

## **Mobile-Mediated Enhancement of English Articles: A Close Look at Interlanguage Development\***

**Jongbum Ha**

Kumoh National Institute of Technology

**Ha, Jongbum. (2016). Mobile-mediated enhancement of English articles: A close look at interlanguage development. *Modern English Education*, 17(4), 221-245.**

This study has been motivated by the assumption that integration of mobile-assisted activities would lead to the improvement in the students' use of English articles, which is extremely difficult to master for EFL learners whose native language lacks the article system. 74 students at a university in South Korea experienced treatment including a one-hour formal instruction and six weeks of mobile-assisted textual enhancement (TE) and postexposure (PE) sessions on the English articles. The students were divided into two groups: the TE\_color and TE\_black groups. The TE\_color group was exposed to colored enhancement of the targeted item while the TE\_black group to traditional black and white enhancement. The findings suggested that the treatment was useful for the TE\_black group and for those who perceived the TE session to be helpful. Additionally, the same treatment group showed a similar sequence of acquisition of English articles in terms of the use of each article while they have not necessarily improved in terms of test scores. Three pedagogical implications are suggested based on the findings of this study, and several limitations and suggestions for further study are presented.

[English articles/mobile-mediated learning/textual enhancement/interlanguage/  
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\* This paper was supported by Research Fund, Kumoh National Institute of Technology. I thank three anonymous reviewers for their valuable comments.

## I. INTRODUCTION

The English article system is difficult to learn for second language (L2) learners whose native language lacks the article system. One of the reasons for this is the semantic complexity of the article system, in which the use of the English articles is governed by the semantic function of the noun phrase (NP) in discourse. This semantic complexity may explain why explicit teaching of English articles alone is relatively ineffective, and is the reason why implicit teaching through textual enhancement (TE) was employed in the current study.

While the effect of TE as implicit teaching has been argued in second language acquisition (SLA) research, many intervening variables, such as targeted items, TE types, familiarity of text, learners' proficiency, frequency of exposure, and individually different levels of meta-awareness, are considered to affect the results. In this study, whilst the variable of familiarity with text was controlled through using a passage familiar to all the participants, variables such as targeted items and types of TE were examined; specifically English articles were focused on through two different types of TE.

Mobile learning is one of the dominating trends of educational applications for new technologies. Distinctive characteristics of mobile learning include permanency, accessibility, immediacy, interactivity, situating of instructional activities (Ogata & Yano, 2005), and the ubiquity, flexibility, multi-functionality, and nonlinearity that mobile devices offer for learning (Kress & Pachler, 2007). The research showed mobile technology use in various aspects of language learning and results, and supported the hypothesis that mobile technology can enhance learners' L2 learning (Viberg & Grönlund, 2012).

Amid the extreme difficulty of learning article use through either explicit or implicit methods, the rationale of this study is that exposure to English articles through TE and postexposure (PE) would enable students to become aware of and notice the use of the targeted items. Additionally, as research shows that L2 learning of English articles is often accompanied by interlanguage development in terms of deletion and overuse and semantic functions of articles (e.g., Huebner, 1983, 1985), it was considered worthwhile to look at pattern change, if any, in students' use of articles after treatment.

## II. LITERATURE REVIEW AND RESEARCH QUESTIONS

### 1. The English Article System and Its Interlanguage Development

Celce-Murcia and Larsen-Freeman (1999) suggested three types of English determiners

and their order in an NP as in Table 1.

**TABLE 1**  
The Order of English Determiners in an NP

Pre-determiners	Core-determiners	Post-determiners
Quantifiers: <i>all, both, half</i>	Articles: <i>Ø, a(n), the</i>	Cardinal numbers: <i>one, two, three, etc.</i>
Multipliers: <i>twice, three times, etc.</i>	Possessives: <i>my, your, his, her, its, their, our;</i> 's	Ordinal numbers: <i>first, second, third, etc.</i>
	Demonstratives: <i>this, that, these, those</i>	General ordinals: <i>next, last, another</i>
	Quantifiers: <i>some, any, no, each, every, several, more, less, most, least</i> <i>either, neither, enough</i>	Quantifiers: <i>many, much, (a) few, (a) little,</i>

*Note.* Adapted from Celce-Murcia & Larsen-Freeman (1999, p. 335)

According to Celce-Murcia and Larsen-Freeman (1999), articles belong to the core-determiner, and nouns with no salient core-determiner are considered to follow a zero article ( $\emptyset$ ). In previous studies (e.g., Master, 2002), production data (e.g., essay writing) was mainly used for the analyses of the acquisition of English articles, and learners of low level of proficiency frequently omitted articles for either negligence or ignorance. On the other hand, in the grammatical judgment test (e.g., multiple-choice cloze test), as in the current study, learners have to actively choose at least one article as an answer (Ha, 2009).

While the classification of articles may be traced back to the work of Hakuta (1976), who initiated the early study on ESL acquisition of articles by investigating the presence (i.e., commission) or absence (i.e., omission) of articles in obligatory contexts, Bickerton (1981) provided a systematic approach to the analysis of English article usage in terms of referentiality. According to Bickerton, the use of the English articles is determined by two binary discourse features: (a) whether a noun has a specific referent (+SR) and (b) whether the hearer knows the referent (+HK). Based on such an analysis, NPs fall into four major semantic types. Based on Bickerton's (1981) noun classification system, Huebner (1983, 1985) found that his adult L2 learner of English initially overused the with almost all nouns in his speech, and then the amount of overuse gradually decreased in [-SR -HK] situations, and his participant began to use the almost exclusively in [+SR +HK] and [SR +HK] cases.

The classification of English articles for the current study is based on Huebner's (1983, 1985) semantic wheel, which was refined by T. S. Park (2005) as in Table 2.

**TABLE 2**  
Semantic Types of English Articles

Type 1 [-SR +HK] Generics: <i>a/an, the, Ø</i>	Type 2 [+SR +HK] Referential definites: <i>the</i>
<u>A pen</u> is an instrument used for writing.	Give me <u>the pencil</u> , please.
<u>The Grey kangaroo</u> is found in Australia.	I bought a pen, but <u>the ink</u> was the wrong.
<u>Ø Hamburgers</u> are bad for you.	Who is <u>the woman</u> with the purple bag?
Type 3 [+SR -HK] Referential indefinites: <i>a(n), Ø</i>	Type 4 [-SR -HK] Non-referentials: <i>a(n), Ø</i>
I went to the zoo and saw <u>an elephant</u> .	She is <u>a doctor</u> .
<u>Ø Politicians</u> are debating the issue.	They are <u>Ø nurses</u> .
There was <u>Ø cheese</u> at the market.	It is <u>Ø cake</u> .
Conventional Use	
On <u>Ø Sunday</u> , everyone went to church.	I had lunch at <u>Ø school</u> .
Let's go play <u>Ø soccer</u> !	I went skiing on <u>the Rocky Mountains</u> .

