Effects of Post-Reading Instructional Scaffolds on EFL Learners’ WebQuest Writing Performance

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This study investigated the effects of types of post-reading instructional scaffolds on university-level English as a foreign language (EFL) learners’ WebQuest writing performance. One hundred twenty students, randomly selected from 8 EFL classes at a Korean university, were randomly assigned to one of three treatment conditions: (a) online Instructional Conversation (IC), (b) online recitation, or (c) no post-reading instructional scaffold (i.e., control). After reading WebQuest texts, the online IC and online recitation groups received their treatments, using an Internet-based synchronous textual communication tool as a medium for communication. The control group, on the other hand, did not receive any post-reading instructional scaffold and continued to read the WebQuest texts for the same amount of time that the IC and recitation groups received their treatments. Results showed that the online IC group outperformed one or both of the other two groups in overall WebQuest writing performance and in the specific areas of overall writing quality and content. Implications are discussed in both theoretical and practical terms.

Key words: WebQuest, Instructional Conversation, recitation, writing, instructional scaffold (or assistance)

1. INTRODUCTION

Since their inception in 1995, WebQuests have been gaining popularity in education in general and in language education in particular. A WebQuest, an inquiry-oriented lesson format which involves learners in using Web-based information, is designed to promote learners’ thinking at the levels of analysis, synthesis, and evaluation (Dodge, 2001). Since it is structurally organized around a meaning-focused, authentic task, a WebQuest, when used in the context of language teaching and learning, can be viewed as a form of task-based language teaching and learning, or, more precisely, a lesson format or...
structure for task-based language teaching and learning with technology.

As the developers of the WebQuest model, Bernie Dodge and Tom March, have stressed, WebQuests have the advantage of fostering higher-level thinking through authentic assignments that emphasize inquiry-based learning (Dodge, 1995, 2001, 2007; March, 2003, 2007). Despite this advantage, however, WebQuests can be overwhelmingly challenging to second and foreign language learners, especially to foreign language learners. Since information is presented in the target language, not their native language, foreign/second language learners often experience difficulties in comprehending and subsequently transforming the information unless appropriate teacher scaffolding (or assistance) is provided to them (Pérez Torres, 2006, 2007).

As a way to help foreign/second language learners overcome difficulties with the comprehension and coordination of ideas, Pérez Torres (2006, 2007) proposed a few scaffolding strategies, including the addition of a phase for background information activation in WebQuest lessons. However, neither the author’s proposed strategies nor the strategies offered by the WebQuest model developers (e.g., Dodge, 2001) include a critical form of scaffolding that has recently received much attention in the field of education and that is designed not only to allow for a phase for activation of background information but also to promote learners’ understanding of ideas and concepts from written text through discussions about the text—namely, Instructional Conversation. Instructional Conversation, which emerged in reaction to the ubiquity of “recitation” across American classrooms, may provide a solution to foreign/second language learners’ difficulties with comprehension of Web-based information and concepts, thereby enabling them to better perform in WebQuest tasks, which typically entail production of a final product in either written or spoken form. Especially, when Instructional Conversation is incorporated as a post-reading scaffold into a WebQuest lesson where language learners perform a writing task after reading Web-based materials, it is likely to help them better perform the writing task.

Despite the importance of post-reading instructional scaffolds in foreign/second language learners’ WebQuest writing performance, no study to date has investigated the effects of post-reading instructional scaffolds on foreign/second language learners’ WebQuest writing performance. The purpose of this study was to investigate the effects of types of post-reading instructional scaffolds on university-level English as a foreign language (EFL) learners’ WebQuest writing performance. Three post-reading instructional scaffolds

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1 Recitation, which Cazden (2001) refers to as “talk of traditional lessons,” is a discourse or interactional pattern that has dominated classroom interactions in North American schools for over a century (Tharp & Gallimore, 1991). More on recitation, including the sequence of IRE (Initiation, Response, and Evaluation) and its criticisms, is described in the literature review section.
scaffolds, as provided in EFL WebQuest lessons, were studied: (a) online Instructional Conversation (IC); (b) online recitation; and (c) no post-reading instructional scaffold, which is traditional. The following research question, consisting of two subquestions, was posed: What are the relative effects of online IC vs. online recitation vs. no post-reading instructional scaffold on EFL learners’ WebQuest writing performance?

1. What are their relative effects on the overall writing quality, content, fluency, syntactic complexity, and lexical complexity, respectively, of EFL learners’ WebQuest writing?
2. What are their relative effects on EFL learners’ overall WebQuest writing performance?

The term “overall WebQuest writing performance,” as used in this study, conceptually refers to the composite of WebQuest writing performances on overall writing quality, content, fluency, syntactic complexity, and lexical complexity. Its operational definition, as well as the operational definitions of the five, smaller dependent variables, is provided in a later section where the instruments are described.

2. LITERATURE REVIEW

2.1. WebQuests

Bernie Dodge, who developed the WebQuest model with Tom March in 1995, initially defined a WebQuest as “an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the Internet” (Dodge, 1995, p. 10). A year later, Dodge (1996), referring to a WebQuest as a lesson format, offered a slightly modified definition: A WebQuest is a “lesson format … or an activity of guided inquiry in which learners are given a task that requires Internet access to complete” (p. 233). Most recently, on his WebQuest organization Web site, Dodge (2007) provides this definition: “A WebQuest is an inquiry-oriented lesson format in which most or all of the information that learners work with comes from the web” (para. 3). Given all these, a WebQuest can be understood as an inquiry-oriented lesson format or activity in which learners are given a task that involves them in interacting with information (textual or nontextual) on the World Wide Web.

In addressing the higher level thinking involved in a WebQuest, Dodge (2001) emphasizes that “WebQuests are designed … to support learners’ thinking at the levels of analysis, synthesis, and evaluation” (p. 7). Learners’ engagement in this process of higher
level thinking, often referred to as “transformation of information,” is the main critical feature of a WebQuest (Dodge, 2001; March, 2003). According to March (2003), in a WebQuest, newly acquired information (input) must undergo a transformation into new understanding (outcomes). Dodge (2001) also stresses the importance of transformation processes in WebQuest lessons, such as comparing and contrasting.

As a “structured” lesson format, a WebQuest has its own required components. Dodge (1995, 1996) presents the six essential components, or what he calls the “critical attributes,” of a WebQuest: (a) an introduction; (b) a task; (c) a set of information sources; (d) a description of the process for accomplishing the task; (e) guidance, or learning advice; and (f) a conclusion. In practice, information sources and guidance are usually embedded in the process section of WebQuest sites on the Web, rendering the sequence of a typical WebQuest lesson introduction – task – process – conclusion (see sample WebQuests in Dodge, 2007).

As can be seen from Dodge’s (1996, 2007) definitions of a WebQuest presented earlier in this section, a WebQuest is clearly a lesson format. Further, a WebQuest is “a lesson format … in which learners are given a task” (Dodge, 1996, p. 233, italics added). To underscore the task-based nature of a WebQuest, Dodge (2007) uses this expression: “A real WebQuest is wrapped around a doable and interesting task” (para. 2, italics added). It follows from these that a WebQuest can be viewed as a lesson format which involves a task, or, briefly put, a task-based lesson format.

