The Effects of Input Enhancement on Reading Comprehension and Vocabulary Learning in L2 Instruction

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Cho, Young Ah & Ma, Jee Hyun. (2016). The Effects of Input Enhancement on Reading Comprehension and Vocabulary Learning in L2 Instruction. *The Linguistic Association of Korea Journal, 24*(3), 17-35. The present study explored the effects of different types of input enhancement on L2 reading comprehension and vocabulary retention, mainly focusing on Korean college students. One-hundred forty students were randomly assigned to visual input enhancement, lexical elaboration, visual input enhancement plus lexical elaboration, or the control group. For the study, a background questionnaire, a vocabulary size test, pre- and post-vocabulary tests, and pre- and post-reading comprehension tests were administered. The outcomes of the study revealed that both lexical elaboration and a combination of visual input enhancement and lexical elaboration groups were significantly influential than control group in fostering vocabulary progression, as well as reading comprehension. The findings also showed that there were no significant differences between visual input enhancement and lexical elaboration groups as to reading comprehension and vocabulary learning. Pedagogical implications are addressed in terms of how educators can apply these results to L2 instruction.

Key Words: input enhancement, visual input enhancement, lexical elaboration, L2 instruction

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I. Introduction

In the field of cognitive psychology, as well as second language acquisition (SLA), it has been widely acknowledged that learners can integrate second language (L2) input into their own knowledge system and then successfully convert it to intake if they notice the features of language in L2 input (Sankó, 2006). In the current literature, researchers have become gradually more interested in ascertaining how L2 learners interact with input to further process language learning acquisition (Parviz, Mohammed, & Shaban, 2015).

The term, 'input,' suggested by Richards and Renandya (2002) and Oh (2001), means all types of linguistic sources which learners are exposed to and are commonly needed to initiate language learning processing. A substantial amount of research has mentioned that even though input plays a vital role in the phases of language learning, simply increasing the salience of linguistic features through enhanced input may not be sufficient for learners to acquire certain aspects of an L2 (Parviz et al., 2015). Additionally, researchers have tried to figure out the probability of learners noticing linguistic forms in a given input, emphasizing learners' attention as a mediating component between input and subsequent learning (Combs, 2008; Parviz et al., 2015; Sankó, 2006).

As one of the teaching approaches that focuses on form instruction and how attention is allocated to linguistic features in a meaning-focused context (Long, 1991; Smith, 1991), empirical studies have investigated the effects of various input enhancement types on L2 learning such as reading, vocabulary, and sentence structures, showing the mixed results (Abadikhah & Shahriyarpour, 2012; Kuiken & Vedder, 2002; Lee, 2007; Rassaei & Karbor, 2013; Wong, 2012). Still, there has been debate over what input enhancement types better influence L2 learners' language learning, and relatively a few studies have dealt with the role of input elaboration on L2 acquisition (Kim, 2006; Parviz et al., 2015; Rahbar, 2014). Furthermore, the combination of different types of input enhancement has rarely been explored in L2 learning with Korean college students learning English, in particular.

Accordingly, it can be timely and pedagogically meaningful to examine whether or not there exist the different effects of diverse types of input enhancement in a text, namely visual input enhancement and lexical elaboration,

which could facilitate Korean EFL learners' reading comprehension and vocabulary retention. Keeping this in mind, the following research questions were addressed in this study:

1. What are the effects of different types of input enhancement on L2 reading comprehension?
2. What are the effects of different types of input enhancement on L2 vocabulary learning?

II. Literature Review

2.1. Input Enhancement in L2 Learning

Input enhancement is a term that has been frequently discussed in L2 literature (Ellis, 1995; Nasab, 2015) with quite a few researchers defining it in slightly different ways. Smith (1981) explained input enhancement as an implicit method of focusing on form approaches, demonstrating that the role of input could make specific features of L2 more salient and draw the learners' attention to them. Smith (1991, 1993) further suggested two input enhancement types, positive and negative input enhancement. Positive input enhancement involves visual input enhancement with visually heightening the targeted forms, by using formatting techniques such as, bold font, capitalization, underlining, italicizing or text coloring. On the other hand, negative input enhancement contains error forms, such as error flags, which are intended to direct the learners' attention to their mistakes. Wong (2005) defined input enhancement as a group of techniques to increase learners' awareness of specific language forms and structures, which may otherwise go unnoticed.

