



## The Impact of Content-Based Language Instruction on EFL Students' Reading Performance

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### Abstract

Reading has always been regarded as an essential skill in foreign language learning, especially for college students. According to previous studies, relative effectiveness is found between the use of Content-Based Language Instruction (CBLI) and reading comprehension. CBLI has been found effectively in developing students' reading comprehension through the topics chosen grounded academic discipline-based and the systematic use of content-based instructional strategies. However, CBLI has been a controversial issue because teachers lack specific linguistic knowledge and skills to help students deliver a language focus on reading. Since the utilization of CBLI is a controversial issue, the purpose of this study attempted to investigate the effect of CBLI on EFL (English as a Foreign Language) students' reading comprehension through the design and implementation of a content-based literature curriculum. Subjects in this study were 101 sophomores majoring in English at I-Shou University in southern Taiwan. *T*-test, ANOVA, and semi-structured interview techniques were used to examine students' attitudes and effect of CBLI on reading performance. Results indicate that the utilization of content-based language instruction in the literature class could enhance students' reading comprehension as well as critical thinking ability. Interview results further support the experimental findings, providing in-depth information about the conditions of CBLI use. Based on the research results of this study, pedagogical implications and suggestions for future study are discussed.

**Keywords:** Content-based language instruction, EFL reading comprehension, Literature course

### 1. Introduction

In recent years, increased attention has been given to the teaching of reading in foreign language acquisition. Over the years, numerous approaches to teach reading and to examine the effectiveness of these approaches have appeared. According to previous studies, relative effectiveness is found between the use of content-based language instruction (CBLI) and reading development (Crawford, 2001; Glenn, 2005; Kasper, 1994a; Kasper, 1994b; Kasper, 1995b; Kasper, 1997a; Kasper, 1997b). Many studies reveal that CBLI results in not only content learning (Andrade & Makaafi, 2001; Daryl, 2006; Kasper, 1994a; Winter, 2004), but also improving students' language acquisition (Daryl, 2006; Diaz et al., 2002; Kasper, 1994a; Kasper, 1997a; Smoke & Haas, 1995), as well as students' reading comprehension through the topics chosen grounded academic discipline-based (Kasper, 1994a; Kasper, 1995a; Kasper, 1995/96; Kasper, 1997a) and the systematic use of content-based instructional strategies (Glenn, 2005; Kasper, 1995b). Just like the other teaching approaches, the perspective toward the effect of CBLI is also various. The doubt that teachers may lack specific linguistic knowledge and skills to help students deliver a language focus on reading is the main concern (Creese, 2005).

#### 1.1 Purpose of the Study

Since the utilization of CBLI in enhancing EFL students' reading comprehension is a controversial issue, the purpose of this study was to investigate the effect of CBLI on EFL students' reading performance. More specifically, four research

questions were proposed as follows:

- 1). Can the application of content-based instruction enhance students' general English reading comprehension?
- 2). Can the application of content-based instruction enhance students' academic English reading comprehension?
- 3). Is there a significant difference among students with different proficiency levels on the improvement of general English reading ability?
- 4). What are students' attitudes toward CBLI?

## 2. Literature Review

### 2.1 Rationale of CBLI

The term of content-based language instruction refers to an approach to integrate content and language learning (Brinton, Snow & Wesche, 1989). CBLI is supported by the second language acquisition research. One central principle which supports the theory of second language acquisition is that "people learn a second language more successfully when they use the language as a means of acquiring information, rather than as an end in itself" (Richards & Rogers, 2005, p. 207). According to Met (1991), natural language acquisition occurs in context, which is never learned divorced from meaning, and CBLI provides a context for meaningful communication to occur. To further understand the essential characteristics and instructional implications of CBLI, three models of CBLI, including the theme-based model, the sheltered model, and the adjunct model, as well as its effect on reading enhancement are discussed below.