2.2. Recitation

Recitation, which Cazden (2001) refers to as “talk of traditional lessons,” consists of “the teacher assigning a text (in the form of a textbook or a lecture) followed by a series of teacher questions that require students to display their mastery of the material through convergent factual answers” (Tharp & Gallimore, 1991, p. 2). According to Mehan (1991), when the recitation script is enacted, the teacher first assigns a text, in either oral or written form, and then the student absorbs the text and recites it. After the student’s recitation, the teacher assesses the student’s performance. A three-part sequence called IRE (Initiation, Response, and Evaluation) has been widely described in the literature as what constitutes recitation. (e.g., Cazden, 2001; Gutierrez, 1994; Mehan, 1991). The following, from Larson and Marsh (2005), exemplifies the IRE sequence: “[I] Teacher: What’s the capital of New York? [R] Student: Albany. [E] Teacher: Good.” (p. 13).

The literature on both classroom discourse/interaction in general and recitation in particular is full of criticisms about, or objections to, the question-response-evaluation pattern of instruction, and it is difficult to find any researchers advocating recitation. Researchers have criticized recitation from the following points of view: First, it provides
little or no opportunity for students to voice their own ideas or comment on those of others (Wood, 1992, as cited in Wells & Arauz, 2006). Second, teacher questions in recitation rarely call for anything besides rote memory or superficial comprehension (Stevens, 1912, as cited in Hoetker & Ahlbrand, 1969). Third, a considerably greater amount of talking is done by the teacher, and considerably less of student discourse is devoted to expressing and justifying opinions than to stating facts (Bellack, Kliebard, Hyman, & Smith, 1966). Fourth, the main theme of the material at hand is lost sight of through overemphasis on facts or details (Colvin, 1931, as cited in Hoetker & Ahlbrand, 1969). Fifth, recitation does not allow for the exploration and development of ideas and is unlikely to yield much conceptual change on the part of learners (Saunders & Goldenberg, 2007). Sixth, and finally, for language classrooms, recitation results in limited opportunities for language learners to use language (Wilen, 1994).

2.3. Instructional Conversation

2.3.1. What is Instructional Conversation?

In reaction to the ubiquity of recitation across North American classrooms, Tharp and Gallimore (1988, 1990, 1991) proffered Instructional Conversation, in which the teacher and students engage in conversations with one another in a natural, spontaneous way, yet with clear instructional intent in the teacher’s mind. Redefining teaching as assisting performance through what Russian psychologist Lev Vygotsky called the “zone of proximal development” (ZPD), Tharp and Gallimore (1991) asserted that Instructional Conversation is the most critical form of assisting learners in developing through the ZPD, or “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (Vygotsky, 1978, p. 86, italics in original).

Since Tharp and Gallimore (1988) initially conceptualized Instructional Conversation as “discourse, in which teacher and students weave together spoken and written language with previous understanding” (p. 111), Instructional Conversation has been defined in a number of ways. IC is “a dialogue between teacher and learners in which the teacher listens carefully to grasp the students’ communicative intent and tailors the dialogue to meet the emerging understanding of the learners” (Tharp & Gallimore, 1991, p. 1). IC is simply “good classroom discussions” or “an excellent discussion conducted by a teacher and a group of students” (Goldenberg, 1991, p. 3). Or IC is a “discussion-based lessons geared toward creating richly textured opportunities for students’ conceptual development” (Goldenberg, 1992/1993, p. 317).
IC is “a dialog between teacher and learner in which prior knowledge and experiences are woven together with new material to build higher understanding” (Tharp & Yamaguchi, 1994, p. 1). Finally, IC is a theme-focused, discussion-oriented form of teacher-led “talk about text” (Saunders & Goldenberg, 2007, p. 222).

2.3.2. Instructional Conversation as the critical form of assisting performance

In their 1991 national research center report, Tharp and Gallimore articulated Instructional Conversation as the critical form of assisting performance through the ZPD. They asserted that while many classroom activities, such as lectures, demonstrations, cooperative learning, exercises, textbook reading, and even recitation, can provide assistance, Instructional Conversation is the most critical form of assisting learners in developing through their ZPDs. In other words, as stated in the abstract of the report, “assistance [in the ZPD] is best provided through the instructional conversation” (Tharp & Gallimore, 1991, p. 1, italics added).

2.3.3. The Instructional Conversation model

The constituent elements of IC are clearly presented in what is called the “instructional conversation model.” The IC model, which was developed by Goldenberg (1991, 1992/1993), is simply a presentation of 10 elements of IC, of which five are instructional elements and five are conversational elements. Table 1, adapted from Goldenberg (1991), shows the list of IC elements, which Goldenberg (1991, 1992/1993) refers to as the “instructional conversation model” or “IC model.”

What needs to be noted at this point is that in presenting the model, Goldenberg (1991, 1992/1993) clearly states that the goals of IC are conceptual and language development. This suggests that the two goals of IC, which were originally presented by Tharp and Gallimore (1988), are reflected in the model.

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2 Recently, Claude Goldenberg has tended to capitalize the initials in the phrase “instructional conversation,” thus rendering it “Instructional Conversation” (e.g., Saunders & Goldenberg, 2007). Throughout this article, I am following this new convention unless such a phrase with lower-case “i” and “r” is directly quoted.
TABLE 1
Elements of Instructional Conversation

<table>
<thead>
<tr>
<th>Instructional Elements</th>
<th>Conversational Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Thematic Focus</td>
<td>6. Few “known-answer” questions</td>
</tr>
<tr>
<td>2. Activation and use of background and relevant schemata</td>
<td>7. Responsiveness to student contributions</td>
</tr>
<tr>
<td>3. Direct teaching (when necessary)</td>
<td>8. Connected discourse</td>
</tr>
<tr>
<td>4. Promotion of more complex language and expression</td>
<td>9. A challenging, but non-threatening, atmosphere</td>
</tr>
<tr>
<td>5. Promotion of bases for statements or positions</td>
<td>10. General participation, including self-selected turns</td>
</tr>
</tbody>
</table>

*Note*. Adapted from Goldenberg (1991, pp. 6-7)

2.4. Instructional Conversation as a Means to Scaffold Reading Comprehension

In presenting the IC model, Goldenberg (1991, 1992/1993) underscores that IC promotes learners’ deep understanding of concepts and ideas represented in written texts. Particularly, he emphasizes this point in his discussions of conceptual development as a goal of IC, thereby suggesting that, like Tharp and Gallimore (1988), he views learners’ conceptual development as occurring through their engagement in the process of developing deep understandings of concepts and ideas in written texts.

Goldenberg’s emphasis on IC as a means to help students’ deep reading comprehension is manifested in several parts of his writings where the IC model is presented (i.e., Goldenberg, 1991, 1992/1993). Here, Goldenberg is essentially addressing the point that IC promotes comprehension of reading “content,” where “content” is viewed as encompassing not just literal details revealed in texts but also complex concepts and ideas represented in the texts. This will become clearer as we review the experimental studies by Goldenberg and one of his colleagues in the following paragraphs.