Ellis (1995) divided input enhancement into three factors: interpretation, production, and integration. Interpretation concerns noticing and cognitively comparing common usage and the correct use of a given form; production refers to the automatic use of the target forms; integration is the process where knowledge is being understood into the implicit system. Chapelle (2003) pointed out that input enhancement can be accomplished by three types of enhancement,

that is, salience, modification, and elaboration. Salience is making linguistic forms phonologically through stress or repetition while modification is intended to make input understandable by using images, L1 translation, and dictionary definition. Elaboration is directed to notice linguistic input through the addition of L2 explanation.

Regarding input modification, L2 researchers divided into two types of approaches: simplification and elaboration. More specifically, simplification to input are the form of less complex vocabulary and structures whereas elaboration has redundancy and explicitness of unfamiliar linguistic forms (Oh, 2001; Yano, Long, & Ross, 1994). In a similar vein, Parker and Chaudron (1987) mentioned that elaboration could clarify message content and enhance language learning by adding redundancy such as, definition, paraphrasing, rhetorical signaling devices, synonyms, and restatements to language items. Le (2011) stressed that elaboration may lead to language learning by paraphrasing unknown linguistic forms with redundancy as well as explicitness. Additionally, Parviz et al. (2015) referred to input elaboration as one of major types of modification which could be utilized to have more comprehensible input in L2 learning.

2.2. Previous Studies on Input Enhancement in L2

Researchers have explored whether the different types of input enhancement have an influence on L2 learning under a variety of premises and theoretical frameworks, mainly focusing on the usage of textual input enhancement, and reported mixed results. Moini (2012), for example, investigated the effectiveness of text input enhancement in the form of highlighted (bold), non-highlighted, and L1 glossed input on collocation learning and retention for Iranian EFL university students. The findings revealed that L1 glossed input significantly promoted collocation learning compared to both highlighted and non-highlighted input enhancement.

Nasab (2015) tested L2 learners' vocabulary learning through a quasi-experimental design by exposing the learners to the enhanced input through the use of bold font, highlighting, and capitalization. The results indicated that using bold font for input enhancement was more helpful for

learners to understand the target words and led to the greatest vocabulary knowledge gains, while capitalizing proved to be the least effective input enhancement in the study. A study that reports the effects of text enhancement on learners' understanding of English present perfect tense was done by Cho (2010), and revealed that textual enhancement, underlining and using bold font, yielded positive findings for learners' noticing and acquisition of L2 target forms.

Kim (2006) conducted a study to compare the different input enhancement conditions in the L2 vocabulary learning process by using the written texts: lexical elaboration, typographical enhancement, and a combination of the two techniques. The results demonstrated that incorporating lexical elaboration and typographical enhancement was an influential method for Korean learners to pay more attention to the forms, and it facilitated more vocabulary-meaning recognition. Parviz et al. (2015) attempted to identify what types of input make English vocabulary, specifically phrasal verbs, more noticeable to L2 learners' learning processes by utilizing three conditions of input: unenhanced input, typographically enhanced input, and lexically elaborated input. The outcomes of the study concluded that both enhanced input and lexical elaboration let L2 learners acquire stronger knowledge of phrasal verbs than unenhanced input, whereas there existed no significant differences between the enhanced input and the elaborated input groups.

As for the input modification, researchers have also attempted to find better approaches to obtaining L2 target forms in L2 learning contexts. Parker and Chaudron (1987) indicated that although elaborated modification increased communicative comprehension, linguistically simplified modification in the form of syntax and vocabulary did not enhance comprehension. Oh (2001) investigated the effects of simplification and elaboration on Korean high school students' reading comprehension depending on the English proficiency levels. The findings of the study suggested that the elaboration to input accelerated the progression to the learners' comprehension abilities.

Even though the previous research does draw the conclusion that input enhancement serves as a pivotal role in L2 instruction, still, there is no comprehensive result to show how the different types of input enhancement affect learning.