Note. Adapted from T. S. Park (2005, pp. 42-43)

In summary, deletion and overuse of articles were the primary measurements to determine L2 learners' current state of article acquisition. Given the difference between production and grammatical judgment data, however, the term "overuse of the zero article (Ø)" instead of "deletion" may be a more appropriate one in the current study, in which the multiple-choice cloze test was employed. Additionally, research suggested that we need to look at interlanguage development of the English articles in each semantic type to get a precise picture of ESL learners' acquisition of the English articles. While five semantic functions were suggested in T. S. Park (2005), the current study was concerned with four semantic functions excluding conventional use of articles, which has too broad a range of use.

## 2. Textual Enhancement in Second Language Acquisition

Textual enhancement (TE) is one kind of input enhancement, and its main function is to draw learners' attention to linguistics forms by modifying the physical appearance of target structures through combinations of various formatting techniques (e.g., bold, italic, capital, underlining, and changing the size of the font of letters) (Simard, 2009). Research on TE have been mostly at the morpho-syntactic level, and has produced mixed results. While some research found no or limited effects of TE (e.g., Alanen, 1995; Izumi, 2002; Jourdenais, 2001; Leow, 2001; Leow, Egi, Nuevo, & Tsa, 2003; Overstreet, 1998; Wong, 2003; White, 1998), other research found the positive effects of TE (e.g., Doughty, 1991; Jourdenais, Ota, Stauffer, Boyson, & Doughty, 1995; Shook, 1994).

These different results may be due to various intervening factors involved in this line of research, such as targeted items, TE types, familiarity of text, learners' proficiency, frequency of exposure, and individually different levels of meta-awareness. These variables make it difficult to make direct comparisons among them, so it is important to

consider and, if necessary, control these factors for TE research.

Targeted items have been various, such as present perfect (Shook, 1994), locative suffixes (Alanen, 1995), present perfect subjunctive (Leow et al., 2003), relative clauses (Izumi, 2003), French past participle (Wong, 2003), passive voice (S. K. Lee, 2007), and plural markers (Simard, 2009). The question of what forms we need to enhance is a difficult one to answer with findings so far. Shook (1999) mentioned that learners are able to notice, on their own, meaning-bearing forms while enhancing a non-meaningful form does not lead to better intake. However, it would be worth a try to conduct form-focused activities using a passage familiar to students and see the effect of TE on other function words like the English article, which has not been targeted in this line of research.

TE types have also been various, such as enlarged letters (Shook, 1994), bold and italic (Alanen, 1995), underline, bold and enlarged fonts (Leow et al., 2003), enlarged letters, bold and different font (S. K. Lee, 2007), and underline, bold, yellow highlight and capital (Simard, 2009). Given the variety of TE types, additional techniques, such as shade and color, would be worth it to be considered along with other techniques in future research. One of various techniques or combination of various techniques has been employed in previous studies, and it would be a critical agenda to find the optimal condition in terms of TE types in which learners can best attend to the targeted form.

Familiarity of text should be considered in that, unlike in L1 reading contexts, where learners tend to prioritize meaning before form for comprehension (Skehan, 2003), in L2 reading, learners have the additional demand of drawing their attention to form in addition to meaning comprehension. Given this nature of L2 reading, we can assume that the passage with familiar topics would minimize the attentional imbalance between form and meaning. On the other hand, S. K. Lee (2007) showed that topic familiarity aided the students' comprehension but was ineffective in terms of their learning of form while textual enhancement aided the learning of the target forms with unfavorable effects on meaning comprehension. Based on these findings, it may not be a good idea to try to achieve two goals, meaning and form, at the same time in the use of TE, but we will have to look for the optimal material and guideline for the targeted form acquisition.

### 3. Use of Mobile Devices for Motivating Second Language Learning

Sternberg and Williams (2002) suggested five ways to boost internal motivation of language learners: First, age is one of the motivators, and according to them, young students are sensitive to external motivators such as points while older students are sensitive to internal motivators such as pleasure. Second, it is important to use a variety of techniques in order to sustain students' learning motivation. Third, inherent internal motivation can lead to good outcome. Forth, the teacher needs to plan a class to intrigue

students' curiosity. Fifth, it is important for the teacher to show his or her love and passion for the students employing a novel method to induce students' curiosity and interest.

Various distinctive characteristics of mobile learning have been suggested by several researchers. Research (e.g., Ogata & Yano, 2005) presented features of mobile learning, such as permanency, accessibility, immediacy, interactivity, situating of instructional activities. Additionally, other research pointed out ubiquity, flexibility, multi-functionality, and nonlinearity that mobile devices offer for learning (e.g., Kress & Pachler, 2007). Given these characteristics of mobile learning, mobile device may be useful as a medium to provide students with target language input.

Stockwell (2008) demonstrated that one of the reasons for the use of mobile devices was the language learners' perception that they could perform the activities anywhere and anytime. On the other hand, the reasons for not wanting to use mobile devices include cost, the small screen, the problem with keypads, and the learning environment in that the users wanted to study in a quiet context instead of public environments, which are resultantly less attractive. According to Stockwell (2008), learners approached the technology with considerable expectation, many of the learners expressing an interest in using mobile phones for the purpose of language leaning in both short- and long-term use.

#### 4. Research Questions

Through the literature review, we learned that we need to look at L2 learners' use of articles in terms of overuse and semantic functions in order to understand their interlanguage development of articles, which may not be seen in the total test scores. Additionally, it may be worthwhile to see the effects of TE and TE types on the acquisition of English articles. The following five research questions were formulated:

- 1) What are the effects of treatment and treatment types in terms of the correct use of articles?
- 2) How do the participants' performances change in terms of correct use and overuse of articles?
- 3) How do the participants' performances change in each semantic type of articles?
- 4) What other variables explain the improvement in the use of articles, if any?

### III. METHOD

#### 1. Participants

Participants were Korean students from two English reading classes at a university in South Korea. Originally, 98 students participated at the beginning of the study, but only 74 students successfully finished all the assignments required for the study. The class of English reading is a course that all students at the university have to take as a requirement. The majority of the students were in their first year at the university majoring in Mechanical System or Electronics Engineering. Both the classes were taught by the researcher with the same textbook and teaching schedule. There was no control group, and the two classes were divided into 35 students and 39 students for each. The pretest scores of the two groups were statistically compared using independent samples *t*-test, and no significant difference was found between the groups, confirming that the two classes were homogeneous ( $t = -1.101, p = 0.273$ ). Table 3 shows the distribution of the participants.

