Getting Learners’ Attention: Typographical Input Enhancement, Output, and Their Combined Effects

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Based on the general agreement that attention plays a crucial role in L2 learning, this study investigated the relative efficacy of three different attention-inducing instructional techniques for learning and noticing of the English past hypothetical conditional. The three focus-on-form techniques investigated in the study were typographical input enhancement (TIE), picture-cued writing (PCW), and combination of typographical input enhancement and picture-cued writing (TIE+PCW). 79 Korean EFL college students participated in the experiment. In the TIE group, students read a typographically enhanced text and answered comprehension questions for a passage, whereas in the PCW and TIE+PCW groups, students read either a baseline (for PCW group) or typographically enhanced text (for TIE+PCW group) and produced a written output based on picture prompts. The major findings are: (a) The PCW and TIE+PCW output groups outperformed the TIE non-output group in the production posttest; however, there were no differences between the two output groups; (b) The three groups did not differ in the receptive knowledge posttest scores; (c) The PCW and TIE+PCW groups noticed the target forms more than the TIE group. These findings were discussed within the theoretical framework of the Output Hypothesis (Swain, 1985, 1995, 2000, 2005) and the Noticing Hypothesis (Schmidt, 1990, 1995, 2001).

I. INTRODUCTION

In recent years, many SLA researchers, influenced by the research findings on the positive role of attention in general learning in the field of cognitive psychology, have also investigated the role attention plays in driving learners to acquire a second language, and found that attention plays a significant role in SLA (Robinson, 1995; Schmidt, 1990, 1993, 1994, 1995, 2001; Tomlin & Villa, 1994).

One of the leading researchers in this field, Schmidt (2001) argues that “people learn about the things they attend to and do not learn much about the things they do not attend to” (p. 30). Based on the argument, he proposed the Noticing Hypothesis, which postulates
that “noticing is the necessary and sufficient condition for the conversion of input to intake for learning” (Schmidt, 1994, p. 17).

Although disagreement exists as to the amount and type of attention needed for learning, there is a general agreement on the importance of attention in learning an L2 (Izumi, 2002). Taking the central role of attention in mediating input and learning as the fundamental assumption of investigation, recent classroom SLA research has begun to explore how learners’ attention can be effectively drawn to a linguistic form in a meaning-oriented activity in order to promote the learning of the form. At the core of the pedagogic proposals such as consciousness-raising (Rutherford & Sharwood Smith, 1985; Sharwood Smith, 1993) and focus on form (Doughty, 2001; Doughty & Williams, 1998; Long, 1991; Long & Robinson, 1998) as well as the noticing function of output (Izumi, 2002; Izumi & Bigelow, 2000; Izumi, Bigelow, Fujiwara, & Fearnow, 1999) is the premise that directing learners’ attention to form during otherwise meaning-oriented learning may help them to acquire form and meaning in an integrated way.

Among various pedagogic approaches or techniques to draw learners’ attention to form, typographical input enhancement and output have received considerable attention in recent classroom SLA research. Izumi (2002) argues that these two approaches share a basic characteristic in that they both attempt to direct learners’ attention to problematic aspects in the input to promote their learning. However, they differ in how attention is induced. In case of typographical input enhancement, attention is induced by external means, for example, by highlighting selected forms, whereas in case of output, attention to form is induced by learners’ internal needs through production process. In other words, the need to attend to a form is internally arisen from learners’ experiencing the difficulty producing the form correctly. Izumi (2002) claims that “typographical input enhancement is an external attention-drawing technique, whereas output is an internal attention-drawing device” (p. 543).

In recent years, several studies (Izumi, 2002; Kang, 2003; Yang, 2004; Yeo, 2002) have been conducted to investigate the relative efficacy of typographical input enhancement and output through two types of instruction (input-based vs. output-based instruction). In general, in the input-based instruction, the participants were first presented with a passage in which there are many instances of the selected grammatical form which are typographically enhanced, and then answered reading comprehension questions. In the output-based instruction, on the other hand, the participants were induced to produce a selected grammatical form through an output activity (i.e., reconstruction, dictogloss, etc.) after they were presented with the same passage in which selected grammatical forms are not enhanced.

Overall, previous studies revealed the superior effects of output (Izumi, 2002; Kang, 2003; Yeo, 2002); only one study (Yang, 2004) showed the equivalent effect of the two instructional techniques in promoting an L2.