### 2.2 Models of CBLI

#### 2.2.1 Theme-Based Model

Theme-based language course is structured around topics or themes. Major principles underlying theme-based model contain automaticity, meaningful learning, intrinsic motivation, and communicative competence (Brown, 2001). Its primary purpose is to help students develop second language competence within specific topic areas. The topics chosen can be several unrelated topics or one major topic. Language instructors are responsible for language and content instruction (Brinton et al., 1989). The theme-based model is mainly employed in adult schools, language institutions, and all other language programs. It is suitable for low to advanced learners.

#### 2.2.2 Sheltered Model

Sheltered instruction is an approach to use second language acquisition strategies while teaching content area instruction. In the sheltered model, an academic subject matter is taught by content teachers in content areas, such as science, mathematics, history, or literature via using language and context to make the information comprehensible. Characteristics of sheltered instruction include comprehensible inputs, warm and affective environments, high levels of student interaction, student-centered, hands-on tasks, and comprehensive planning (Echevarria & Graves, 2003). In the sheltered model, content courses are taught in the second language by a content area specialist to a group of ESL learners having been grouped together (Richards & Rogers, 2005) or a language teacher with content-area knowledge (Gaffield-Vile, 1996).

#### 2.2.3 Adjunct Model

Adjunct model constitutes a more sophisticated pattern for the integration of language and content. It aims at connecting a specially designed language course with a regular academic course. In the adjunct model, students enroll in two linked courses simultaneously—a content course and a language course. The content instructor focuses on academic concepts while the language instructor emphasizes language skills using the content-area subject as a background for contextualizing the language learning process (Brinton et al., 1989). The rationale of this model is that the linked courses can assist students developing academic coping strategies and cognitive skills which can be transferred to other disciplines. The adjunct model is suitable for high intermediate to advanced levels (Brinton et al., 1989).

In summary, these three models of CBLI share a number of common features. First, authentic tasks and materials are used in the three models. Second, they all share the principle that helps students deal with the content materials. They also differ in several ways, including the course aim and learning objectives, instructor's roles, students' proficiency levels, and evaluation approaches.

### 2.3 Researches on Content-Based Language Instruction and Reading Comprehension

There is abundant evidence which is supportive of CBLI in promoting EFL students reading comprehension; the major reason is the use of academic discipline-based topics as content in CBLI. A study conducted by Kasper (1997a) was to assess the effect of CBLI and the subsequent academic performance of ESL students. Subjects were 152 ESL students at Kingsborough Community College – 73 students were assigned to the experimental group and 79 to the control group. The major difference between students in these two groups was in the nature of the textual materials used in instruction. The material that the content-based group used was topic-related to their academic discipline; while the material that the

non-content-based group used was not grounded in any specific academic disciplines, but rather covered a variety of topics. The result indicated that students in the experimental group obtained significantly higher average scores than did students in the control group, with the overall average score of 81% for the experimental group and 68% for the control group. As to the subsequent effect of CBLI, after completing the first year's ESL course, the students in the subject sample went on to a number of different classes taught by a larger pool of instructors than was present at their first year. In all four semesters of this study, the result indicated that students in the experimental group obtained significantly high grades on the reading assessment examination than did students in the control group, with the overall average score of 75% for the experimental group and 67% for the control group. The result suggests that students accumulated adequate background knowledge on topics when they continually dealt with academically-oriented topics. The accumulation of the background knowledge could facilitate the development of reading comprehension. These findings are closely supported by Kasper's (1994a, 1995a, 1995/96, 1997a) and Parkinson's (2000) studies, showing that students' reading comprehension can be improved by using academic discipline-based topics. Through the discipline-based topics, students become aware of how to construct meanings from information stored in their memory, how to extract relevant information from the larger text contexts, and how to filter out redundant or irrelevant information. The conclusion of those studies is that the use of academic discipline-based topics as content in CBLI can accumulate students' background knowledge, construct schemata, increase metacognition of the reading process, and lead to the efficient use of reading comprehension strategies.