In the extant literature, two experimental studies are to be found that investigated the effects of IC on reading comprehension. The first study, conducted by Saunders and Goldenberg (1999), investigated the effects of IC and literature logs on limited- and fluent-English-proficient English language learners’ reading comprehension. One hundred sixteen fourth and fifth graders enrolled in a Spanish-to-English language arts transitional bilingual program at an American urban K-5 elementary school participated in the study. The students were randomly assigned within classes to one of four treatment conditions: literature logs only, IC only, literature logs + IC, and control. Over the period of...
approximately two weeks, the literature logs group wrote individually about their personal experiences related to a story in their literature logs and then participated in teacher-led discussions. Over the same period, the IC group participated in IC discussion sessions conducted by their teachers. Students in the control group did not participate in small group discussions with their teachers and only worked independently on reading and writing activities over the same period. Results indicated that students in the IC and literature logs + IC groups outperformed the control group on the posttests of story comprehension (i.e., factual and interpretive comprehension). Results also revealed that students in all the three experimental groups were significantly more likely to demonstrate an understanding of the story themes than students in the control group. Moreover, the effects of IC were found to be stronger than the effects of literature logs on factual and interpretive comprehension for both limited- and fluent-English-proficient students.

After this study, Saunders and Goldenberg (2007) investigated the effects of IC on English language learners’ reading comprehension. Twenty-seven fourth-grade students enrolled in a Spanish bilingual program at an American urban K-5 elementary school participated in the study. The students were randomly assigned to one of two treatment conditions: IC and recitation (i.e., control). In both conditions, the students first read a short story (in English) about two mischievous friends. Following this, in the IC condition, the teacher conducted IC lessons in which she focused on problematic (hence, more differentiated) aspects of a story-related theme of “friendship.” In the control condition, the same teacher conducted conventional recitation (or “basal-like”) lessons in which she reviewed the literal details of the story with students. After the experiment, the students were posttested on their understanding of the concept of friendship by an essay writing test about friendship. A 10-item short-answer posttest on the students’ literal comprehension of the story was also administered. Results indicated that students in the IC group understood the literal details of the story as well or better than students in the control group and that most of the IC students displayed a more complex and differentiated conceptualization of friendship in their essays. The authors conclude that IC promotes higher level understanding of significant concepts without sacrificing literal comprehension.

The results of the two experimental studies just reviewed suggest that instructional conversation can serve as a crucial means to assist English as a second or foreign language learners in their comprehension of reading content, as “content” is defined as encompassing not only literal details but also complex concepts and ideas from text. Now, given that IC promotes students’ comprehension or understanding of reading content, how would such understanding of reading content impact writing performance, which is the focus (or the dependent variable) of this study? To put it in another way, how would content knowledge influence students’ writing performance?

If we find evidence from the extant literature that students with a better understanding of
content perform better in writing than students with poorer understanding of the same content, this will provide a basis upon which to predict (or hypothesize) that the IC group, who has gained a better understanding of content through their participation in IC sessions, will perform better in WebQuest writing than the recitation or the control group. In fact, there is a small body of research in the extant literature that provides such a basis. It is a group of research studies on the effects of content knowledge on writing performance.

2.5. Effects of Content Knowledge on Writing Performance and Their Implications for IC

Five studies were found in the extant literature that investigated the effects of content knowledge on writing performance. While admitting that each of these five studies would need to be described in some detail in this article, due to space limitations, I will only present each study’s research problem and then provide a further, synthesized presentation of the studies. This will be followed by a discussion of the studies’ implications for the effects of IC on writing performance.

A study by Tedick (1990) investigated the effects of subject-matter knowledge on English as a second language (ESL) students’ writing performance. Another study, conducted by Winfield and Barnes-Felfeli (1982), also investigated the effects of prior content knowledge on writing in ESL context. In the area of first language (L1), Langer (1984) studied the relationships between topic-specific background knowledge and measures of overall writing quality, coherence, and syntactic complexity in expository writing. McCutchen (1986) reported a developmental study of domain knowledge effects in L1 writing. Finally, using Langer’s (1984) “combined” category of topic-specific knowledge, Chesky and Hiebert (1987) examined the effects of low and high prior knowledge on high school students’ writing in L1 context.

The researchers of these studies did not investigate the same aspects (or components) of writing performance. Overall, however, we can see that they investigated such aspects of writing performance as (a) overall writing quality, (b) fluency, (c) syntactic complexity, and (d) coherence. One of the researchers (i.e., McCutchen, 1986) additionally reported on the “content” of student writings. Also, the researchers of two of the studies (i.e., Chesky & Hiebert, 1987; Winfield & Barnes-Felfeli, 1982) additionally investigated “grammar” in student writings.

In general, the results of the studies suggest that higher topic-related content knowledge leads to better writing (with the exception of grammatical accuracy); that is, students with relatively higher topic-related content knowledge perform better in writing (on the topic) than students with relatively lower topic-related content knowledge. Specifically, the results of the studies suggest that the writings of students with relatively higher topic-
related content knowledge exhibit better overall writing quality and higher levels of fluency, syntactic complexity, and coherence compared to the writings of students with relatively lower topic-related content knowledge.

Then, to extend the results of the studies further to the context of IC, the results suggest that IC students, who, as the results of Saunders and Goldenberg’s (1999, 2007) experimental studies demonstrated, have gained a better understanding of content through participation in ICs, will likely perform better in writing when the writing requires use of the content. Specifically, the results suggest that these IC students’ writings will likely exhibit better overall writing quality and higher levels of fluency, syntactic complexity, and coherence (i.e., organization) compared to the writings of students who participated in traditional recitation or read-and-study-alone sessions. As for the content of writings, although only one of the studies (i.e., McCutchen, 1986) examined the content of student writings and found a significant difference between the low and high content knowledge groups, this finding alone still suggests to a certain extent that there is a likelihood that IC students’ writings will exhibit more elaborate content because they have a higher level of content understanding.

2.6. Statement of the Hypotheses

Based upon the literature reviewed, it was hypothesized that types of post-reading instructional scaffolds would impact EFL learners’ overall WebQuest writing performance and, specifically, their performance in the areas of overall writing quality, content, fluency, syntactic complexity, and lexical complexity, respectively. More specifically, the following hypotheses were posed:

1. Online Instructional Conversation about WebQuest readings will lead to better overall WebQuest writing performance by EFL students than traditional, no post-reading instructional scaffold. Specifically, online IC will lead to better WebQuest writing performance in the areas of overall writing quality, content, fluency, syntactic complexity, and lexical complexity, respectively.

2. Online Instructional Conversation about WebQuest readings will lead to better overall WebQuest writing performance than an online recitation review of the readings. Specifically, online IC will lead to better WebQuest writing performance in the areas of overall writing quality, content, fluency, syntactic complexity, and lexical complexity, respectively.
3. METHOD

3.1. Participants and Sampling

One hundred four EFL students, randomly selected from 8 English for academic purposes (EAP) classes at a large, private university in Seoul, Korea, participated in this study. They were mostly first-year students at the university who were taking the EAP course to fulfill the university’s foreign language requirement. The ethnicity of the vast majority of the participants (97%) was Korean, and thus, their first language was predominantly Korean. The participants included three international students (3%) from Russia and South East Asian nations. Most of the Korean participants had been learning EFL as a compulsory subject for approximately 11 years since their third year in elementary school.

Participants were randomly selected from the population of the 8 EFL/EAP classes at the university, using the stratified random sampling strategy (see Wiersma & Jurs, 2005). In employing this approach to random sampling, I considered each of the 8 classes a subpopulation, or a stratum, and randomly selected sample members from each class, rather than from the entire population of the 8 classes as a whole. In other words, after stratifying, or dividing, the population (8 classes as a whole) into its subpopulations (i.e., into individual classes), I selected participants from each of the subpopulations, i.e., each of the 8 classes. The decision about the number (i.e., allocation) to be selected from each stratum was made, drawing on the allocation method called “equal allocation” (Wiersma & Jurs, 2005). Using this method, I selected 15 participants (i.e., equal numbers) from each of the 8 classes, and this produced an initial sample of 120 participants for this study. The final sample, however, consisted of 104 participants due to participant attrition.