III. Methods

3.1. Participants

The participants of the current study consisted of 140 Korean EFL learners enrolled in general English courses in a university located in the Chonnam Province (age=20-25). According to the results from the background questionnaire, their average scores for the College Scholastic Ability Test (CSAT) were from the third rating (*N*=14, 10.0%), the fourth to fifth ratings (*N*=66, 47.2%), the sixth to seventh ratings (*N*=19, 13.6%) for the English section (ranged from the first to the ninth ratings). The rest of the students were accepted through non-scheduled admission (*N*=41, 29.3%). The results of self-evaluated English proficiency levels indicated over 70% of the students evaluated themselves as low and intermediate in English.

In the current study, four classes were randomly assigned to one of four experimental groups: visual input enhancement (hereafter, VIE), lexical elaboration (LE), visual input enhancement plus lexical elaboration (VIEE), and the control group (CON) (See Table 1). The participants in the VIE group read the texts with the perceptual salience of the target words by using bold font, while the LE group received the passages where the target words were presented with definitions, preceded by the explanation, 'which means.' The participants in the VIEE group were exposed to the target words with both bold font and definitions in the text, whereas the CON group received the treatment passages without any enhanced or elaborated versions of input.

Table 1. Distribution of the Participants

Group	*N*	Male	Female
VIE	36	11 (30.6%)	25 (69.4%)
LE	34	15 (44.1%)	19 (55.9%)
VIEE	35	29 (82.9%)	6 (17.1%)
CON	35	30 (85.7%)	5 (14.3%)
Total	140	85 (60.7%)	55 (39.3%)

3.2. Instruments

Four major instruments were used in the current study: a background questionnaire, a vocabulary size test, pre- and post-vocabulary tests, and pre- and post-reading comprehension tests. The background questionnaire was made up of 8 close-ended questions to gather general information about the participants such as their gender, age, levels on the CSAT, and levels of English competency.

The Korean version of vocabulary-size test was administered to measure the participants' initial vocabulary size from the 1,000 to the 4,000 out of the 14,000 word-level parts (Nation, 2015). Based on the results of the vocabulary-size test, the 40 words in the 3,000- and 4,000-word frequency levels were employed for testing the participants' prior knowledge of the target forms on the pre-vocabulary test. Target words were listed and presented upon, and the participants were required to write the L2 definitions of the words. Finally, 21 target words, unknown to nearly all the participants, were chosen from the texts.

Two reading comprehension tests were taken. To check the homogeneity of the group in terms of the participants' English reading proficiency levels, a pre-reading comprehension test with 13-question items was conducted. In addition, a post-reading comprehension test with 24-question items was also tested, which included the 21 target words in reading texts. The treatment passages were slightly modified under the four conditions depending on the VIE, LE, VIEE, and CON versions of input. Thus, each task required the four groups to attend the target words in a text in a different manner (see Appendix A and B). For selecting reading comprehension items in the pre- and post-reading comprehension tests, the four reading passages and comprehension questions were taken from *Bricks Intensive Reading 1* (Yoon, 2009) which might be suitable for intermediate learners, and the reading topics were about people, archaeology, anthropology, and sports.

In order to measure the results of the participants' vocabulary retention, two vocabulary posttests were devised, a productive recognition one and a receptive recognition one (See Appendix C and D). The participants, when they took the productive recognition test, were asked to choose the L2 target words presented

from four multiple choice options; from those, there were three distracters and one correct response. For the receptive recognition test, participants were asked to select the meaning of L2 target words among four options, which were supplied in their L1.

3.3. Procedure and Data Analysis

The participants were told to complete the background questionnaire and the vocabulary-size test. Then, they performed a pre-reading comprehension test to check the homogeneity of all groups. Shortly after the pretest, the three experimental groups and the one control group took four types of post-reading comprehension tasks—each of which employed different input enhancement—and the reading comprehension questions were distributed to the groups as well. It took approximately 40 minutes for the participants to complete the tasks using regular English classes. After being exposed to all the tasks, the participants were given two post-vocabulary tests for assessing their long-term retention rates over a period of two weeks.