Besides the factor of using academic discipline-based topics as content contributing to the effect of CBLI on students' reading comprehension, abundant evidence shows that students' development of reading comprehension is related to the systematic use of content-based instructional strategies. A study conducted by Glenn (2005), the purpose of her study was to examine the effect of English literacy proficiency, academic English literacy, and content literacy of 30 Spanish-speaking students enrolled in a bilingual 10<sup>th</sup> grade Global Studies course in a public school in New York City through the sheltered content approach. The result indicated that students' English language reading score increased with the mean score of the post-reading 65.87, comparing to the mean score of the pre-reading 18.4. The result also showed the gains on students' academic English reading with the mean score of pre-reading 33.65, comparing to the mean score of post-reading 58.2. Glenn concludes that curriculum delivered through systematic use of content-based instructional strategies, including explicit reading strategies instruction, explicit language objective introduction, explicit core vocabulary introduction, activating background knowledge and schemata, prior knowledge developing, scaffolded modified instruction through well-structured interaction and activities, and the use of authentic reading materials, helps students contextualize concepts and expand their reading skills. Such result is coherent with the previous study (Kasper, 1995b), indicating that the systematic use of content-based instructional strategies contributes to students' reading comprehension.

Despite the positive effects on CBLI, some scholars disagree that CBLI is an effective approach if teachers lack specific linguistic knowledge and skills to help students deliver a language focus on reading. A study done by Creese (2005) indicated that reading comprehension working in the content classroom is given little status because teachers lack specific linguistic knowledge and skills on CBLI. Data from a year-long ethnography in three London secondary schools was used to explore how teachers and students managed the content and language interface in a subject-focused classroom. The result showed that students often rejected a focus on the metalinguistic function, which was not relevant to subject learning. The major reason is that teachers are often unclear about the relationship between form and function in language nor make it working in the subject classroom, which results in CBLI as an ineffective approach in students' reading comprehension development. In fact, in the study conducted by Pawan (2008), data were derived from 33 content-area teachers while they were pursuing professional development in an American university classroom over 32 weeks. Survey findings in the study indicated that 38.5% of the content-area teachers felt that collaboration with their ESL teacher counterparts was necessary in CBLI because they do not feel equipped to undertake English language instruction and thus they rely on ESL teachers to provide assistance. In conclusion, those studies reveal that teachers' lack of linguistic knowledge and skills results in the ineffectiveness of CBLI on students' reading comprehension. Consequently, the present study aimed at examining the effect of CBLI on EFL students' reading comprehension via the employment of CBLI. It is assumed that EFL students' reading comprehension can be enhanced effectively after CBLI.

### **3. Methodology**

#### *3.1 Subjects*

The subjects in this study were 101 sophomores including 30 males and 71 females majoring in English at I-Shou University in southern Taiwan. Most subjects received formal English instruction for at least seven years. The subjects took English literature as a required course in the Fall 2008 academic year. Most of the subjects had received formal English instruction for at least seven years before conducting the study. The subjects were grouped into high, intermediate, and low level learners based on the simulated TOEFL reading scores; there were 50 items in total and subjects could get two points for each correct answer. The test results ranged from 10 to 82 points, with the mean of 44

and the median of 44. Thirty-six subjects (35%) whose scores ranged from 50 to 82 were labeled “high”; 33 subjects (33%) with scores from 48 to 38 were labeled “intermediate,” and 32 subjects (32%) with scores from 36 to 10 were labeled “low.”

### 3.2 Learning Contexts

Subjects in the present study received a 100-minute instruction per week, lasting for 14 weeks. In order to investigate CBLI on students’ reading comprehension, four short stories including *A Rose for Emily*, *The Chrysanthemums*, *Barn Burning*, *The Lottery*, and one poem *The Sick Rose* were selected from *An Introduction to Fiction, Poetry, and Drama* (Kennedy & Gioia, 2006) as the teaching materials. The reading curriculum, mainly applying the sheltered model, including course aims, objectives, and three steps of teaching approaches is elaborated as follows.

#### 3.2.1 Course Aims

The aims of the reading course were divided into two parts: content and language aims. The content aims included that (1) students could develop reading ability as well as lay the foundation for approaching and appreciating literature; (2) students could identify basic elements in reading literature, and (3) students would become interested in the literature world. The language aim included that students could read effectively and develop better reading strategies.

