argumentation as that of in a writing assignment in writing class. Thus we try to identify the indicator words, as suggested by Neil Browne [13], which indicate reasoning and conclusion, logical order, and intensifiers from our data. The indicator words are put in Table 1 with frequencies recorded in the brackets. Then the frequencies of indicator words in our data are mapped in scatter plots which could demonstrate more clearly the components of data than bar graphs do, as shown in Figs. 1 and 2.

4.1 Words for Reasoning and Conclusion

In Fig. 1, data 2 shows a greater variety of words used to express reasoning and conclusion process in students' answers. Table 1 reveals the changes of students' vocabulary expressions in some detail. Students tend to use “because”, “reason”, “however”,

Table 1. Indicator words/expressions and their frequencies

	Data 1	Data 2
reasoning and conclusion	because (of)(55), reasons(s)(6), however(3), (al)though / even though(10); therefore(1), so(9)	because (of)(53), reason(6), however(11), (al)though(4), what’s more(1); therefore (4), in conclusion (1), so(33)
logical order	first(ly)(6), second(ly)(6), finally(1)	first(1), second(1), third(1), finally(2), at last(1)
intensifiers	also(10), just(3), likely(3), in fact(2)	also(17), just(14), in fact(1), actually(2), really(2), totally(1), surely(1), strongly(1), maybe(5)

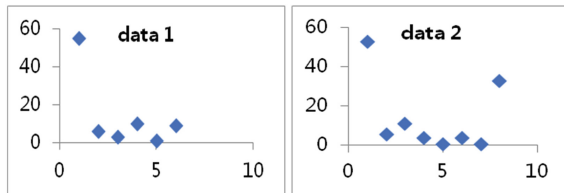


Fig. 1. Words for reasoning and conclusion

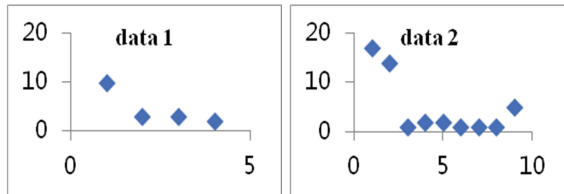


Fig. 2. Intensifiers and downtoners

“though” to argue for their point throughout the semester. The frequency of “because” is much higher than the occurrence of other words in both data. A search of “Because” with case sensitive yields 77 results altogether. A careful reading of the data shows that 76 out of 77 “Because” are located at the beginning of the answer. It’s natural response to begin a short answer with “because” when the students face a “why-question”. Yet this tendency is expected to decrease when students are able to give longer answers and develop their reasons more fully and freely. Hopefully, Data 2 shows a slight drop of the frequency from 55 to 53. The use of “however” and “(al)though” signal a sense of inclusiveness of opinions more or less, though the frequencies of which don’t show any obvious increase in Data 2.

Data 2 also shows an increased use of “therefore” and “so”, and the appearance of “in conclusion”, both of which imply an awareness of marking out the conclusion part in an argumentation.

- (1) **Therefore**, his shyness had always held him back.
- (2) **In conclusion**, It's the change of her mood that affect the type of the song in the class.

Both (1) and (2) came from Data 2. It seems that the awareness of bringing the arguments to an apparent conclusion has come to take shape gradually.

4.2 Words for Logical Order and Words of Intensifiers

The indicator words for logical order in students' answers happen to be almost the same in two data set, but they occur with varying frequencies. It seems that students prefer to list their reasons in order and symbolize each reason with a number. A close look at the data indicates that there is a sharp decrease of the frequencies of indicator words for logical order in Data 2, the number of which has dropped 54% compared with Data 1. However, less indicator words of this type may not lead to the confusion of arguments presentation in Data 2. Students tend to resort to begin the explanation with "first" or "second" when there is an inadequate means to express otherwise. The striking increase of varieties in adverbial expressions in Data 2 has manifested an improvement in expressing the strength of opinions.

According to Table 1, the most obvious change between Data 1 and Data 2 took place in the use of intensifiers, and this change in higher frequency and more variety is also displayed in Fig. 2. Intensifiers, defined as "elements that are used with other expressions to indicate an intensification of the meaning denoted by the expression they modify" [14], can be classified into amplifiers and downtoners [15]. Amplifiers such as "really", "totally", "surely", "strongly" are used to increase the intensity of statement, expressing a firm and certain attitude towards the topic discussed.

- (3) His dreams are illusions in the spiritual world, they will **surely** disappear because of the difficult reality.
- (4) It makes this **totally** different result.

In addition, some downtoners including "maybe" and "just" have also occurred in Data 2, designating a lowering effect on the force of the expressions.

- (5) Gallaher **maybe** didn't have good manners, but he had the brave mind to have adventures.

Thus, the use of intensifiers and downtoners has illustrated an improvement in expressiveness in a way that attitudes and opinions are presented with more precision.

5 Conclusion

In our study, peer interaction is conducted as an approach to the comprehension of the passages in reading class, during which students get involved in the discussions of various topics. The improvements in the expression of reasoned arguments, a major element in critical thinking skills, prove the impacts peer interaction has had on written work. The comparison between Data 1 and Data 2 has shown mild progress in the organization

of argumentative structure. As Kuhn [5] has pointed out, “developing argument skills requires sustained and dense practice,” learning by peer interaction should be encouraged and repeatedly implemented.

The limitation of this study lies in the multiple indirect contributing factors in the development of students critical thinking skills. The English majors are also trained in other lessons such as writing or comprehensive reading, and individual efforts after class are possible contributors, too. The future research can make observations on the longer written work such as essays, in which the argumentations may develop more fully than the present data.

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