**TABLE 3**  
Participants

Class		Year			Sex	
Class 1	Class 2	1st year	2nd year	3rd year	Male	Female
35	39	68	4	2	67	7

#### 2. Target Item

The target item was the English articles—the definite article (*the*), the indefinite article (*a* or *an*) and the zero article ( $\emptyset$ ), excluding the other core-determiners, such as possessives (e.g., *my, your, his, her, its, their, -'s*), demonstratives (e.g., *this, that, these, those*), and some quantifiers (e.g., *some, any, no, each, every, either, neither, enough*). This is because L2 learners could use other core-determiners rather than the article when they have little confidence in its use, which would prevent from obtaining a precise picture of their knowledge of the article system.

#### 3. Materials and Instruments

A test package of 30 questions was used as the pre- and post-tests, which were a set of multiple-choice cloze tests. The questions were generated by the researcher from several

passages whose difficulty levels are similar to the textbook.<sup>1</sup> Based on four types of semantic features, the target article of each question belongs to one of the four semantic types. No article of conventional use was included in this study to maximize the effects of treatment as this type was reported to be the most difficult to learn of all the five types (T. S. Park, 2005). While there was no control group, the 30 questions were randomized for each of the pre- and post-tests. The students were asked to select the appropriate article from three possible choices—zero article, *the* and *a(n)*.

Materials for the six TE sessions were extracted from the reading passage of the textbook which had previously been studied in class with no focus on the use of articles. Therefore, any potential intervening variable due to differential familiarity was effectively controlled, and the students were expected to focus on the target form with little need of making an additional effort to comprehend the content and get acquainted with the structure of the passage. In the materials for both classes, all the noun phrases with an article were bolded, and the articles and the following head nouns were underlined and italicized. Additionally, in the materials for Class 1, the head nouns were colored in blue, and each of the articles were capitalized and shaded in different colors, such as green for  $\emptyset$ , jade green for *a(n)*, and yellow for *the* (i.e., TE\_color). In the materials for Class 2, on the other hand, each of the articles was capitalized with no additional manipulation (i.e., TE\_black) (see Appendix 1). The TE materials were created with Google Docs<sup>2</sup>—an online word processor—and were made available online to the students with no need of printing out any hardcopy materials.

Materials for the six PE sessions were also extracted from the TE materials, and provided students with immediate feedback for the selected answers. Each of the six PE sessions consists of 17 to 20 online questions of English articles, which were created and activated with Socrative<sup>3</sup>—an online tool with which real-time questioning and result aggregation are enabled for the teacher (see Appendix 2). Socrative provides three kinds of conditions for each quiz, such as *student paced with immediate feedback*, *student paced without feedback*, and *teacher paced*. For the PE sessions of this study, the mode was set as *student paced with immediate feedback* to give the students additional exposures to the targeted item.

Materials for formal instruction of English articles were on the order of English determiners and semantic types of English articles based on the semantic function of the noun phrase (NP) in discourse, which were based on Celce-Murcia and Larsen-Freeman (1999) and T. S. Park (2005) respectively (see Tables 1 and 2.). The survey questionnaire

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<sup>1</sup> *Analytical Readings in English* (Walters, C. Song, S. Jang, H. Yoon, & J. Ha, 2015)

<sup>2</sup> <https://docs.google.com/document/>

<sup>3</sup> <http://www.socrative.com/>

included questions on class, year, sex, TOEIC score, language-learning preference, cognitive style, the most difficult article type, the most helpful activity used in class, sincerity level for the activities, and motivation level induced by mobile device. Information on individual variables was based on the participants' self-reported answers using a 5 point Likert-type scale.

#### 4. Treatment and Procedures

Data was collected through 8 weeks during the spring 2016 semester of study at a university in South Korea. In the 1st week, all the participants took the pretest, and a one hour formal instruction on the order of English determiners and semantic types of English articles based on the semantic function of the noun phrase (NP) in discourse was provided. In the 2nd through 8th weeks, students from both classes were required to read their materials and be acquainted with the use of articles for 20 minutes during each class time. For students to access the materials, the URL of each Google Docs material was sent to the students in the form of a text message during class time. Once this TE session was over, students were then required to access Socrative questions as the PE session, in which students could review what they had learned by answering questions of the English article with immediate feedback. Finally, in the 8th week, all the participants took the posttest, and a post-activity survey was done for information from the students. Table 4 shows the overall procedure of the treatment.

**TABLE 4**  
Procedures for Treatment

Week	Class 1	Class 2
Week 1	Pretest, Formal instruction	Pretest, Formal instruction
Week 2	TE_color 1, PE 1	TE_black 1, PE 1
Week 3	TE_color 2, PE 2	TE_black 2, PE 2
Week 4	TE_color 3, PE 3	TE_black 3, PE 3
Week 5	TE_color 4, PE 4	TE_black 4, PE 4
Week 6	TE_color 5, PE 5	TE_black 5, PE 5
Week 7	TE_color 6, PE 6	TE_black 6, PE 6
Week 8	Posttest, Post-activity survey	Posttest, Post-activity survey

#### 5. Data Collection and Analyses

The pretest and the posttest were implemented using Socrative, and their results were automatically aggregated online, then transforming into Excel data for further analyses. Each analysis included descriptive statistics and statistical analyses for the dependent variables. Statistical analyses were performed in order to determine whether students

outperformed on the posttests and whether the difference in the dependent variables is statistically significant. For statistical analyses, paired samples *t*-tests, repeated measures ANOVA, independent samples *t*-tests, and one-way ANOVA were employed, and the statistical significance was set at a *p*-value of 0.05. SPSS (Statistical Package for the Social Sciences) 20 for Windows was employed to analyze the results.

Independent variables include treatment, treatment types (i.e., TE\_black vs. TE\_color), and other individual variables (e.g., year, sex, TOEIC score, language-learning preference, cognitive style, the most difficult article type, the most helpful activity, and sincerity and motivation levels) while dependent variables were the scores of the pre- and post-tests, the gain scores in the posttest, correct use and overuse of each article type.

#### IV. RESULTS AND DISCUSSION

The results of the data analysis were presented in order to answer each research question. Each analysis includes the descriptive statistics and the statistical analyses on the variables.

##### 1. Research Question 1: What Are the Effects of Treatment and Treatment Types in Terms of the Correct Use of Articles?

Table 5 presents descriptive statistics for the scores of the pretest and posttest for the overall participants.