#### 3.2.2 Course Objectives

Based on the course aims, course objectives were made including (1) developing background knowledge of content; (2) acquiring key vocabulary of content; (3) identifying literary elements such as the plot, setting, themes and styles in order to enhance students’ reading comprehension; (4) arousing interest in content reading. Language objectives included (1) predicting the meaning of and rapidly solving unfamiliar words by using different types of cues; (2) reading for information, including identifying the topic, main ideas, stated and implied messages, and reading for details; (3) reading interpretatively including interpreting the author’s intention and attitude, and making critical thinking and judgments, and (4) acquiring reading comprehension strategies.

##### 3.2.2.1 Pre-Reading Stage

At this stage, the course designed focused on making connections with students’ background knowledge and prior learning experiences, and developing their academic vocabulary. Therefore, reading comprehension strategies in this stage were to stimulate students’ interests through identifying their background knowledge and incorporating it into new information. Involved activities contained (1) *author’s life* -- students were arranged in a small group to do research about the author’s life and work, and (2) *prediction* -- students predicted the content based on the title.

##### 3.2.2.2 During-Reading Stage

At this stage, the focus was to help students be aware of the meaning of the text. Reading comprehension strategies at this stage were to use different types of cues to solve unfamiliar words, parse complicated sentences, reread, annotate, and summarize strategies. Involved activities were employed as follows: (1) *listening centers* -- teachers offered the audiobook to students to listen; (2) *read alouds* -- teachers asked students to read for alternation. After students read aloud, teachers gave feedback on students’ pronunciation and emotional expressions, and (3) *scrambling exercise* -- teachers extracted the segment of the text and cut it into pieces, and then asked students to put the scrambled sentences in the right order.

##### 3.2.2.3 Post-Reading Stage

At this stage, students would try out new knowledge, and practice new skills supported by the teacher and peer feedback, leading to mastery. Activities designed aimed to practice and apply the language skills and content knowledge, which called upon students to integrate listening, speaking, and reading. Involved activities were prepared as follows: (1) *role-playing* and (2) *seeing a movie*.

### 3.3 Instrumentation and Procedure

#### 3.3.1 General Reading Comprehension Test

A pre-reading test was conducted during the first and the second week of the course to figure out the subjects’ reading proficiency level before instruction. After 14-week training, a post-reading test with the same test items was employed to investigate the learning outcomes. In consideration of a standardized language proficiency test with high validity and reliability (Perkin et al., 1989; Read, 2000), a simulated TOFEL reading test was adopted to examine students’ general reading comprehension.

#### 3.3.2 Academic Reading Comprehension Test

An academic reading comprehension pre-test was conducted during the first and the second week of the course to examine the subjects’ academic reading proficiency level. After 14-week instruction, a post test was employed to investigate the learning outcomes. The academic reading comprehension test produced by the researcher was used to

measure students' literal, interpretive, and critical reading comprehension. Fifteen multiple-choice items were designed based on a short story "Powder", written by Wolff Tobias. To reach content validity, the items of the test were evaluated by two professors in the subject matter area.

### 3.3.3 Semi-Structured Interview Technique

In order to explore in-depth information regarding subjects' attitudes toward the conditions of CBLI use, a semi-structured interview was employed in the study. The researcher randomly selected five advanced, intermediate, and low readers in the population pool as the interviewees to answer eight predetermined questions, which mainly focused on the subjects' past, present experiences, and their opinions of CBLI.

### 3.4 Data Analysis

Both qualitative and quantitative approaches were applied to evaluate four research questions: (1) Can the application of content-based instruction enhance students' reading comprehension? (2) Is there a significant difference among students with different proficiency levels on the improvement of general reading ability? (3) Is there a significant difference among students with different proficiency levels on the improvement of academic reading ability? (4) What are students' attitudes toward CBLI? A paired-sample *t*-test was used to compare the difference between pre- and post-tests of the general reading comprehension tests and the academic reading comprehension tests after the use of CBLI. The .05 level of confidence was used as the criterion level to determine the significant difference. Then, ANOVA was employed to investigate whether students' different proficiency levels have significant differences on their reading outcomes after employing CBLI. Finally, the semi-structured interview was conducted to transcribe, classify, and synthesize subjects' perceptions toward CBLI use.