Izumi (2002), however, argues that further investigation into the effect of a combination
of different instructional techniques may be worthwhile in order to maximize the possibility of learners’ attention to be drawn to a specific form and to promote learning of the form. Although previous studies compared the relative efficacy between typographical input enhancement and output, few of them explored the combined effect of the two noticing-inducing techniques, that is, the combination of typographical input enhancement and output. Moreover, no previous studies empirically tested which of the two types of instructional techniques promotes the largest amount of noticing of a targeted form, and whether the amount of noticing induced by a specific instructional technique is indeed positively related to the amount of learning gain. More concrete empirical evidence is needed to support the Noticing Hypothesis, which assumes that input needs to be noticed in order for it to be acquired.

Therefore, the present study aims to investigate the combined effect of typographical input enhancement and output on noticing and learning of a form which many Korean EFL learners find it difficult to acquire, the English past hypothetical conditional and compare it with the effect of each separate technique. This study also aims to test whether the amount of noticing drawn to the targeted form is positively related to the amount of learning gain of the form, as the Noticing Hypothesis postulates.

II. REVIEW OF LITERATURE

1. Typographical Input Enhancement

Typographical input enhancement (visual input enhancement or textual enhancement) refers to a technique of manipulating the appearance of targeted forms in the input by employing different typographical methods such as underlining, bold facing, italicizing, upper case, larger fonts, color coding (Lee, 2006). It is an effective way to increase the perceptual salience of certain grammatical forms of the text in order for them to get noticed (Yang, 2004).

The effect of typographical input enhancement has been generally measured through a reading task in which participants read a given passage containing many instances of particular grammatical forms which are typographically enhanced and answer the reading comprehension check-up questions. Then, they were tested whether the exposure to the typographically enhanced input in the reading passage had any impact on their learning of the form, and their learning gain was compared with that of the comparison group. The comparison group received the same treatment, but only differed from the experimental group in that the grammatical forms in focus in the reading passage were not typographically enhanced. That is, the comparison group received an ‘input flood’ passage.

1 There are many different ways to enhance the perceptual saliency of input. Input flood refers to the technique which provides as many instances of input (selected grammatical features) as possible
Previous studies on the relative effect of typographical input enhancement over input flood have yielded mixed results. Some studies (Alanen, 1995; Doughty, 1991; Jourdenais, Ota, Stauffer, Boyson, & Doughty, 1995; Shook, 1994; White, 1998) provided positive results for the facilitative role of typographical input enhancement in promoting the acquisition of the target form, while other studies (Leow, 1997, 2001; Leow, Egi, Nuevo, & Tsai, 2003; Overstreet, 1998; Wong, 2003) failed to find such positive effect at all.

In a recent ‘synthesis’ research which pooled the results of twelve previously published studies on the effects of typographical input enhancement over input flood, Lee (2006) reported the magnitude of effects of typographical input enhancement. According to the results of the study, learners who experienced typographically enhanced texts improved considerably after the intervention (d=0.84) and they seemed to have outperformed the others who experienced the same texts in a baseline version (input flood) by a medium-size effect (d=0.43). Although Lee (2006) emphasizes that his findings should be supported by further research, he indicated that typographical input enhancement conditions affected the students’ knowledge systems in a significant way, and they could be more effective than input flood conditions.

2. Output

With the proposal of Swain’s (1985) Output Hypothesis, output has been viewed as not a mere end product of acquisition, but as a crucial factor to cause acquisition. That is, producing the target language provides learners with unique opportunity for a level of processing (i.e., syntactic processing) that may be needed for the development of targetlike proficiency or the improvement of accuracy (Izumi & Bigelow, 2000; Swain & Lapkin, 1995).

Of the four functions of output proposed by Swain (1993, 1995, 1998), the noticing function of output posits that by producing the target language, learners may notice the gap between target language (i.e., what they “want” to say) and their interlanguage knowledge (i.e., what they “can” say), which then may bring their attention to something they need to solve their linguistic deficiency. This function of output is related to Schmidt’s (1994) Noticing Hypothesis, which claims the overriding significance of noticing in language acquisition. Output opportunities facilitate, according to this hypothesis, the noticing of problems in learners’ interlanguage and cause them to search for ways to solve the problems. Therefore, if relevant input is immediately available, learners may focus their attention to the input and process it more meaningfully.

Relatively a small number of studies to date have investigated the noticing function of output, with mixed results. In a series of studies (Izumi, 2002; Izumi & Bigelow, 2000; Izumi et al., 1999), designed to trace the effects of output in L2 learning, Izumi and his
colleagues examined whether recognition of problems through the act of producing the target language prompts learners to notice pertinent linguistic forms and learn them if input including the forms is subsequently provided to them. In order to investigate this issue, the previous studies compared an experimental group (output group) that was given output opportunities and subsequent exposure to relevant input and a comparison group (input-flood group) that was exposed to the same input first and then asked to answer comprehension questions on the input.