**TABLE 5**  
Descriptive Statistics on Scores ( $n = 74$ )

	Pretest	Posttest
<i>M</i>	46.53	47.57
<i>Max</i>	66.67	80.00
<i>Min</i>	20.00	23.33
<i>SD</i>	10.27	10.07

Note. The maximum scores for each test were originally 30, which were reevaluated as percentage for easy comparison, so the numbers indicate percentage and their maximum value is 100 (%).

A paired samples *t*-test on the scores of the test determined that there was no significant difference in the scores of the pre- and post-tests ( $t = -0.742, p = 0.460$ ). The result showed that the participants did not gain significantly more in the posttest than in the pretest. Although it was believed that the treatment—consisting of formal instruction, TE, and PE—would induce the participants to focus on the target form, we need to note that English articles may not be what is possibly learned within this limited time, particularly by those who were mostly in their first year at university. For this reason, it may be premature to say

that the treatment employed in the current study was not useful at all. To obtain a more precise picture, we need to look at other variables and their mutual relationships among variables.

Tables 6 and 7 presents descriptive statistics and statistical analyses for scores in the pretest and the posttest for the two groups.

**TABLE 6**  
Descriptive Statistics on Scores for TE\_black and TE\_color

	TE_black ( <i>n</i> = 35)		TE_color ( <i>n</i> = 39)	
	Pretest	Posttest	Pretest	Posttest
<i>M</i>	45.13	49.03	47.77	46.23
<i>Max</i>	66.67	66.67	66.67	66.67
<i>Min</i>	23.33	33.33	20.00	23.33
<i>SD</i>	10.60	8.83	9.90	10.97

**TABLE 7**  
Repeated Measures on Scores for TE\_black and TE\_color

Source	<i>df</i>	<i>SS</i>	<i>F</i>	<i>p</i>
Group	1	29402.72	2401.52	.000**
Error	72	12.243		
Time	1	4.648	0.745	.391
Time*Group	1	24.594	3.941	.050*
Error	72	6.241		

\**p* < .05, \*\**p* < .01

Repeated measures ANOVA confirmed that there was a significant difference in the pre- and post-test scores between the groups. The result showed that while the overall improvement was not significant (as in Research Question 1), there was a significant difference in the gain scores between the two groups (3.90 for TE\_black and -1.57 for TE\_color). However, we need to note that while TE\_black group showed some positive improvement, TE\_color group did not with the negative gain score. Considering the same test questions were used for both pre- and post-tests with no control group, it was expected that both the groups would make improvement more or less. To make sure of this result, a paired samples *t*-test on the scores in the pre- and post-tests for TE\_black was run, and it was found that there was no significant but noticeable difference in the gain scores for TE\_black group (*t* = -2.003, *p* = 0.053).

Based on this result, while it may be hard to say that the treatment employed for this study was surely effective for the development of English articles, it seems that different treatments—specifically different types of TE—made the difference in the outcomes. Given the result, we can cautiously say that highlighting in black and white was effective while colored highlighting could lead to students' over-focus on the target form. Unfortunately,

there was no survey question included on the students' perceived focus on the targeted form between the two classes while there was no significant difference in perceived focus on meaning between groups ( $t = 0.343, p = 0.733$ ).

In case there had been other variables intervened on this result, self-reported sincerity scales were compared with each other, which showed that there was a significant difference between the two groups: the scale of 4.06 out of 5 for TE\_black and 3.44 for TE\_color ( $t = 2.641, p = 0.010$ ). This indicates that, throughout the activities, the students of TE\_black had sincerer attitude in completing the given assignments than those of TE\_color did, which has led to a better outcome of TE\_black. While the sincerity scale was a possible factor to explain the different outcomes as an independent variable, however, it could also have affected by another variable—major—in that the TE\_black group was mostly Mechanical System Engineering students whereas the TE\_color was mostly Electronics Engineering students. Different classroom atmospheres, if any, due to different majors might have affected the result as an intervening variable.

### 3. Research Question 3: How Do the Participants' Performances Change in Terms of Correct Use and Overuse of Articles?

To answer this research question, an analysis on the differences in the pre- and post-test scores for the overall participants was conducted (i.e., Effect of treatment), which was followed by on the effects of the two treatment types (i.e., Effect of treatment types).

#### 1) Effect of Treatment

Table 8 presents descriptive statistics and statistical analyses for correct use of articles in the pretest and the posttest for the overall participants.

**TABLE 8**  
Statistics on Correct Use of Articles for the Overall Participants ( $n = 74$ )

	Correct Use of $\emptyset$		Correct Use of $a(n)$		Correct Use of <i>the</i>	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
<i>M</i>	40.09	29.73	47.49	46.43	49.05	60.81
<i>SD</i>	2.98	2.66	1.88	2.10	1.77	1.99
<i>t</i>		3.172		0.448		-4.601
<i>p</i>		0.002**		0.655		0.000**

\*\* $p < .01$

A paired samples *t*-test on correct use of articles for the overall participants determined that there were significant differences in correct use of  $\emptyset$  ( $t = 3.172, p = 0.002$ ) and *the* ( $t = -4.601, p = 0.000$ ) while no significant difference in correct use of  $a(n)$  ( $t = 0.448, p =$

0.655).

Table 9 presents descriptive statistics and statistical analyses for overuse of articles in the pretest and the posttest for the overall participants

**TABLE 9**  
Statistics on Overuse of Articles for the Overall Participants ( $n = 74$ )

	Overuse of $\emptyset$		Overuse of $a(n)$		Overuse of <i>the</i>	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
<i>M</i>	37.61	25.70	23.43	22.83	38.98	51.41
<i>SD</i>	1.85	1.75	1.37	1.61	1.42	1.99
<i>t</i>		5.978		0.344		-5.833
<i>p</i>		0.000**		0.732		0.000**

\*\* $p < .01$

A paired samples *t*-test on overuse of articles for the overall participants determined that there were significant differences in overuse of  $\emptyset$  ( $t = 5.978, p = 0.000$ ) and overuse of *the* ( $t = -5.833, p = 0.000$ ) while there was no significant difference in overuse of  $a(n)$  ( $t = 0.344, p = 0.732$ ).

The results suggested that the overall participants showed less correct use of  $\emptyset$  (40.09 to 29.73), more correct use of *the* (49.05 to 60.81), less overuse of  $\emptyset$  (37.61 to 25.70), and overuse of *the* (38.98 to 51.41) in the posttest while there were no significant changes in correct use and overuse of  $a(n)$ . Based on this result, it seemed that students tried to use  $\emptyset$  less often and *the* more often in the posttest, which resulted in less correct use of  $\emptyset$  and more correct use of *the*, and less overuse of  $\emptyset$  and more overuse of *the*.