## 4. Results

### 4.1 Research question 1: Can the application of content-based instruction enhance students' general English reading comprehension?

To examine the effect of CBLI on students' general English reading comprehension, a paired-sample *t*-test was employed to investigate if there is a significant difference between the pre- and post-test administered in this study. As shown in Table 1, the mean score of the pre-test was 43.9 ( $SD = 13.8$ ). After 14-week instruction, the mean increased to 56.2 ( $SD = 12.6$ ). The results demonstrate that there was a statistically significant difference between the pre- and post-test ( $p < .05$ ). In other words, the *t*-test result shows that the subjects' general English reading comprehension scored significantly higher in the post-test than that in the pretest. It is suggested that CBLI had a prominent effect in increasing students' general English reading comprehension.

[Insert Table 1 here]

### 4.2 Research question 2: Can the application of content-based instruction enhance students' academic English reading comprehension?

To examine the effect of CBLI on students' academic English reading comprehension, a paired-sample *t*-test was employed to determine if there is a significant difference between the pre- and post-test. As shown in Table 2, the pre-test mean score for academic English reading comprehension was 8.2 ( $SD = 2.2$ ); the mean increased to 9.1 ( $SD = 1.7$ ) after 14-week training. The result reveals that there was a significant difference between the pre- and post-test scores ( $p < .05$ ). The *t*-test shows that the subjects' academic English reading comprehension scored significantly higher in the post-test than that in the pretest.

[Insert Table 2 here]

### 4.3 Research question 3: Is there a significant difference among students with different proficiency levels on the improvement of general English reading ability?

A one-way ANOVA was conducted to investigate if there is a significant difference among students with different proficiency levels on general English reading development. As shown in Table 3, there was a significant difference among the three levels in general English reading post test, [ $F(2, 98) = 21.007, p = .000$ ].

[Insert Table 3 here]

Scheffe post hoc comparison procedure was further employed to examine multiple comparisons among the three-level means. As shown in Table 4, the result reveals that the high level learners ( $M = 65.22, SD = 12.33$ ) scored significantly higher than intermediate level learners ( $M = 53.21, SD = 10.25$ ) and low level learners ( $M = 49.25, SD = 8.88$ ) in the post-test scores. However, low level learners showed the greatest improvement on the reading scores (mean for pre-test = 28.38,  $SD = 7.59$ ; mean for post-test = 49.25,  $SD = 8.88$ , with the mean difference = 20.87), followed by the intermediate level learners (mean for pre-test = 43.09,  $SD = 2.74$ ; mean for post-test = 53.21,  $SD = 10.25$ , with the mean difference = 10.12), and then followed by the higher level learners (mean for pre-test = 58.39,  $SD = 7.02$ ; mean for post-test = 65.22,  $SD = 12.33$ , with the mean difference = 6.83). Such results indicate that students who had the poorest

reading ability seem to get the most benefits from content-based language instruction.

[Insert Table 4 here]

#### 4.4 Research question 4: What are students' attitudes toward CBLI?

According to the interview results, most participants hold positive attitudes toward the teaching of explicit reading comprehension strategies to facilitate their reading comprehension. For example, 13 out of 15 interviewees (86%) reported that content-based instruction helped them comprehend the content of the stories with fewer difficulties. The major reason is that students used to look up the unknown words in the dictionary when reading, but now they realize how to use different types of cues to acquire the meanings of unfamiliar words, such as analyzing words into various components from their roots, affixes, and suffixes, or figuring out word meanings based on their sound. Besides, students used to focus on grammar and sentence structure when reading, but now they know how to use contextual clues to read for general gist and main idea, not for details. Students even learn how to use information in the text to predict upcoming information to better comprehend the content of the story after teaching the reading strategies. According to students' perceptions, the results suggest that students' reading comprehension is improved through the teaching of explicit reading comprehension strategies.