3.2. Design

For this study, an experimental, pretest-posttest control group design (Wiersma & Jurs, 2005) was used. The independent variable was type of post-reading instructional scaffold, consisting of three levels: (a) online Instructional Conversation; (b) online recitation; and (c) no post-reading instructional scaffold, which was traditional. There were six dependent variables: (a) EFL learners’ overall WebQuest writing performance and their WebQuest writing performance in the specific areas of (b) overall writing quality, (c) content, (d) fluency, (e) syntactic complexity, and (f) lexical complexity.

Using the blocked random assignment method (Bloom, Bos, & Lee, 1999), 120 randomly selected participants were randomly assigned to one of three conditions: online
IC, online recitation, or no post-reading instructional scaffold. Fifteen participants (i.e., each block of participants), who had been randomly selected from each of the 8 classes, were randomly assigned from within the block to one of the three treatment conditions, rather than the whole initial sample of 120 participants were randomly assigned to one of the conditions as in simple random assignment.

All participants were pretested on reading and writing prior to the experiment and posttested on writing after the experiment. This design is diagrammed in Figure 1.

**FIGURE 1**

Experimental, Pretest-Posttest Control Group Design, With Two Experimental Groups and a Control Group

<table>
<thead>
<tr>
<th>Randomly Selected Participants (N=120)</th>
<th>Randomly Assigned By Block</th>
<th>Pretest</th>
<th>Treatment</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 (n=40)</td>
<td>Reading/Writing</td>
<td>Online IC (Experimental)</td>
<td>Writing</td>
<td></td>
</tr>
<tr>
<td>Group 2 (n=40)</td>
<td>Reading/Writing</td>
<td>Online Recitation (Experimental)</td>
<td>Writing</td>
<td></td>
</tr>
<tr>
<td>Group 3 (n=40)</td>
<td>Reading/Writing</td>
<td>No Post-reading Scaffold (Control)</td>
<td>Writing</td>
<td></td>
</tr>
</tbody>
</table>

As it was neither authentic nor appropriate to administer online IC and recitation treatments to groups of 40 students at a time, each of the three treatment groups was divided into small groups of five prior to the experiment (see Tharp and Gallimore, 1988 for a discussion of the appropriate group size, i.e., 3 to 6, for IC sessions). In dividing each treatment group (n = 40) into small groups, it was ensured that the members of each small group came from the same class. This, as well as the adoption of the stratified random sampling followed by the blocked random assignment, was because all treatments were to be administered at on-campus computer labs during the participants’ regular class times.

3.3. Treatment

3.3.1. Operational definitions of treatments

Online Instructional Conversation, one of the two experimental treatments, was operationally defined as discussion-oriented, teacher-led talk about written text occurring synchronously over the Internet (a) in which the teacher focuses on a substantive theme relevant to the text throughout the talk but yet intentionally relates the theme to the text during the talk and (b) which exhibits the 10 elements of IC presented by Goldenberg (1991, 1992/1993) at least to a moderate extent (for the 10 IC elements, see Table 1, presented earlier). Here, the “moderate extent” was considered to have been satisfied by
the teacher-led talk obtaining an average score of 1 on the 3-point IC scale (0-1-2) for scoring the 10 IC elements which was developed by Goldenberg and colleagues (Rueda, Goldenberg, & Gallimore, 1992). This operational definition stemmed from a synthesis of the conceptual definitions of Instructional Conversation offered by Claude Goldenberg (Goldenberg, 1991, 1992/1993; Saunders & Goldenberg, 2007).

Online recitation, the other experimental treatment, was operationally defined as a pattern of classroom discourse or mode of teaching occurring synchronously over the Internet in which the teacher consistently asks known-answer questions (i.e., questions to which the teacher already knows the answer) that require the students to display their mastery of the factual, literal details of written text, the students then respond with their answers, and then, optionally, the teacher evaluates the students’ responses, typically with short remarks of evaluation (e.g., Good, Right, or Well done). This operational definition was developed from an analysis of the conceptual literature on recitation, as well as a synthesis of a number of classroom discourse theorists’ conceptual definitions of recitation (e.g., Cazden, 2001; Hoetker & Ahlbrand, 1969, Mehan, 1991; Nystrand & Gamoran, 1991; Nystrand, Wu, Gamoran, Zeiser, & Long, 2001; Tharp & Gallimore, 1988, 1991).

Finally, no post-reading instructional scaffold, the control treatment, was operationally defined as a session which involves no talk about written text between the teacher and students or among students either over the Internet or face to face and in which students engage in continuing to read the text.

Prior to the experiment, lesson plans which faithfully and concretely reflected these operational definitions were developed for each of the treatment conditions. The lesson plans for the IC and recitation treatments later served as a basis for developing scripts to be used by the experimental teacher during the IC and recitation sessions. All the three lesson plans were fully utilized during the training sessions for both the experimental and control teachers in order to increase the implementation fidelities for the treatments (see the next section).

3.3.2. Implementation fidelity for the treatments

Efforts were made to enhance implementation fidelity, or the extent to which treatments are implemented as intended (Krathwohl & Smith, 2005). Prior to the experiment, the researcher held training sessions with the teacher who would be administering the experimental treatments (hereafter called the “experimental teacher”) over a period of four weeks, during which the teacher was trained by the researcher in implementing the online IC and recitation treatments as operationally defined. Researcher-developed scripts for the online IC and recitation treatment sessions, to be used by the experimental teacher during the experiment, as well as lesson plans, were used for training purposes. The teacher who
would be administering the control treatment (hereafter called the “control teacher”) was also trained by the researcher.

After the experiment, implementation fidelities for the experimental and control treatments were assessed. For assessment of the implementation fidelity of the IC treatment, four randomly selected online IC transcripts were examined. The calculated implementation fidelity for the IC treatment was 1.93 out of 2.0. This value of 1.93 was yielded by averaging the implementation fidelity of 1.85 as calculated using Rueda et al.’s (1992) 3-point IC scale (0-1-2) and that of 2.0 as calculated using a researcher-developed 3-point scale (0-1-2), which was designed to rate the first component of the operationally defined IC.

For assessment of the implementation fidelity of the recitation treatment, four randomly selected online recitation transcripts were examined. The calculated implementation fidelity for the recitation treatment was 2.0 out of 2.0. This value of 2.0 was obtained by using a researcher-developed 3-point scale (0-1-2).

As for the control treatment, its implementation fidelity was assessed based upon observations made by the researcher during his four visits (including two unannounced visits) to the computer lab where the treatment was being administered. A researcher-developed 3-point scale was used for the assessment of the implementation fidelity of the control treatment. The calculated implementation fidelity for the control treatment was 2.0 out of 2.0.

3.4. Materials

The WebQuest site, which was developed by the researcher for this experiment, contained links to four Web-based reading materials about the artists Claude Monet and Paul Cezanne. The students’ task for the lesson, as described in the “task” section of the site, was to write an essay comparing and contrasting the work of the two artists after reading two materials (or texts) on each of the artists. The menu area on the left-hand side of the homepage displayed such items as introduction, task, process, and conclusion. Since information sources (i.e., sources of reading) were embedded in the process section, as is usually the case, this WebQuest site can be seen as containing all the essential components of a WebQuest (see Dodge, 1995, 1996).