Master (2002) suggested that developmental sequence of acquisition of English articles is stages of deletions, overuse of *the*, overuse of  $a(n)$  and correct use of articles. In contrast, Ha (2009) suggested that in the multiple-choice cloze tests, in which each blank includes three options, such as zero article,  $a(n)$  or *the*, students were forced to choose at least one article as an answer, so actively choose an article including the zero article. In this way, a zero article is always an option in the multiple-choice cloze tests while in the production data students may omit articles negligently. Then, how can we explain the current results—less overuse of  $\emptyset$  and more overuse of *the* in the posttest in the form of multiple-choice cloze test? We need to note that, unlike Ha (2009), who only employed TE, the current study included a one-hour formal instruction session as well as TE, so students seemed to become aware that *the* is the most used article in English and exclusively used in Type 2 [+SR +HK], which led them to use *the* for many uncertain contexts in the posttest.

## 2) Effect of Treatment Types

Table 10 presents descriptive statistics and statistical analyses for correct use of articles

in the pre- and post-tests and the gain values for the two groups (i.e., TE\_black and TE\_color).

**TABLE 10**  
Statistics on Correct Use of Articles for the Two Groups

		Correct Use of $\emptyset$		Correct Use of $a(n)$		Correct Use of <i>the</i>	
		Gain		Gain		Gain	
TE_black (n = 35)	Pretest	<i>M</i>	32.38	-3.82	48.15	0.82	48.57
		<i>SD</i>	22.84		15.99		16.29
	Posttest	<i>M</i>	28.56		48.97		61.42
		<i>SD</i>	20.43		18.42		14.97
TE_color (n = 39)	Pretest	<i>M</i>	47.01	-16.24	46.88	-2.74	49.48
		<i>SD</i>	26.45		16.52		14.50
	Posttest	<i>M</i>	30.77		44.14		60.25
		<i>SD</i>	25.22		17.71		19.12
		<i>t</i>	1.934		0.752		0.406
		<i>p</i>	0.050*		0.455		0.686

\* $p < .05$

Independent samples *t*-tests on the gain values of correct use of each article determined that there was a significant difference in the gain values of  $\emptyset$  ( $t = 1.934$ ,  $p = 0.050$ ) while there were no significant differences in the gain values of  $a(n)$  ( $t = 0.752$ ,  $p = 0.455$ ) and *the* ( $t = 0.406$ ,  $p = 0.686$ ).

Table 11 presents descriptive statistics and statistical analyses for overuse of articles in the pretest and the posttest and the gain values for the two groups.

**TABLE 11**  
Statistics on Overuse of Articles for the Two Groups

		Overuse of $\emptyset$		Overuse of $a(n)$		Overuse of <i>the</i>	
		Gain		Gain		Gain	
TE_black (n = 35)	Pretest	<i>M</i>	32.95	-6.50	24.24	-0.56	42.82
		<i>SD</i>	12.65		9.08		11.08
	Posttest	<i>M</i>	26.44		23.68		49.87
		<i>SD</i>	15.24		12.64		14.88
TE_color (n = 39)	Pretest	<i>M</i>	41.78	-16.76	22.70	-0.63	35.53
		<i>SD</i>	17.42		13.79		12.31
	Posttest	<i>M</i>	25.01		22.06		52.93
		<i>SD</i>	14.99		15.00		19.10
		<i>t</i>	2.677		0.020		-2.495
		<i>p</i>	0.009**		0.984		0.015*

\* $p < .05$ , \*\* $p < .01$

Independent samples *t*-tests on the gain values of overuse of articles determined that there were significant differences in overuse of  $\emptyset$  ( $t = 2.677$ ,  $p = 0.009$ ) and overuse of *the* ( $t = -2.495$ ,  $p = 0.015$ ) for the two groups while there was no significant difference in

overuse of *a(n)* ( $t = 0.020, p = 0.984$ ).

The results suggested that the TE\_color group showed more changes in correct use of  $\emptyset$  (47.01 to 30.77), overuse of  $\emptyset$  (41.78 to 25.01) and overuse of *the* (35.53 to 52.93) than the TE\_black group (32.38 to 28.56; 32.95 to 26.44; 42.82 to 49.87, respectively) while there were no significant changes in correct use of *a(n)* and *the*, and in overuse of *a(n)*. It is interesting that the TE\_color group, who did not improve in the posttest, showed more changes in these values even than the TE\_black group, who showed some noticeable improvement in the posttest. This may indicate that those who have experienced the same treatment would follow a similar sequence of acquisition of English articles, which may not be seen in terms of test scores.

However, the comparison of each value in the pretest shows that there were significant differences in correct use of  $\emptyset$ , overuse of  $\emptyset$ , and overuse of *the* between the groups, indicating that two groups were not homogeneous at the moment of taking the pretest in terms of these three values ( $t = -2.532, p = 0.014$ ;  $t = -2.469, p = 0.016$ ;  $t = 2.665, p = 0.009$ , respectively). It is not clear why this difference existed from the beginning, but an intervening variable—major—could have affected the result.

#### 4. Research Question 4: How Do the Participants' Performances Change in Each Semantic Type of Articles?

To answer this research question, an analysis on the differences in the pre- and post-test scores for the overall participants was conducted, which was followed by on the effects of the two treatment types.

##### 1) Effect of Treatment

Table 12 presents descriptive statistics and statistical analyses for four semantic types of articles in the pretest and the posttest for the overall participants.

**TABLE 12**  
Statistics on Semantic Types of Articles for the Overall Participants ( $n = 74$ )

	Type 1 [-SR +HK]		Type 2 [+SR +HK]		Type 3 [-SR -HK]		Type 4 [-SR -HK]	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
<i>M</i>	33.78	25.67	51.35	62.77	53.82	47.74	44.18	45.67
<i>SD</i>	22.91	20.27	14.93	17.88	21.82	26.64	16.21	13.95
<i>t</i>	2.595		-4.525		1.763		-0.666	
<i>p</i>	0.011*		0.000**		0.082		0.508	

\* $p < .05$ , \*\* $p < .01$

A paired samples *t*-test on correct use of articles in each semantic type for the overall participants determined that there were significant differences in Type 1 [-SR +HK] ( $t = 2.595, p = 0.011$ ) and Type 2 [-SR +HR] ( $t = -4.525, p = 0.000$ ) while there is no significant difference in Type 3 [+SR -HK] ( $t = 1.763, p = 0.082$ ) and Type 4 [-SR -HK] ( $t = -0.666, p = 0.508$ ) between the pre- and post-tests.