Izumi et al. (1999) and Izumi and Bigelow (2000), in a two-stage study, focusing on the English past hypothetical conditional, compared an output group and a non-output (input flood) group. The output tasks in the two studies were a reconstruction writing task and an essay-writing task. The two studies were the same in every aspect except in the order of the two output tasks in the two phases. That is, Izumi and Bigelow (2000) was conducted to examine if task ordering plays any role in accounting for the results. Regarding the effect of output on the acquisition of form, the two studies revealed a contrasting result: Izumi et al. (1999) found that the output group made a greater improvement on the production test than did the non-output (input flood) group, whereas Izumi and Bigelow (2000) found no advantage for the output group in gains on any of the posttests.

In a more recent study, Izumi (2002) lent support for the unique function of output in promoting the acquisition of English relativization. From the study, he found that the participants engaged in the output treatment (reconstruction) outperformed the participants exposed to the same input for the purpose of comprehension only (input flood) in learning the target form. The previous studies which have been conducted so far on this issue do not provide any definite answer; however, it seems that more evidence currently exists for the advantage of output over input flood.

3. Relative Efficacy between Typographical Input Enhancement and Output

As shown in the literature review on typographical input enhancement and output, most previous studies were focused on comparing the effect of each technique with that of input flood technique. Relatively a fewer number of studies (Izumi, 2002; Kang, 2003; Yang, 2004; Yeo, 2002) have been conducted as to the relative efficacy between typographical input enhancement and output.

Yeo (2002) compared the effect of a typographical input enhancement technique and that of an output-focused technique called dictogloss. In the study, the input-focused group read the material that was marked with larger letters on participial adjectives, and after reading, the students in the group were checked for understanding of the content. The output-focused group, on the other hand, listened to a short text which contains many instances of participial adjectives twice and asked to take down notes. Then, the students were instructed to work together in a small group to reconstruct the original text based on
their notes. Then, the two groups were tested on the knowledge of English participial adjectives. The findings of the study indicated that the output-focused group outperformed the typographical input enhancement group in learning English participial adjectives.

Izumi (2002) investigated whether and how output task (reconstruction) and typographical input enhancement, together or separately, promote noticing and learning of English relativization. This study involved one control group and four treatment groups who differed in respect to output requirements and exposure to enhanced input. From the study, it was found that the participants engaged in the output treatments outperformed the participants exposed to the same input (typographically enhanced input) for the purpose of comprehension only in learning the target form.

Kang (2003), focusing on English conditional sentences, compared the relative efficacy between input-based instruction and output-based instruction. The findings of the study also showed that in learning conditional sentences, output-based instruction, in which the participants had the opportunity to produce the targeted forms after presented with reading or listening materials, was more effective than input-based instruction, where the participants were presented with materials typographically enhanced for comprehension.

Yang (2004) investigated which of the two instructional approaches, input-based instruction or output-based instruction, is more effective in promoting learning of the English present perfect continuous tense. In the study, the participants in the input-based group performed a comprehension task based on typographically enhanced reading materials, while the participants in the output-based group performed a dictogloss. From the study, she found that input-based instruction was as effective as output-based instruction in both the comprehension and production of the target form.

4. The Focus of the Present Study

The previous studies reviewed in the section 3 show that the relative efficacy between typographical input enhancement and output is not conclusive yet; more evidence should be obtained to get a clearer picture of the issue. Moreover, there has been no research which investigates the combined effect of typographical input enhancement and output, except Izumi (2002). In order to find out a variety of classroom techniques which can maximize noticing and learning effect, it would be beneficial to explore further what are the combined effects of different types of classroom techniques on noticing and learning of a target form.