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4 Both the experimental and control teachers were native speakers of English with extensive EFL teaching experience.
5 The high implementation fidelities for the experimental treatments are, above all, by virtue of the fact that during the experimental sessions, the experimental teacher made use of researcher-developed scripts, which faithfully reflected what was described in the lesson plans and hence the operational definitions of the treatments.
3.5. Instruments

Researcher-developed writing tests were used as a writing pretest and a writing posttest. For the reading pretest, the reading section of a test from a Test of English as a Foreign Language (TOEFL) practice tests volume authored by the Educational Testing Service (ETS) (2009) was utilized. This reading pretest consisted of 13 multiple choice items under a passage.

The prompt for the writing posttest asked the participants to write an essay comparing and contrasting the work of Monet and Cézanne, based upon the WebQuest reading materials about the two artists which they had just read (see Appendix). The prompt for the writing pretest was equivalent in format to that for the writing posttest in that it also asked the participants to write a compare-and-contrast essay, based upon reading materials about two artists (Vincent van Gogh and Paul Gauguin) that they had just read, and in that the same time (40 minutes) was given to complete the test.

In developing the writing pretest and posttest, construct (or the ability tested) was defined based upon theories in the literature. Drawing on Skehan’s (1996, 1998) theory of linguistic ability and Bachman and Palmer’s (1996) model of communicative language ability, writing ability was defined as consisting of (a) fluency, (b) syntactic complexity, (c) lexical complexity, (d) content, (e) organization, and (f) grammar. The dependent variables were operationally defined as follows:

1. Overall writing quality: holistic score on content, organization, and grammatical accuracy (i.e., accuracy in syntax and vocabulary) of an essay.
2. Fluency: the total number of words in an essay.
3. Syntactic complexity: the mean length of T-units in an essay, as determined by dividing the total number of words by the number of T-units. A T-unit (or a “terminable unit”) is “a main clause plus all subordinate clauses and non-clausal structures attached to it” (Hunt, 1970, p. 4)
4. Lexical complexity: the Type-Token Ratio in an essay, as determined by the number of different words divided by the total number of words.
5. Content: score on accuracy, thoroughness, and completeness of the content of an essay, as the content is generated in compliance with the task instructions given in the prompt of the test, i.e., to compare and contrast certain aspect(s) in the source materials that students have read.
6. Overall WebQuest writing performance: composite score consisting of the sum of percentage scores on all the above five variables. That is, scores on each of the variables were converted to percentage scores before they were added up to produce the composite score; for example, a score of 0.7 in lexical complexity
was converted to 70, and a score of 6 out of 12 in content was converted to 50. In this way, all the five variables received equal weight in constituting overall WebQuest writing performance.

The operational definitions of syntactic complexity, lexical complexity, and fluency (as well as that of overall writing quality) were derived from among the most commonly encountered operationalizations of those constructs in the extant research literature on writing, both first and second/foreign language (L1 and L2) writing. Evidence for L2 writing researchers’ predominant use of the mean length of T-units (MLTU) for measuring syntactic complexity can be found in Ortega’s (2003) research synthesis study of 25 college-level L2 writing studies, the overwhelming majority of which employed MLTU as the measure of syntactic complexity. As for lexical complexity, Polio (2011) indicated that while there are a variety of ways to measure this construct, “[the use of] a simple type/token ratio is quite common” (p. 147). For fluency, overall length, as calculated by the total number of words, has been widely used in both L1 and L2 writing research. For example, Tedick’s (1990) and Winfield and Barnes-Felfeli’s (1982) studies of L2 writing, described earlier, used the total number of words as the measure of fluency, and Chesky and Hiebert’s (1987) study of L1 writing, described earlier as well, also employed the total number of words to measure the writing fluency of high school students. As Polio (2001) noted, the total number of words is currently one of the most frequently used measures of fluency in L2 writing research.

3.6. Procedures

3.6.1. Data collection procedures

In the fall of 2012, 120 students, randomly selected from a population of 8 EFL/EAP classes at a Korean university, were randomly assigned to three treatment conditions: online IC (n = 40), online recitation (n = 40), and no post-reading instructional scaffold (n = 40). Prior to the random assignment, the participants were informed about the study and asked to sign an informed consent form. The week before the experiment, reading and writing pretests were administered to the participants during their regular class times. Prior to the experiment, each of the three treatment groups was also divided into 8 groups of five so that they could participate in the experiment in those small groups rather than in large, whole groups of forty.

During the experimental period, the small groups of participating students came to an on-campus computer lab in lieu of their classrooms. The experimental teacher administered the experimental treatments (i.e., online IC and online recitation) at a computer lab on the
university campus, while the control teacher administered the control treatment at another computer lab on the campus during the same time periods when the experimental teacher was implementing the online recitation treatment. All these treatment sessions (24 sessions in total) occurred during regular class times for the 8 classes, and the entire experiment took approximately 4 weeks.  

Due to 16 students’ absence from their classes on their days of the experiment, a total of 104 students participated in the experiment ($n$ for online IC = 36; $n$ for online recitation = 36; and $n$ for control = 32).

Each WebQuest lesson (experimental and control) lasted 90 minutes, including the last 40 minutes devoted to the students’ writing of a compare-and-contrast essay pertaining to their WebQuest readings. The students in the online IC group and the online recitation group spent 20 minutes reading the Monet and Cezanne materials individually at their computer stations. Prior to the reading, the online IC group engaged in a five-minute online IC session with the experimental teacher, during which the teacher attempted to use and activate students’ background knowledge and schemata related to the readings. Following the reading, the online IC group participated in a post-reading online IC session with the experimental teacher for 25 minutes, while the online recitation group participated in a post-reading online recitation session with the experimental teacher for 30 minutes.

An Internet-based synchronous (i.e., real-time, or simultaneous) textual CMC (computer-mediated communication) tool, the Skype client, was used as a medium for the IC and recitation participants’ multi-way communication; that is, using the tool, the teacher and students communicated real-time by typing in words at their respective computer terminals. English was used for the synchronous communication. Whenever appropriate and possible, the teacher, who had word-processed scripts available on his computer, copied portions of the text in the scripts and pasted them onto the input area of the Skype conversation window and then pressed the “enter” key. The IC group engaged in an Instructional Conversation with the teacher about the Monet and Cezanne texts.

6 The university’s EAP class schedule made it inevitable to adopt this particular implementation process. Also, the reason why the experimental teacher was not used for the administration of the control treatment was two-fold: First, if the experimental teacher also implemented the control treatment, the experimental period would be prolonged, thus exerting a negative influence on the internal validity of the study. Second, since the role of the teacher participating in the control WebQuest lessons was to ensure that students continued to read the WebQuest materials and that the larger WebQuest lessons for the students followed the same procedures as the experimental WebQuest lessons except for the treatment, any teacher, as long as he or she was trained by the researcher in those appropriate procedures, could successfully complete the control WebQuest lessons without exerting any negative influence on the internal validity of the study.