The background questionnaire was analyzed by using descriptive statistics. The vocabulary-size test, the pre- and post-vocabulary tests, and the pre- and post-reading comprehension tests were measured using an ANOVA; also, post hoc pairwise comparisons were carried out to gauge significant mean differences within the four groups when necessary. For all these analyses, Statistical Package for Social Studies (SPSS) 20.0 for Windows was used, and the significance levels were set .05, nondirectional.

IV. Results and Discussion

4.1. Input Enhancement and Reading Comprehension

First of all, we measured the outcomes of the pre-reading comprehension and pre-vocabulary tests by using the descriptive statistics. The findings revealed that the test performance of the four groups did not have a significant difference, which confirmed that the participants in the four groups had similar levels of English reading comprehension (*Sig.*=.353) and vocabulary knowledge

(*Sig.*=.771) from the outset of the study (See Tables 2 and 3).

Table 2. Descriptive Statistics on the Pre-reading and Vocabulary Tests

Test type	Group	*N*	Mean	*SD*	Min	Max
pre-reading test (*k*=13)	VIE	36	7.31	1.939	3	11
	LE	34	7.12	1.919	3	10
	VIEE	35	7.94	2.195	5	13
	CON	35	7.60	2.047	3	12
	Total	140	7.49	2.030	3	13
pre-vocabulary test (*k*=40)	VIE	36	4.22	5.077	0	16
	LE	34	5.12	4.637	0	16
	VIEE	35	5.17	4.355	0	20
	CON	35	5.31	5.246	0	12
	Total	140	4.95	4.812	0	20

k: total numbers of items

Table 3. Group Comparison on the Pre-reading and Vocabulary Tests

Test type	Source	*SS*	*df*	*MS*	F	*Sig.*	*ES*
pre-reading test	Between Groups	13.539	3	4.513	1.097	.353	0.02
	Within Groups	559.454	136	4.114			
	Total	572.993	139				
pre-vocabulary test	Between Groups	26.384	3	8.795	.375	.771	0.00
	Within Groups	3192.266	136	23.473			
	Total	3218.650	139				

$p < .05$, *ES*= Effect Size

The first research question posed in this study was to examine what the effects of different types of input enhancement have on English reading comprehension. Table 4 shows that the mean score of the VIE group was 11.81, the LE was 13.29, the VIEE was 14.43, and the CON was 10.63 on the post-reading test. It demonstrated that the performance of the VIEE group was numerically higher than the other three groups.

Table 4. Descriptive Statistics on the Post-reading Test

Test type	Group	*N*	Mean	*SD*	Min	Max
post-reading test (*k*=24)	VIE	36	11.81	3.528	4	20
	LE	34	13.29	2.623	4	19
	VIEE	35	14.43	3.950	5	21
	CON	35	10.63	3.490	2	19
	Total	140	12.53	3.696	2	21

k: total numbers of items

An ANOVA and post hoc pairwise comparison were also applied to check if there was statistically significant difference among the four groups. The results are presented in Tables 5 and 6.

Table 5. Group Comparison on the Post-reading Test

Test type	Source	*SS*	*df*	*MS*	F	*Sig.*	*ES*
post-reading test	Between Groups	291.445	3	97.148	8.219	.000	0.15
	Within Groups	1607.441	136	11.819			
	Total	1898.886	139				

$p < .05$, *ES*= Effect Size

Table 6. Post Hoc Pairwise on the Post-reading Test

Group	Group	MD (I-J)	Std. Error	*Sig.*
VIE	LE	-1.489	.822	.435
	VIEE	-2.623	.816	.010
	CON	1.177	.816	.909
LE	VIEE	-1.134	.828	1.000
	CON	2.666	.828	.010
VIEE	CON	3.800	.822	.000

$p < .05$

There were significant effects for the different types of input enhancement on reading comprehension, displaying relatively the large effect size (*ES*=0.15). It can be seen from Table 6 that the LE and VIEE groups showed better reading

comprehension in comparison to the CON one (*Sig.*=.010 and *Sig.*=.000 respectively), though they were somewhat limited by exposure to the input in the short-term treatment. These results are partially consistent with the findings in Parviz et al.'s (2015) and also Kim's (2006) research, which clarified the point that elaborated input can help learners yield better results. From an instructional perspective, it can be assumed that providing elaborate input conditions are more influential than giving unenhanced input. Meanwhile, the findings of the study also revealed that differences in mean scores between the VIE and LE groups was not statistically significant; nor was a significant difference existed between the LE and VIEE groups.