The results suggested that the overall participants showed less correct use of articles in Type 1 [-SR +HK] (33.78 to 25.67) and more correct use of articles in Type 2 [+SR +HK] (51.35 to 62.77) in the posttest while there were no significant changes in Type 3 [-SR -HK] and Type 4 [-SR -HK]. However, we need to consider the findings in Research Question 3 regarding correct use and overuse of articles. Given that *the* is exclusively used in Type 2, there should be direct correlations between the use of *the* and correct use of article in Type 2. To determine correlations between values, Pearson's Correlations were run for (1) total correct use of articles in each type; (2) total correct use of each article; and (3) overuse of each article. Table 13 presents correlations between them.

**TABLE 13**  
Correlations of Correct Use and Overuse of Articles ( $n = 74$ )

	Type1	Type2	Type3	Type4	$\emptyset$	$a(n)$	<i>the</i>	$\emptyset$	$a(n)$	<i>the</i>
Type1	1									
1 Type2	-.071	1								
Type3	.123	-.058	1							
Type4	.186	.040	.304**	1						
$\emptyset$	.798**	.029	.076	.346**	1					
2 $a(n)$	.124	-.076	.831**	.637**	-.025	1				
<i>The</i>	-.051	.958**	-.123	.064	.044	-.152	1			
$\emptyset$	.471**	-.158	-.006	.088	.581**	-.088	-.171	1		
3 $a(n)$	-.219	-.439**	.422**	.075	-.395**	.479**	-.464**	-.511**	1	
<i>the</i>	-.321**	.565**	-.368**	-.164	-.286**	-.330**	.602**	-.642**	-.331**	1

\*\* $p < .01$

The analyses of correlations showed that while there are many significant correlations with one another, there are significant correlations between correct use of articles in Type 1 and correct use of  $\emptyset$  and overuse of  $\emptyset$ , and between correct use of articles in Type 2 and correct use and overuse of *the*. The correlations of Type 2 and the may be well explained by the fact that *the* is exclusively used in Type 2 [+SR +HK]. On the other hand, regarding the correlations of Type 1 and  $\emptyset$ , we need to note that four out of five Type 1 questions used in the current study required  $\emptyset$  as the correct answer while only one question required  $a(n)$ . Therefore, failure of having normal distribution of all the three articles as the correct answer may have led to this result.

## 2) Effect of Treatment Types

Table 14 presents descriptive statistics and statistical analyses for four semantic types of articles in the pretest and the posttest and the gain values for the two groups (i.e., TE\_black and TE\_color).

**TABLE 14**  
Statistics on Correct Use of Articles for the Two Groups

		Type 1 [-SR +HK]		Type2 [+SR +HK]		Type 3 [-SR -HK]		Type 4 [-SR -HK]	
		Gain		Gain		Gain		Gain	
TE_black (n = 35)	Pretest	<i>M</i>	25.71		50.16		55.23		44.28
		<i>SD</i>	18.51	-1.14	15.59	13.02	21.30	-4.75	16.67
	Posttest	<i>M</i>	24.57		63.19		50.48		47.71
		<i>SD</i>	20.05		15.67		28.42		11.65
TE_color (n = 39)	Pretest	<i>M</i>	41.02		52.42		52.55		44.10
		<i>SD</i>	24.25	-14.35	14.43	9.97	22.47	-7.26	16.01
	Posttest	<i>M</i>	26.66		62.40		45.29		43.84
		<i>SD</i>	20.68		19.86		25.05		15.66
		<i>t</i>	2.165		0.600		0.361		0.822
		<i>p</i>	0.034*		0.550		0.719		0.057

\* $p < .05$

Independent samples *t*-tests on the gain values in each semantic type determined that there was a significant difference in Type 1 [-SR +HK] ( $t = 2.165, p = 0.034$ ) while there are no significant differences in Type 2 [+SR +HR] ( $t = 0.600, p = 0.550$ ), Type 3 [+SR -HK] ( $t = 0.361, p = 0.719$ ) and Type 4 [-SR -HK] ( $t = 0.822, p = 0.057$ ) between the pre- and post-tests.

The results suggested that TE\_color group showed more changes in correct use of articles in Type 1 [-SR +HK] (41.02 to 26.66) in the posttest than the TE\_black group (25.71 to 24.57) while there were no significant changes in the other types. This result is no wonder because the TE\_color group showed more changes in correct use of  $\emptyset$  (47.01 to 30.77) than the TE\_black group (32.38 to 28.56), and most of the questions in Type 1 required  $\emptyset$  as the correct answer. However, as in Research Question 3, the comparison of correct use of articles in each type in the pretest between the two groups shows that there was a significant difference between the groups ( $t = -3.025, p = 0.003$ ). With the possibility of an intervening variable—major—involved, a more variety of questions in Type 1 will help obtain more reliable data.

### 5. Research Question 5: What Other Variables Explain the Improvement in the Use of Articles, If Any?

Results showed that there were no significant differences in the improvement between groups in terms of year, sex, TOEIC score, language-learning preference, cognitive style, the most difficult article type, and motivation level while there was a significant difference in the improvement in terms of the most helpful activity. While 54 students chose one of the three activities as the most helpful one, 20 students answered all the three were helpful equally.

Table 15 presents descriptive statistics for gain scores between the four groups.

**TABLE 15**  
Descriptive Statistics on Scores for the Most Helpful Activity<sup>4</sup>

		TE ( <i>n</i> = 6)	PE ( <i>n</i> = 24)	Lecture ( <i>n</i> = 24)	ALL ( <i>n</i> = 20)
Pretest	<i>M</i>	41.10	48.77	49.17	42.33
	<i>SD</i>	14.83	15.90	8.50	10.53
Posttest	<i>M</i>	44.43	50.13	44.17	49.50
	<i>SD</i>	11.47	8.73	10.37	10.03
Gain	<i>M</i>	3.33	1.40	-5.00	7.17
	<i>SD</i>	10.54	10.49	11.59	11.91

One-way ANOVA on the gain scores determined that there were significant differences in the gains ( $F = 4.368, p = 0.007$ ) between groups. Particularly, those who reported all of the three activities had been helpful made the most gain (7.17), and those who reported lecture had been the most helpful made a minus gain (-5.00) while those of TE and PE made moderate gains (3.33 and 1.40 respectively).

According to the results, those who reported all of the three activities had been helpful showed the most improvement (7.17) while those who reported lecture had been the most helpful showed no improvement with a minus gain (-5.00), and those of TE and PE showed moderate improvement (3.33 and 1.40 respectively). Based on this finding, given that three activities were combined and provided for students, meaningful involvement in all the three activities was necessary for the effective learning of English articles. However, the comparison of the pretest scores shows that there were significant differences between the four groups ( $F = 2.766, p = 0.048$ ), suggesting that only those who obtained lower scores in the pretest significantly improved in the posttest.