7 As “activation and use of background and relevant schemata” is an essential element of IC (see Table 1), prior to reading the WebQuest texts, the online IC group had a brief, 5-minute session with the teacher, which was geared toward fulfilling this element of IC. With the five-minute period included, the online IC group received a 30-minute treatment, as was the case for the online recitation group.
recitation group engaged in an online recitation session with the teacher about the same texts. Then the students in each group began to write an essay comparing and contrasting the two artists’ work (see Appendix for the essay writing test). They had access to the Monet and Cezanne materials as they wrote the essay; that is, they had the input data available from the “process” section of the WebQuest site as they performed the essay writing task. Students wrote the essay on paper at their individual computer stations. The students’ writing of the essay was part of the WebQuest lesson, but it served as the posttest for this study.

The control group, on the other hand, spent 50 minutes reading the same Monet and Cezanne materials individually at their computer stations. No post-reading session with the participating teacher was provided to them. Then they began to write their essays on paper as the IC and recitation groups did. As in the IC and recitation groups, 40 minutes were given for their essay writing. The essay writing served as the posttest for this study.

3.6.2. Scoring procedures

The reading pretest was scored dichotomously using the answer key provided in the TOEFL practice tests volume. The total possible score for the 13-item multiple choice reading pretest was 14, with the last item worth two points. The researcher scored the test and then checked all the scorings once.

For the writing pretest and posttest, two experienced EFL teachers, who were native speakers of English, first rated the essays for overall writing quality and content. For overall writing quality, the two raters scored the essays holistically on a six-point scale based on the criteria of content, organization, and grammatical accuracy as specified in a holistic scoring rubric developed by the researcher. For content, the raters, using a researcher-developed six-point scale rubric, focused on the accuracy, completeness, and thoroughness of the essays’ content, as it related to the task instructions, i.e., to compare and contrast certain aspect(s) in the source materials. Prior to scoring the essays for overall writing quality and content, the raters had two days of training sessions offered by the researcher which involved discussion of the features of twelve researcher-selected anchor essays (i.e., two sample essays at each of the six score points selected from the total pool of essays) and practice in scoring essays drawn randomly from the pool of essays. Once an acceptable level of inter-rater reliability ($r = .85$) was reached in these practice sessions, the raters began to score essays independently (see Kern & Schultz, 1992). The final score for each essay was the sum of the two scorings, hence yielding a range of two to twelve points for overall writing quality and content, respectively.

For the scoring of the essays for fluency, syntactic complexity, and lexical complexity, one of the raters who scored the essays for overall writing quality and content participated
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in two-day training sessions offered by the researcher and then counted the number of T-units for each essay independently. After he completed the T-unit counting for all essays, the researcher checked the accuracy of his T-unit counts. Upon obtaining the numbers of T-units for all essays, the researcher computed the fluency, syntactic complexity (using the obtained numbers of T-units), and lexical complexity for each essay, using the concordancing software program “tlCorpus.”

3.6.3. Inter-rater reliability

The inter-rater reliabilities for the scoring of posttest essays on overall writing quality and content, as computed using the Pearson product-moment correlation coefficient, were $r = .89$ and $r = .90$, respectively. The inter-rater reliabilities for the scoring of pretest essays on overall writing quality and content, as computed using the Pearson product-moment correlation coefficient, were $r = .86$ and $r = .91$, respectively.

3.7. Data Analysis

As preliminary analyses on pretest data indicated that there was a significant difference among the treatment groups in pretest scores on content and that the pretest scores on content were significantly related to posttest scores on some of the first five dependent variables (i.e., overall writing quality, content, fluency, syntactic complexity, and lexical complexity), a decision was made to use the pretest scores on content as the covariate in all analyses on the first five dependent variables. Given this covariate, a multivariate analysis of covariance (MANCOVA) was first conducted on the first five dependent variables because most of them were correlated. Then, as a follow-up to the MANCOVA, univariate analyses of covariance (ANCOVAs) were performed on each of the five dependent variables. Finally, post-hoc pairwise comparisons were conducted on the dependent variables for which significant F ratios had been obtained.

The last, sixth dependent variable, i.e., overall WebQuest writing performance, was analyzed using a one-way analysis of variance (ANOVA). Following this, post-hoc tests were conducted for pairwise comparisons. The Tukey HSD and Scheffé tests were used.

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8 Since the score on this variable, which was operationalized as the composite score consisting of the sum of percentage scores on all the other five dependent variables, was to be obtained in a post hoc manner (i.e., after the percentage scores on all the five variables had been obtained), it was not appropriate to subject it to a multivariate analysis together with the five, smaller variables. Also, because a preliminary analysis of the pretest data indicated no significant difference in overall WebQuest writing performance among the three groups, it seemed more appropriate to use a one-way ANOVA, rather than a one-way ANCOVA involving use of the pretest score on overall WebQuest writing performance as a covariate.
4. RESULTS

4.1. Effects of Treatments on the Five Areas of WebQuest Writing Performance

4.1.1. Effects on the five areas of performance as a whole

The first analysis involved an examination of the effects of type of post-reading instructional scaffold on the five areas of WebQuest writing performance as a whole. In examining these omnibus effects, a one-way multivariate analysis of covariance (MANCOVA) was used, with the five posttest variables of overall writing quality, content, fluency, syntactic complexity, and lexical complexity as dependent variables and the pretest on content as the covariate. Results showed a significant difference among the groups, Wilk’s lambda = .77, \( F(10, 192) = 2.63, p = .005, \eta^2_p = .12, \) observed power = .96, indicating that there was a significant treatment effect on the whole set of the five dependent variables, controlling for the effect of the initial, pretest differences on content.

4.1.2. Effects on each of the five areas of performance

As the MANCOVA revealed that the treatment groups differed with respect to at least one of the five dependent variables (controlling for the effect of the pretest differences), follow-up univariate analyses of covariance (ANCOVAs) were conducted on each of the dependent variables to see on which dependent variable(s) the treatment groups differed, thereby contributing to the overall significant result from the omnibus MANCOVA. Results showed significant differences among the groups in overall writing quality (\( F(2, 100) = 4.50, p = .013, \eta^2_p = .08, \) observed power = .76) and content (\( F(2, 100) = 7.84, p = .001, \eta^2_p = .14, \) observed power = .95).\(^9\) The mean differences among the groups in fluency, syntactic complexity, and lexical complexity were not significant.

4.1.3. Pairwise differences: Post-hoc comparisons

Following the univariate ANCOVAs, post-hoc pairwise comparisons were conducted on each of the two dependent variables of overall writing quality and content in order to evaluate pairwise differences among the adjusted means for the groups. For all pairwise comparisons, the Bonferroni adjustment technique (alpha/number of comparisons) was used.

\(^9\) The effect sizes, i.e., \( \eta^2_p = .08 \) and \( \eta^2_p = .14 \), fall into the categories of “medium” and “large,” respectively (see Huck, 2012 for a discussion of the lower limits of .06 and .14 for medium and large effect sizes for partial eta squared (\( \eta^2_p \)), as well as eta squared (\( \eta^2 \)).
used to control for Type I error due to alpha inflation. Specifically, in lieu of an \textit{a priori} alpha level of .05, an adjusted alpha ($\alpha'$) of .017 ($\alpha' = .05 / 3 = .017$) was used as the criterion against which obtained $p$ values for each pairwise comparison were compared.