Consequently, compared to unenhanced input condition, the lexically elaborated input and a combination of visually enhanced and lexically elaborated input have the potential to raise learners' awareness of the target forms and eventually lead to greater levels of learning.

4.2. Input Enhancement and Vocabulary Learning

The second research question examined the effects of different types of input enhancement on vocabulary retention rates. To measure the results of the two vocabulary tests – productive and receptive recognition ones – descriptive statistics were run. Table 7 described that the VIEE group received the highest mean scores among the four groups. The mean scores of the VIEE group was followed by LE, VIE, and then the CON group in terms of productive and receptive vocabulary tests. Interestingly, in line with the reading comprehension results, input modification had significantly positive effects on the vocabulary learning. Based on the results, one can cautiously infer that visual input enhancement in combination with elaborative modification could be a useful tool for enhancing learners' noticing, which could have a positive impact on their word knowledge gains and reading competence.

Table 7. Descriptive Statistics on the Productive and Receptive Vocabulary Tests

Test type	Group	*N*	Mean	*SD*	Min	Max
productive test (*k*=21)	VIE	36	12.83	5.532	3	19
	LE	34	14.41	5.229	4	21
	VIEE	35	17.23	4.124	9	21
	CON	35	9.60	6.151	1	21
	Total	140	13.51	5.938	1	21
receptive test (*k*=21)	VIE	36	11.06	3.971	3	19
	LE	34	13.15	5.609	1	21
	VIEE	35	15.20	3.864	7	21
	CON	35	9.31	4.471	2	21
	Total	140	12.16	4.990	1	21

k: total numbers of items

Next, to come to a more complete understanding of the effects of different types of input enhancement have on vocabulary retention, the scores of the tests were analyzed by applying an ANOVA.

Table 8. Group Comparison on the Productive and Receptive Vocabulary Tests

Test type	Source	*SS*	*df*	*MS*	F	*Sig.*	*ES*
productive test	Between Groups	1063.186	3	354.395	12.559	.000	0.21
	Within Groups	3837.807	136	28.219			
	Total	4900.993	139				
receptive test	Between Groups	683.925	3	227.975	11.164	.000	0.00
	Within Groups	2777.296	136	20.421			
	Total	3461.221	139				

$p < .05$, *ES*= Effect Size

As displayed in Table 8, the findings indicated that there were significant differences in the productive and receptive vocabulary gains. In terms of effect size, the outcomes of productive lexical competence demonstrated the greater effect size (*ES*=0.21) compared to receptive word gains (*ES*=0.00). This partially hints that the different input enhancement types could trigger learners'

awareness to direct L2 productive target-forms more than receptive ones.

Regarding the data more specifically, post hoc pairwise comparisons were carried out, as well. The results are presented in Table 9. Here, what is more noticeable is that the same performance for two-word tests was found in the study. The participants in the VIEE group had more lexical knowledge gains than the VIE and CON groups productively and receptively. Plus, the LE and VIEE groups acquired statistically significant higher outcomes in vocabulary acquisition than the CON group in terms of productive and receptive test scores.

Table 9. Post Hoc Pairwise on the Productive and Receptive Vocabulary Tests

Test type	Group	Group	MD (I-J)	Std. Error	*Sig.*
productive test	VIE	LE	-1.578	1.270	1.000
		VIEE	-4.395	1.261	.004
		CON	3.233	1.261	.069
	LE	VIEE	2.817	1.279	.176
		CON	4.812	1.279	.001
	VIEE	CON	7.629	1.270	.000
receptive test	VIE	LE	2.092	1.081	.330
		VIEE	4.144	1.073	.001
		CON	1.741	1.073	.641
	LE	VIEE	2.053	1.088	.368
		CON	3.833	1.088	.003
	VIEE	CON	5.886	1.080	.000

$p < .05$

Comparing this with the outcomes obtained from the previous research, a meaningful observation can be elicited. When combined with other techniques, lexical elaboration in the current study, input enhancement might increase recall by leading to an additional retrieval process which, in turn, could result in firmer and longer retention in L2 vocabulary acquisition (Anderson, 1990; Chae, 2015; Ridder, 2002). Once again, compared to unenhanced input, explicit means of visual enhanced and lexical elaborated types of input could have the potential to make L2 learners notice the target forms and then lead to greater acquisition in language learning settings.