With TE being the primary concern of the study, to see the effect of TE, the four groups

<sup>4</sup> The numbers of students in each of TE\_black and TE\_color are 4 and 2 for TE, 15 and 9 for PE, 7 and 17 for Lecture, and 9 and 11 for All, which shows there was no class factor for this grouping.

have been reduced into two—TE Preferred (i.e., TE and All) and TE Not Preferred (i.e., PE and Lecture). Tables 16 and 17 present descriptive statistics and statistical analyses for scores in the pretest and the posttest for the two groups.

**TABLE 16**  
Descriptive Statistics on Scores for TE Preferred and TE Not Preferred<sup>5</sup>

	TE Preferred ( <i>n</i> = 26)		TE Not Preferred ( <i>n</i> = 48)	
	Pretest	Posttest	Pretest	Posttest
<i>M</i>	42.02	48.33	48.97	47.17
<i>Max</i>	60.00	66.67	26.67	23.33
<i>Min</i>	20.00	26.67	66.67	66.67
<i>SD</i>	11.33	10.37	8.80	9.93

**TABLE 17**  
Repeated Measures on Scores for TE Preferred and TE Not Preferred

Source	<i>DF</i>	<i>SS</i>	<i>F</i>	<i>p</i>
Group	1	24.887	2.092	0.000**
Error	72	11.898		
Time	1	15.208	2.581	.113
Time*Group	1	49.640	8.424	0.005**
Error	72	5.893		

\*\**p* < .01

Repeated measures ANOVA confirmed that there were significant differences in the pre- and post-test scores between the groups (i.e., TE Preferred and TE Not Preferred), indicating that those who considered TE helpful showed more improvement in the posttest than the other. However, the comparison of the pretest scores also shows that there were significant differences between the two groups ( $t = -2.903$ ,  $p = 0.005$ ), suggesting that only those who obtained lower scores in the pretest significantly improved in the posttest.

In addition, the total test score (i.e., the sum of pre- and post-test scores) was set as a variable to see if it would make any effect on the gain scores in the posttest. Pearson's Correlations were run, and the result showed that there were no correlations between total test scores and gain scores and other gain values of article use. To ensure this result, total test scores were divided into three groups: High (110 or more out of 200), Average (between 90 and 109), and Low (less than 90), which were then statistically run in terms of gains scores and ratios of overuse of articles. One-way ANOVA confirmed that there were no significant differences in gains scores ( $F = 0.897$ ,  $p = 0.412$ ) and in total correct use of articles in each type, total correct use and overuse of articles for total test scores.

<sup>5</sup> The numbers of students in each of TE\_black and TE\_color are 13 and 13 for TE Preferred, and 22 and 26 for TE Not Preferred, which shows there was no class factor for this grouping.

Finally, the questionnaire included the most difficult article, and 54 participants reported that the zero article was the most difficult one to use while 11 and 9 participants chose *the* and *a(n)* respectively as the most difficult. One-way ANOVA confirmed that there were no significant differences in gains scores ( $F = 1.707, p = 0.189$ ) and in total correct use of articles in each type, total correct use and overuse of articles for the most difficult article.

## V. CONCLUSION AND IMPLICATIONS

### 1. Conclusion

The findings of the current study lead to the following conclusion: First, the treatment—formal instruction, TE, and PE—did not necessarily result in the improvement in the posttest although the treatment was conducted in a limited time period, particularly on mostly first year students at university. Second, those who were exposed to TE materials with highlighting in black and white improved more in the posttest than those who were exposed to TE materials with colored highlight. This may suggest that too much highlighting, particularly in color, could focus students' attention too much on the targeted form, and could possibly lower students' motivation to complete the given activities. Third, those who experienced the same treatment showed a similar sequence of acquisition of English articles in terms of the use of each article while they did not necessarily improve in terms of test scores. Forth, more correct use of articles in Type 2 [+SR +HK] in the posttest could be explained by the fact that *the* is exclusively used in Type 2 [+SR +HK]. Particularly, the formal instruction of article types encourages students to use *the* while it is still hard for them to use the other articles correctly. Finally, those who perceived all the three activities to be useful showed a significant improvement in the posttest while those who did only one of them did not. This may suggest that when the three activities are combined and provided to students, it is crucial for students to make a meaningful engagement with each activity, particularly the TE session, to benefit from the treatment.

### 2. Implications

The implications of this study regard the use of TE materials, the understanding of the developmental sequence of English articles, and attitude and strategies toward learning English articles. First, mobile devices can be a good medium for the teacher to provide students with target language input since it is convenient and can intrigue students. Second, TE materials and test questions should not be too complicated in terms of both contents and enhancing techniques for target forms. Too much highlighting could lead to students'

over-focus on the target form and negative attitude toward the assignments overall. Third, the effect of TE and other activities for teaching English articles should be monitored in terms of not just test scores but also the changes of article use patterns. Forth, it is important for the teacher to convince students to make a meaningful engagement with the TE session with the confidence that it would help improve their knowledge of English articles. Finally, given the nature of English articles, it would be helpful for the teacher to narrow down article types to one or two so that students can get better acquainted with the correct use of the article in question.

### 3. Limitations and Further Study

The current study has methodological limitations that need to be considered for future research: First, eight weeks of treatments may not be long enough to investigate the interlanguage system of the participants. Although some changes were found in the use of English articles, longer periods of treatment would give a more accurate picture. Second, the TE materials and the test questions used in the study were somewhat difficult for first year students to cover. The selection of more language-level appropriate materials and test questions might help to give a more precise picture of students' interlanguage development of English articles. Third, most of the treatment was spent on TE, but more thorough formal instruction, particularly with enough examples, could increase chances for students to improve with the target form. Forth, the number of questions for each article type was approximately only six, so it was hard to generalize the findings regarding article types; more questions would make it possible to analyze each article type precisely. Finally, while it was assumed that TE with colored highlighting might somewhat over-focus students' attention on the targeted form, there was a possibility of an intervening variable involved; the students in each class studied different major subjects (TE\_black, Mechanical Engineering, and TE\_color, Electronical Engineering), so different classroom atmospheres possibly affected the result. Removal of any potential intervening variables would be necessary for a future study.