Results of the post-hoc pairwise comparisons showed that there was a significant difference between the online IC and non-scaffold (i.e., control) groups with respect to overall writing quality ($p = .004$, $d = .75$). As for the area of content, results revealed that there were significant differences between the online IC and online recitation groups ($p = .008$, $d = .66$) and between the online IC and non-scaffold groups ($p < .001$, $d = .96$). More specifically, the results indicated that students who had received the online IC treatment ($M = 7.88$) scored significantly higher on overall writing quality, controlling for the effect of the pretest differences on content, than students who had not received any post-reading instructional scaffold ($M = 6.29$) and that students who had received the online IC treatment ($M = 9.16$) also scored significantly higher on content, controlling for the pretest difference effect, than students who had received the online recitation treatment ($M = 7.58$) and students who had not received any post-reading instructional scaffold treatment at all ($M = 6.86$). Table 2 shows the results of these post-hoc pairwise comparisons.

\section*{TABLE 2}

\textbf{Pairwise Comparisons and Effect Sizes of Overall Writing Quality and Content}

\begin{tabular}{|l|c|c|c|c|}
\hline
Dependent variable & Adjusted mean difference ($|\bar{X}_i - \bar{X}_k|$) & Adjusted mean & 1. Online IC & 2. Online recitation & 3. No scaffold \\
Group & Mean & Adjusted mean & ($n = 36$) & ($n = 36$) & ($n = 32$) \\
\hline
Quality & & & & & \\
1. Online IC & 8.14 & 7.88 & - & & \\
   ($n = 36$) & & & & & \\
2. Online recitation & 6.69 & 6.86 & 1.02 & - & \\
   ($n = 36$) & & & & & \\
3. No scaffold & 6.19 & 6.29 & 1.60* & .57 & - \\
   ($n = 32$) & & & & & \\
Content & & & & & \\
1. Online IC & 9.44 & 9.16 & - & & \\
   ($n = 36$) & & & & & \\
2. Online recitation & 7.39 & 7.58 & 1.58* & - & \\
   ($n = 36$) & & & & & \\
3. No scaffold & 6.75 & 6.86 & 2.29* & .71 & - \\
   ($n = 32$) & & & & & \\
\hline
\end{tabular}

\textit{Note}. 1. Any minor discrepancies in calculated values of adjusted mean differences are due to rounding. 2. Quality = Overall writing quality.

\* $p < .017$

10 See Huck (2012) for a discussion of the lower limits of .50 and .80 for medium and large Cohen’s $d$ effect sizes.
4.1.4. Putting it together: Answering research question 1

The series of analyses described thus far was intended to answer research question 1, i.e., “What are the relative effects of online IC vs. online recitation vs. no post-reading instructional scaffold on the overall writing quality, content, fluency, syntactic complexity, and lexical complexity, respectively, of EFL learners’ WebQuest writing?” As we have seen, results from the final, post-hoc examination of pairwise differences on overall writing quality and content showed that in the area of overall writing quality, the effect of online IC was significantly greater than that of no post-reading instructional scaffold ($p = .004, d = .75$). Results also revealed that in the area of content, online IC was more effective than both online recitation ($p = .008, d = .66$) and no post-reading instructional scaffold ($p < .001, d = .96$). For both overall writing quality and content, the effects of online recitation vs. no post-reading instructional scaffold were not significantly different. In the other three areas of WebQuest writing, i.e., fluency, syntactic complexity, and lexical complexity, no significantly different effectiveness was found between any two treatments, because the preceding ANCOVAs revealed no significant overall effect on any of the three variables.

4.2. Effects of Treatments on Overall WebQuest Writing Performance

4.2.1. Effects on overall WebQuest writing performance

Since a preliminary analysis of the pretest data indicated no significant difference in overall WebQuest writing performance among the three groups, a one-way analysis of variance (ANOVA) was used to examine the overall effects of the different independent variable treatments on students’ overall WebQuest writing performance. Results showed a significant difference among the groups in overall WebQuest writing performance, $F(2, 101) = 4.28, p = .016, η^2 = .08$, observed power = .74, indicating that there was a significant treatment effect on the students’ overall WebQuest writing performance.

4.2.2. Pairwise differences: Post-hoc comparisons

Following the ANOVA $F$ test, post-hoc tests were conducted to find out which pair or pairs of group means were significantly different from each other. The Tukey HSD test was used to compare the means of the IC group ($n = 36$) vs. the recitation group ($n = 36$), and the Scheffé test was used to compare the means of the IC group ($n = 36$) vs. the non-scaffold group ($n = 32$) and the recitation group ($n = 36$) vs. the non-scaffold group ($n = 32$).
The post-hoc tests revealed a significant difference between the online IC and non-scaffold (i.e., control) groups \((p = .023, d = .68)\). The mean differences between the online IC and recitation groups and between the recitation and control groups were not significant \((p = .093\) and \(p = .756\), respectively). More specifically, the results of the post-hoc pairwise comparison tests indicated that students who had received the online IC treatment \((M = 300.85)\) scored significantly higher on overall WebQuest writing performance than students who had not received any post-reading instructional scaffold \((M = 266.81)\). Table 3 shows the results of these post-hoc pairwise comparisons.

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean ((n=36))</th>
<th>1. Online IC ((n=36))</th>
<th>2. Online recitation ((n=36))</th>
<th>3. No scaffold ((n=32))</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Online IC</td>
<td>300.85</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2. Online recitation</td>
<td>275.92</td>
<td>24.93</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3. No scaffold</td>
<td>266.81</td>
<td>34.04* ((d = .68))</td>
<td>9.11</td>
<td>-</td>
</tr>
</tbody>
</table>

*\(p < .05\)

4.2.3. Putting it together: Answering research question 2

The two successive analyses described above were intended to answer research question 2, i.e., “What are the relative effects of online IC vs. online recitation vs. no post-reading instructional scaffold on EFL learners’ overall WebQuest writing performance?” As we have seen, results from the post-hoc examination of pairwise differences in overall WebQuest writing performance showed that the effect of online IC was significantly greater than that of no post-reading instructional scaffold \((p = .023, d = .68)\). Results, however, revealed that the effects of online IC vs. online recitation, as well as the effects of online recitation vs. no post-reading instructional scaffold, were not significantly different.
5. DISCUSSION

5.1. Interpretation of the Results

5.1.1. The results in relation to the hypotheses

The post-hoc comparison results pertaining to overall WebQuest writing performance support the pre-established research hypothesis that online Instructional Conversation about WebQuest readings would lead to better overall WebQuest writing performance by EFL students than traditional, no post-reading instructional scaffold. The results, however, do not support the other research hypothesis concerning overall WebQuest writing performance, which stated that online Instructional Conversation about WebQuest readings would lead to better overall WebQuest writing performance by EFL students than an online recitation review of the readings; the results revealed no significant difference between the online IC and online recitation groups.

The post-hoc comparison results pertaining to the specific areas of WebQuest writing performance support the following three hypotheses concerning overall writing quality and content:

1. Online IC about WebQuest readings will lead to EFL students’ better WebQuest writing performance in the area of overall writing quality than traditional, no post-reading instructional scaffold.
2. Online IC about WebQuest readings will lead to EFL students’ better WebQuest writing performance in the area of content than traditional, no post-reading instructional scaffold.
3. Online IC about WebQuest readings will lead to EFL students’ better WebQuest writing performance in the area of content than an online recitation review of the readings.

As for the other three areas of WebQuest writing performance, i.e., fluency, syntactic complexity, and lexical complexity, results have failed to support the pertinent pairwise hypotheses, because the univariate ANCOVAs conducted on these variables revealed no significant differences among the groups.