Izumi (2002) investigated the combined effect of typographical input enhancement and output on L2 learning. One of the Izumi’s experimental groups received a reading passage which was typographically enhanced and performed an output task. The output task used in the study was reconstruction, and the linguistic target was English relativization. The participants of the study were students enrolled in the ESL programs in two universities in the US.
The present study differs in Izumi (2002) in that it uses a different output task called picture-cued writing task. The output tasks used in the previous studies were reconstruction, dictogloss, and essay-writing tasks. It has been pointed out that reconstruction and dictogloss writing tasks do not provide learners with any freedom or flexibility to express their own thought because they require learners to reconstruct the text as accurately as possible after they read or listen to it. Moreover, these tasks give learners a heavy burden on their cognitive processing because they have to memorize content and structures of a given text to reconstruct it accurately. However, due to the advantage of the task characteristics which induces learners to attend to a targeted form, they have been extensively used in output studies. As for essay-writing task, Izumi (2002) argued that since the task, although it provides greater freedom for expressing learners’ own thought, does not allow learners to notice an intended target form in the subsequent input, it is not appropriate to be used in output studies. Izumi (1999) and Izumi and Bigelow (2002) found that learners who performed an essay-writing task showed greater individual variation in attending a target form. Based on these arguments, this study employed another type of output task - a picture-cued writing task - which was designed to induce learners’ attention to target forms as well as to give learners a little more flexibility and freedom than reconstruction and dictogloss.

This study also differs from Izumi (2002) in that the linguistic target of the present study is the English past hypothetical conditional (If he had studied harder, he would have passed the test). The rationale for choosing the grammatical form as the linguistic target was that due to syntactic and semantic complexity, it is known as one of the most problematic features for L2 learners of English (Celce-Murcia, Larsen-Freeman, & Williams, 1999).

The present study is also unique since it empirically tests the Noticing Hypothesis. Most previous studies assumed that the learning gain observed in the studies was caused by the attention the learners paid to target forms, without empirically measuring whether their participants indeed noticed the target forms while performing a task, and whether the amount of noticing induced by each task or technique is indeed different. Using the method of underlining, which may be indirect indication of awareness or attention, this study tests whether the amount of noticing to target forms induced by each technique is positively related to its learning gain.

Based on the rationales, the present study developed the following two specific research questions:

Research question 1: Which of the three attention-inducing techniques - typographical input enhancement (TIE), picture-cued writing (PCW), and the combination of typographical input enhancement and picture-cued writing (TIE+PCW) - best promotes the learning of the English past hypothetical conditional?
Research question 2: Which of the three attention-inducing techniques - typographical input enhancement (TIE), picture-cued writing (PCW), and the combination of typographical input enhancement and picture-cued writing (TIE+PCW) - best promotes the noticing of the English past hypothetical conditional?

III. METHODS

1. Participants

The participants of the study were 140 Korean EFL intermediate-level college students who were enrolled in eight “College English” classes at a university in Seoul, Korea. Most of the participants were freshmen, and had TEPS (Test of English Proficiency at Seoul National University) scores ranging from 501-700. Among the eight classes, six classes (two classes each) were assigned to the three experimental groups, and the remaining two classes were assigned to the control group. The control group didn’t receive any treatment; they participated only in the pre- and posttests.

Based on the results of the pretest on the English past hypothetical conditional, participants who scored more than 90% and less than 10% were excluded from the study due to the potential for a ceiling effect and lack of developmental readiness for learning the grammatical form. In addition, students who didn’t participate in any of the three treatment sessions and complete any of the two tests were excluded from the data. In order to measure the treatment effect more accurately, the data from those who responded that they consulted with anyone or anything about the target form during the experiment period were also discarded. For these reasons, the number of the participants in each experimental group turned out to be different. Including the control group, the number of the final pool of participants was 79. Among 79 students, 17 students were in the typographical input enhancement (TIE) group, 12 were in the picture-cued writing (PCW) group, 29 students were in the group which combined typographical input enhancement and picture-cued writing (TIE+PCW), and 21 students were in the control group.

2. Experimental Schedule

The experiment took place over a 5-week period. One week prior to the first treatment session, the participants took the pretest which consisted of a receptive knowledge test and a written production test on English past hypothetical conditional for 30 minutes. Then, the three experimental groups underwent different treatments. The experimental treatment consisted of
three sessions. The second treatment session took place a week after the first treatment session, and the third treatment session took place another week after the second treatment. Each session lasted for 30 minutes. The posttest, which is the same as the pretest in terms of the content and format, was administered one week after the third treatment for 30 minutes.

3. Experimental Treatments and Treatment Procedures

1) Experimental Treatments

The three treatment groups differed in terms of whether or not the participants were asked to produce output, and whether the target forms in the reading materials are typographically enhanced (bold-faced) or not.

The typographical input enhancement (TIE) group were not asked to produce output; however, all the past hypothetical conditional elements (i.e., if, had pp, would have pp) in the reading materials they received were typographically enhanced (bold-faced). Instead of performing the output task, which is the picture-cued writing task, the participants in the TIE group completed a reading comprehension check-up quiz. Unlike TIE group, the picture-cued writing (PCW) group was asked to produce output; however, the target forms in the reading materials they received were not typographically enhanced. The TIE + PCW group, on the other hand, were asked to produce output, and the linguistic target forms in the reading materials were all typographically enhanced. That is, the participants in this group received both treatments.