## REFERENCES

- Alanen, R. (1995). Input enhancement and rule presentation in second language acquisition. In R. Schmidt (Ed.), *Attention and awareness in foreign language learning and teaching* (pp. 259-302). Honolulu: University of Hawaii.
- Bickerton, D. (1981). *Roots of language*. Cambridge University Press: Ann Arbor, Karoms.
- Celce-Murcia, M., & Larsen-Freeman, D. (1999). *The grammar book: An ESL/EFL*

- teacher's guide*. Boston, MA: Heinle & Heinle.
- Doughty, C. (1991). Second language instruction does make a difference. Evidence from an empirical study of SL relativization. *Studies in Second Language Acquisition* 13(4), 431-469.
- Ha, Jongbum. (2009). Interlanguage development of English articles through textual enhancement. *Modern English Education*, 10(1), 1-19.
- Hakuta, K. (1976). A case study of a Japanese child learning English as a second language. *Language Learning*, 26(2), 321-351.
- Huebner, T. (1983). *A longitudinal analysis of the acquisition of English*. Ann Arbor, MI: Karoma.
- Huebner, T. (1985). System and variability in interlanguage syntax. *Language Learning*, 35(2), 141-163.
- Izumi, S. (2002). Output, input enhancement, and the noticing hypothesis: An experimental study on ESL relativization. *Studies in Second Language Acquisition*, 24(4), 547-577.
- Izumi, S. (2003). Comprehension and production processes in second language learning: In search of the psycholinguistic rationale of the output hypothesis. *Applied Linguistics*, 24(2), 168-196.
- Jourdenais, R. (2001). Cognition, instruction and protocol analysis. In Robinson, P. (Ed.), *Cognition and second language instruction* (pp. 354-375). Cambridge: Cambridge University Press.
- Jourdenais, R., Ota, M., Stauffer, S., Boyson, B., & Doughty, C. (1995). Does textual enhancement promote noticing? A protocol analysis. In R. Schmidt (Ed.), *Attention and awareness in second language learning* (Technical Report 9) (pp. 183-216). Honolulu: University of Hawaii.
- Kress, G., & Pachler, N. (2007). Thinking about the 'm' in m-learning. In N. Pachler (Ed.), *Mobile learning: Toward a research agenda* (pp. 7-32). London: WLE Centre.
- Lee, S. K. (2007). Effects of textual enhancement and topic familiarity on Korean EFL students' reading comprehension and learning of passive form. *Language Learning*, 57(1), 87-118.
- Leow, R. P. (2001). Do learners notice enhanced forms while interacting with the L2? An online and offline study of the role of written input enhancement in L2 reading. *Hispania*, 84(3), 496-509.
- Leow, R. P., Egi, T., Nuevo, A. M., & Tsa, Y. (2003). The roles of textual enhancement and type of linguistic item in adult L2 learners' comprehension and intake. *Applied Language Learning*, 13(2), 93-108.
- Master, P. (2002). Information structure and English article pedagogy. *System*, 30(3), 331-338.

- Ogata, H., & Yano, Y. (2005). Knowledge awareness for computer-assisted language learning using handhelds. *International Journal of Learning Technology*, 5(1), 435-449.
- Overstreet, M. H. (1998). Text enhancement and content familiarity: The focus of learner attention. *Spanish Applied Linguistics*, 2, 229-258.
- Park, T. S. (2005). English article use by advanced Korean EFL learners. *Foreign Languages Education*, 12(1), 35-59.
- Shook, D. J. (1994). FL/L2 reading, grammatical information, and the input to intake phenomenon. *Applied Language Learning*, 5(2), 57-93.
- Shook, D. (1999). What foreign language reading recalls reveal about the input-to-intake phenomenon. *Applied Language Learning*, 10, 39-76.
- Simard, D. (2009). Differential effects of textual enhancement formats on intake. *System*, 37(1), 124-135.
- Skehan, P. (2003). Focus on form, tasks, and technology. *Computer Assisted Language Learning*, 16(5), 391-411.
- Sternberg, R. J., & Williams, W. M. (2002). *Educational psychology*. Boston: Allyn-Bacon.
- Stockwell, G. (2008). Investigating learner preparedness for and usage patterns of mobile learning. *ReCALL*, 20(3), 253-270.
- Viberg, O., & Grönlund, A. (2012). Mobile assisted language learning: A literature review. *Proceedings of the 11th international conference on mobile and contextualized learning* (pp. 9-16). Retrieved from the World Wide Web: <http://ceur-ws.org/Vol-955>
- Walters, B., Song, Changho, Jang, Samshik, Yoon, Heesoo, & Ha, Jongbum. (2015). *Analytical Readings in English*. Darakwon: Paju, Gyeonggi.
- White, J. (1998). Getting the learners' attention: A typographical input enhancement study. In C. Doughty & J. Williams (Eds.), *Focus-on-form in classroom second language acquisition* (pp. 85-113). New York: Cambridge University Press.
- Wong, W. (2003). Textual enhancement and simplified input: Effects on L2 comprehension and acquisition of non-meaningful grammatical form. *Applied Language Learning* 13, 17-45.

## APPENDIX 1

### Sample Materials for Textual Enhancement (TE)

Material for TE\_color:

**A species** is considered extinct when all of its members have died out. However, **Ø species** can be functionally extinct prior to **THE death of the last member**. This situation arises when **Ø remaining**

members are no longer capable of breeding sufficiently to recover. In such circumstances, there are 0 **too few living members of one sex**, or THE **remaining members** are isolated from each other. (Visit <http://bit.ly/1U58dzG> for the actual colored material.)

Material for TE\_black:

A species is considered extinct when all of its members have died out. However, 0 species can be functionally extinct prior to THE death of the last member. This situation arises when 0 remaining members are no longer capable of breeding sufficiently to recover. In such circumstances, there are 0 **too few living members of one sex**, or THE **remaining members** are isolated from each other.

## APPENDIX 2

### A Sample Material for Postexposure (PE)

1. \_\_\_\_ species is considered extinct when all of its members have died out. However, species can be functionally extinct prior to the death of the last member.

- a) No article                      b) A                      c) The

✗ **Incorrect**

**Question:**

\_\_\_\_ species is considered extinct when all of its members have died out. However, species can be functionally extinct prior to the death of the last member.

**Correct Answer:**

A

OK

2. This situation arises when \_\_\_\_ remaining members are no longer capable of breeding sufficiently to recover.

- a) No article                      b) A                      c) The

✓ **Correct!**

**Question:**

This situation arises when \_\_\_\_ remaining members are no longer capable of breeding sufficiently to recover.

**Correct Answer:**

No article

OK

**Examples in: English**

**Applicable Languages: English**

**Applicable Levels: Tertiary**

Jongbum Ha

Department of Liberal Arts and Teacher Training

Kumoh National Institute of Technology

61 Daehak-ro, Gumi, Gyeongbuk 39149, Korea

Tel: (054) 478-7862

Email: [jbha@kumoh.ac.kr](mailto:jbha@kumoh.ac.kr)

Received 13 September 2016

Revised 24 October 2016

Accepted 11 November 2016