Furthermore, 14 out of 15 interviewees (93%) agreed that a variety of activities done in the literature course helped them comprehend the story, lowered their anxiety, and gave them more confidence to finish reading the whole story. To illustrate more specifically, some participants expressed that they enjoyed the activities done in the literature class, especially doing the scrambling exercise for *The Sick Rose*. From the process of problem solving, students had a clear framework of the poem. Besides, the implied meaning of the poem and the author's point of view and tone were understood through the activity. Besides, students felt that the activity, such as watching a movie after reading approximately half of the short stories not only clarified and reinforced the main idea of the story, but also lowered their anxiety of heavy-load reading, so that they had more confidence to finish and understand the story by themselves. To sum up, the results show that students' reading comprehension is improved through a variety of activities done in the literature class.

In addition, it is found that some of the techniques characterizing sheltered instruction model of CBLI enhance students' reading comprehension and content understanding. Most students felt that the techniques the teacher used for lecture delivery helped them comprehend the story. Those techniques included slower speech, using simple sentence structure, building background knowledge to connect with students' learning experiences, and comprehensible inputs. Besides the gains on students' reading comprehension through the teaching of explicit reading comprehension strategies, comprehensible inputs, and a variety of activities done in the literature class, many psychological and pedagogical benefits, e.g., gaining critical thinking, self-confidence, high motivation, and low anxiety, are also found based on students' feedback.

Though most subjects hold positive attitudes toward the utilization of CBLI, there are still some voices against such an instruction. For example, some minority students reported that it is time-consuming when the complex core concepts were introduced in English. Those complex core concepts should be explained in Chinese with few words, but it might take more time for teachers to use different expressions to make students understand in English. In conclusion, a small group of students are against using CBLI because it is time-consuming to deliver some complex concepts in English instead of Chinese language.

## 5. Discussions and Implications

The purpose of this study was to investigate the effect of CBLI on EFL students' reading development through the design and implementation of a content-based literature curriculum. To examine students' attitudes and effect of CBLI on reading comprehension, *t*-test, ANOVA, and semi-structured interview techniques were used. According to the research results, students' general and academic English reading comprehension were improved via CBLI. As found from the interview results, this enhancement was achieved by the use of content-based instruction strategies, which include (1) the explicit instruction of reading comprehension skills; (2) teacher's comprehensible inputs, and (3) a variety of activities used in a meaningful context. Such results consist with the previous studies (Glenn, 2005; Kasper, 1995b), showing that explicit reading strategy instruction via the content area, comprehensible inputs, and activities done in a meaningful context contributes to the development of English reading comprehension. Those explicit reading comprehension strategies provide students with a concrete basis to enhance their reading comprehension. More specifically, the techniques used to deliver the content information contribute to comprehensible inputs, which facilitate students' understanding of the content. Based on the results, there is a need for teachers to modify their lecture delivering in order to make the content understandable for EFL students while promoting their English reading development. For example, teachers can use techniques such as slower speech and clear pronunciation, use of visuals and demonstrations, scaffolded instruction, targeted vocabulary development, and connections to student experiences to make content comprehensible (Echevarria & Graves, 2003). This practice is highly beneficial and should be encouraged

further within the curriculum design.

Second, regarding the differences among high, intermediate, and low students on general English reading comprehension, the finding of this study demonstrates that students with the low reading ability have the greatest improvement compared with high proficient level students. Such result supports the previous study (Glenn, 2005), indicating that poor readers benefit more on reading improvement than good readers. One reason to this effect could be explained that students with high reading ability were already good at using these reading comprehension strategies; they might not benefit a lot via the teaching of explicit reading comprehension strategies. However, students with low reading ability benefit more from CBLI because such an instruction might arouse students' awareness of using appropriate strategies in reading process and further improve their reading comprehension (Dole et al., 1991).

Third, although students' reading comprehension was the main focus of this study, the gains of students' critical thinking ability were also found in this study. CBLI has been regarded as an effective approach to improve students' language skills and develop critical thinking as well (Chapple & Curtis, 2000; Huang, 2003). The interview results of the study confirm that students made great gains in analytical and critical thinking ability and develop their language skills by using content-based language instruction, showing that students gain cognitive development via involving in a variety of thinking processes in a CBLI program. An additional benefit in this CBLI course was the increase of students' confidence, high motivation, and low anxiety in language learning. Such interview results are coherent with the previous studies (Stoller, 1999), indicating that many psychological and pedagogical benefits are promoted by utilizing CBLI.