5.1.2. Tying the results to the theoretical and empirical literature reviewed

The results of this study lend support to IC theorists’ theoretical assertion that Instructional Conversation is the critical form of assisting performance through the ZPD
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(Tharp & Gallimore, 1991). As noted earlier in the Introduction section, Tharp and Gallimore (1991) asserted that given their view of teaching as assisting performance through the ZPD, IC is the critical form of assisting performance through the ZPD over other forms of assistance, such as lectures, demonstrations, cooperative learning, independent textbook reading, and even recitation. This implies that while other forms of teaching (or assistance) cannot effectively enable the teacher to provide responsive assistance through learners’ ZPDs, IC can do so effectively, thereby facilitating their internalization of skills and functions. The results of this study, which showed the online IC group’s superior performance over the recitation and/or the non-scaffolded, independent reading (i.e., control) group in overall WebQuest writing, as well as in its component areas of overall writing quality and content, support the IC theorists’ assertion that IC is the critical form of assisting performance through the ZPD over other forms of assistance.

As for the areas of fluency, syntactic complexity, and lexical complexity, for which no significant differences were found among the three groups, it may well be stated that IC failed to play a superior assisting role for students’ performance in these areas. While this is true if we look at the results for these areas and only these areas per se, a different picture emerges if we look at the results in conjunction with the finding on performance on content. In the area of content, it was found that the IC group outperformed the other two groups. The results on fluency, syntactic complexity, and lexical complexity when viewed in conjunction with this finding on performance on content suggest that IC students’ writings, unlike recitation and control students’ writings, focused on content relatively relevant to the task at hand and still achieved the same levels of performance on fluency, syntactic complexity, and lexical complexity as the writings of the students in the other groups. This is a hard task and hence merits credit. Now, it may well be stated that IC in fact played a positive assisting role for students’ desired, task-relevant performance in the areas of fluency, syntactic complexity, and lexical complexity.

The results pertaining to performance on content, i.e., the IC group’s superior performance over the recitation and control groups, are consistent with Saunders and Goldenberg’s (2007) finding that IC students’ essays showed a deeper understanding of reading texts than recitation students’ essays. The results are also consistent with Saunders and Goldenberg’s (1999) earlier finding that students in the IC group were significantly more likely to demonstrate a good understanding of text themes in their essays than students in the traditional “read-and-study-alone” group.

5.2. Implications

In terms of theory, results from this study inform us that IC, as used in the context of EFL WebQuest lessons, can serve as an effective means for fostering not just the language
but also the conceptual development of EFL students, who have traditionally been deprived of opportunities to engage in performing language learning tasks within their zones of proximal development, i.e., beyond their current cognitive developmental levels. In terms of conceptual development—one of the two goals of IC (see Goldenberg, 1991, 1992/1993; Tharp & Gallimore, 1988)—results from this study, which revealed greater effectiveness of IC in the area of content as compared to recitation and independent reading, suggest that IC promotes and facilitates EFL learners’ deep understanding of concepts from written text, thereby fostering their conceptual development (see the Introduction section for a discussion of the relationship between conceptual development and engagement in deep understanding of concepts). This informs us that IC, as used in the context of EFL WebQuest lessons, can serve as an effective means for fostering the conceptual development of EFL students. This potential of IC provides a legitimate basis for using IC in EFL WebQuest lessons, and this is especially so given that EFL students, like ESL students, have traditionally been deprived of opportunities to engage in performing language learning tasks within their zones of proximal development, i.e., beyond their current conceptual developmental levels (Vygotsky, 1978; see Saunders & Goldenberg, 2007 for a discussion of ESL students’ lack of engagement in higher-level thinking activities).

In terms of practice, the results of this study inform EFL teachers about the potentially optimal anatomy of a task-based WebQuest language lesson by suggesting that IC can be utilized as a critically important pre-task activity which serves to scaffold EFL students’ performance of the main WebQuest writing task. As Ellis (2003) noted, in a task-based language lesson, teachers can use the “pre-task – during-task (i.e., (main) task) – post-task” framework in a variety of ways; that is, while the lesson format minimally consists of the during-task phase, it can also include either a pre-task or a post-task or both of these. In this study, the main task was to write an essay comparing and contrasting two artists’ work. Given this lesson structure, the results of this study inform EFL teachers that in a task-based EFL WebQuest lesson, IC can be utilized as the most effective, hence a critically important, pre-task activity that serves to scaffold EFL students’ performance of the main task. For writing classes in particular, this suggests that teachers of an EFL writing class or lesson would benefit from implementing a WebQuest lesson involving writing as the main task and an IC as the pre-task, especially when their lesson or class objective is to improve their students’ overall writing performance and/or performance in the specific areas of overall writing quality and content.

5.3. Limitations and Suggestions for Future Research

This study reveals limitations in three distinct ways: First, the construct of content was
reflected twice in the operational definition of overall WebQuest writing performance, thereby resulting in the content variable carrying more weight than the other variables in constituting the composite variable of overall WebQuest writing performance (see the Instruments section). Second, although the results are generalizable to a larger population in statistical terms, absolute generalization of the results to the larger population based upon only a single administration of a writing test would still remain implausible until such a test is replicated further in the future and additional confirmatory results are obtained (see Yin, 2009 for a discussion of statistical generalization vs. replication logic). Third, no pretest was conducted on the participants’ content knowledge on Monet and Cezanne’s work. While this is certainly a limitation of this study, the lack of a pretest on content knowledge may be justified, at least to some extent, given that this study involved random assignment of participants to treatment conditions and that conducting a pretest on the same content as the posttest would potentially cause a “testing effect” problem (see Campbell & Stanley, 1963).

Future studies would need to address the following: (a) the relative effectiveness of the ETR (experience-text-relationship) vs. CTA (concept-text-application) approaches to IC on EFL/ESL learners’ WebQuest writing performance or general task-based writing performance involving students’ use of source texts (see Tharp & Gallimore, 1988; Wong & Au, 1985 for discussions of these two IC approaches); (b) the relative effectiveness of types of post-reading instructional scaffolds on the “task-relevant” fluency, syntactic complexity, and lexical complexity of ESOL (English for Speakers of Other Languages) students’ WebQuest writings or task-based writings involving use of source texts; and (c) a comparative analysis of online IC and online recitation texts. Particularly, in view of the results of this study concerning performance on content and performance on fluency, syntactic complexity, and lexical complexity, an investigation of the task-relevant fluency and syntactic/lexical complexities of ESOL students’ writings would provide “meaningful” information about the students’ performance on these variables.

REFERENCES

Bellack, A. A., Kliebard, H. M., Hyman, R. T., & Smith, F. L. (1966). The language of the...


Suggestions for students in education & the social and behavioral sciences. Syracuse, NY: Syracuse University Press.


APPENDIX

Writing Posttest (Time: 40 minutes)

Based upon the WebQuest readings about Monet and Cezanne that you completed in today’s class, write an essay comparing and contrasting the work of the two artists. Focus on some aspects and/or characteristics of their work for the comparison and contrast. Remember that you must compare and contrast the “work” of the two artists, not the artists themselves.

You will be evaluated on the overall quality (content, organization, and grammar as a whole), length, syntactic complexity (i.e., structural complexity of sentences), lexical complexity (i.e., use of a variety of words), and content of your writing. Use the additional sheets provided to you.

Before you begin to write, you may use this space to organize your thoughts. ((Space)) Start to write your essay on the next page.

Applicable levels: Tertiary, secondary

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Received in June 2014
Reviewed in July 2014
Revised version received in August 2014

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