Based on the above results, this study echoes Parviz et al.'s (2015) assertion that although input enhancement may help learners to foster targeted linguistic features, input modification of original texts is needed to encourage L2 learners to notice and acquire of the target form, in other words, elaborated input. Additionally, this study had similarities to previous research that showed that mere exposure to certain L2 features may not be sufficient for acquiring language knowledge in terms of naturalistic input (Smith, 1993). From that, it could be said that providing modified input has a lot of substantial benefits for L2 learners.

V. Conclusion

The current study set out to explore whether visual input enhancement and input elaboration could improve L2 reading comprehension and vocabulary retention. The results revealed that mean scores of the combination of visual input enhancement and lexical elaboration group were numerically higher than the other three groups, followed by those of lexically elaborated group, visually enhanced group, and then control group. This study also showed both lexical elaboration and visual input enhancement plus lexical elaboration significantly affected L2 learning as compared to unenhanced input condition. There was no significant difference between the lexically elaborated and the combination of visually enhanced and lexically elaborated input groups in terms of vocabulary learning as well as reading comprehension, implying the importance of lexical elaboration in L2 learning for rather low-level learners.

Nowadays, it has become popular to use lexical modification to help students learn unfamiliar vocabulary in texts (Parviz et al., 2015); thus, this study, as well as previous studies on input enhancement, may offer new grounds for the useful application of elaborated modification in constructing English books and materials in a timely fashion, especially for low-level L2 learners. In particular, the presence of visual input enhancement with lexical elaboration within reading texts could help L2 leaners obtain L2 knowledge more accurately. As Tajeddin and Daraee (2013) and also Yang (2010) considered, since attention paid to linguistic forms could be beneficial for acquiring certain aspects of an L2, more

elaborate and explicit teaching techniques could be fruitful for L2 learners, such as explicit rule and definition explanation, supplemental input flooding techniques, and additional feedback.

The results of the current study are limited by the particular sample selected, which was made up of a low and low-intermediate English learners; thus, further studies are needed to consider the variety of English proficiency levels and obtain more persuasive results related to the effects of input modification. Additionally, long-term experimental sessions using multiple teaching approaches are recommended, which would be another interesting avenue for L2 learning context in future studies.

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Appendix

Appendix A. Selected sentences for VIE

They work as treasure hunters and as roaming thieves. They are **rebellious**, wild, and **uncivilized**, yet live by a pirate's code that control their actions. Of course, this is a **stereotype** or simplified picture. In fact, pirates are still very real and very dangerous.

Appendix B. Selected sentences for VIEE

They work as treasure hunters and as roaming thieves. They are **rebellious** which means refusing some established authority, wild, and **uncivilized** which means behaving in ways that are thought to be socially or culturally undeveloped, yet live by a pirate's code that control their actions. Of course, this is a **stereotype** which means over generalized idea, conception, and image or simplified picture. In fact, pirates are still very real and very dangerous.

Appendix C. Selected Question items for receptive vocabulary test

1.	designation	a. 화	b. 불멸	c. 사직	d. 명칭
2.	modified	a. 진심어린	b.영감을 받은	c. 즉각적인	d. 변경된
3.	rebellious	a. 부착된	b. 미묘한	c. 반항적인	d. 적응할수있는
4.	vigorously	a. 활발히	b. 전형적으로	c. 덥수룩하게	d. 지속적으로

Appendix D. Selected Question items for productive vocabulary test

1.	명칭	a. irritation	b. immortality	c. resignation	d. designation
2.	변경된	a. sincere	b. inspired	c. instant	d. modified
3.	반항적인	a. detached	b. subtle	c. rebellious	d. adaptive
4.	활발히	a. vigorously	b. typically	c. scraggly	d. steadily

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