Finally, some students reported that they experienced difficulties when some complex concepts were explained in English, even though the teacher had tried hard to make students understand in different ways. It is suggested to use native language in class for an alternative solution to the problem.

### 5.1 Limitations of the Study

Although the use of CBLI is a factor that contributes to the improvement on EFL students' general and academic English reading comprehension, there are several limitations in the research design. First, the subjects were only 101 English majors at I-Shou University, who might have a higher level of English proficiency and more opportunities to practice English than non-English majors. Therefore, the results of this study might not be generalized to all university students. Second, the genres of the reading selections were restricted to short stories and poems; as a result, the research findings may not be generalized to other reading genre, such as drama, fiction, etc. Third, this study was conducted over a short period of time, so the findings may be different from those of a similar study carried out over a long period. Finally, many other factors, such as the subjects' genders and individual differences, social background, and motivation were not taken into considerations. Thus, in interpreting the results, we should also bear in mind that those factors might have affected students' reading performance. In future research, it is recommended that larger and randomized subjects with other non-English majors or different educational levels should also join in the research, in order to increase the level of generalization and get a clearer picture of the effect of CBLI on EFL students' reading comprehension.

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Table 1. Pair-sample t-test results for students' general English reading performance

| General English Reading Performance | M    | SD   | t     | p     |
|-------------------------------------|------|------|-------|-------|
| Pre-test                            | 43.9 | 13.8 | - 6.5 | .000* |
| Post-test                           | 56.2 | 12.6 |       |       |

Note: \* p < .05, N=101

Table 2. Pair-sample t-test results for students' academic English reading performance

| <i>Academic English Reading Performance</i> | <i>M</i> | <i>SD</i> | <i>t</i> | <i>p</i> |
|---------------------------------------------|----------|-----------|----------|----------|
| Pre-test                                    | 8.2      | 2.2       | - 4.9    | .000*    |
| Post-test                                   | 9.1      | 1.7       |          |          |

Note: \*  $p < .05$ ,  $N=101$

Table 3. Results of ANOVA among high, intermediate, and low groups on general English reading scores

| <i>General English Reading Performance</i> | Sum of Squares | <i>df</i> | Mean Squares | <i>F</i> | <i>p</i> |
|--------------------------------------------|----------------|-----------|--------------|----------|----------|
| Post-test Scores                           |                |           |              |          |          |
| Between Groups                             | 4770.6         | 2         | 2385.28      | 21.007   | .000*    |
| Within Groups                              | 11127.7        | 98        | 113.548      |          |          |
| Total                                      | 15898.3        | 100       |              |          |          |

Note: \*  $p < .05$ ,  $N=101$

Table 4. Scheffe post hoc test for students' proficiency level and general English reading performance

| Level | <i>N</i> | Pre- <i>M</i><br>( <i>SD</i> ) | Post- <i>M</i><br>( <i>SD</i> ) | Level | Mean Difference | <i>p</i> | Scheffe |
|-------|----------|--------------------------------|---------------------------------|-------|-----------------|----------|---------|
| H     | 36       | 58.39<br>(7.02)                | 65.22<br>(12.33)                | I     | 12.01           | .000*    | H>I     |
|       |          |                                |                                 | L     | 15.97           | .000*    | H>L     |
| I     | 33       | 43.09<br>(2.74)                | 53.21<br>(10.25)                | H     | -12.01          | .000*    | I<H     |
|       |          |                                |                                 | L     | 3.96            | .329     | I>L     |
| L     | 32       | 28.38<br>(7.59)                | 49.25<br>(8.88)                 | H     | -15.97          | .000*    | L<H     |
|       |          |                                |                                 | I     | - 3.96          | .329     | L<I     |

Note:  $N=101$ ; \*  $p < .05$ . H=High Level Learners. I= Intermediate Level Learners. L= Low Level Learners.