2) Treatment Procedures

All three experimental groups were first asked to read a text containing many instances of the past hypothetical conditionals, either typographically enhanced or unenhanced. The TIE group and TIE+PCW group received a typographically enhanced reading text, whereas PCW group received a baseline reading text without typographical enhancement. Except that, the reading passage was the same for the three groups. The passage used in the second session, for example, was about a girl who regretted having worked as an assistant at an English camp held in Jeju during the summer vacation; it fully contextualized the use of the past hypothetical conditional (See Appendix A for the reading sample).

Right before reading the text, all participants in each experimental group were informed of the task they were going to do after reading the text. The TIE group was told that they were going to answer comprehension questions; the PCW and TIE+PCW groups were told that they were going to write about a similar situation to the one in the reading passage and that they were going to be provided with picture and vocabulary prompts they can use in the subsequent writing task. In order to measure the amount of noticing each treatment
condition induces, the participants were also asked to underline the parts that they felt were necessary for the subsequent task while they were reading. They were instructed not to underline sentences but to underline words, parts of words, and phrases, and asked to write down reasons why they underlined specific elements in the text.

After reading the passage, the TIE group answered a comprehension check-up quiz which consists of 10 multiple-choice and open-ended questions, without looking back the text they just read. The PCW and TIE+PCW groups were given an output sheet where a similar situation was briefly described. Below the explanation of the situation, picture and vocabulary prompts designed to elicit the targeted contexts were provided. The participants in the two output groups completed a short guided-writing passage based on the prompts. The participants were told that they may use the words written below each picture as prompts to write one sentence combining the meanings of the two pictures, one of which was created to represent the if-clause, and the other, the main clause. However, the participants were also told that they could use their own words or phrases to construct a passage which contextualizes the situation.

The participants in the three groups were shown the same text a second time, and asked again to underline any parts of words, and phrases that they felt would be necessary in the subsequent task. This procedure was done to examine whether experiencing a different treatment had any impact on learners’ noticing on the target form in the subsequent input. After the second reading, the TIE group answered slightly different questions regarding the content of the text, whereas the PCW and the TIE+PCW groups received a second picture-cued writing opportunity.

4. Testing Instruments (Pre-and Posttests)

The pre-and posttests consisted of two different sections. The first section was designed to test the participants’ receptive knowledge of the target form, and the second section was developed to assess their ability to use the form in a given context productively. Both tests were administered in a paper-and-pencil format, and the interval between the pretest and the posttest was one month. The same format was used for the two tests since it was deemed that there would be little possibility that the participants could remember the questions on the tests, due to the relatively long interval between the two tests.

The receptive knowledge test consisted of 25 questions, among which 19 questions were about the English past hypothetical conditional, and the rest of the questions were distracters. The sentences were read aloud by a female native speaker of English and were recorded on a CD. The participants, after listening to a sentence, were instructed to answer whether the sentence is grammatically correct or not, and if incorrect, to underline the incorrect part and correct it on the test sheet.

The production test consisted of two sets of contexts for which the participants are...
required to produce three sentences containing the target form respectively. Each context was explained in Korean, and a prompt (e.g., If my mother) under each item was written to ensure the participants produce the target form (See Appendix B for the sample items from the pretest and the posttest).

5. Data Scoring

The scoring procedure of the present study generally followed Izumi (2002). For obtaining the data on the noticing of the target form, the total number of all underlines made on the first and second input (reading texts) and the total number of conditional-related underlines for each participant were first identified. Then, the noticing score of each participant was obtained by calculating the percentage of the conditional-related underlines. The average amount of noticing of the target form for the 1st and 2nd input was also obtained to examine the differential impact of each treatment on noticing of the target form.

In order to obtain the data on each participant’s receptive knowledge on the target form, the items that were not answered were first excluded from scoring. One point was given for each correct answer, and a half point was given when the participants made a correct judgment as to the grammaticality of a sentence, and underlined the incorrect part, but failed to correct it. No point was given when the participants made an incorrect judgment about each sentence, or when the participants made a correct judgment on each sentence and did not underline the incorrect part of the sentence. In order to obtain each participant’s score on receptive knowledge on the target form, the total number of points each participant earned was divided by the total number of items he/she answered.

The production data obtained from the pre-and posttests were coded using a targetlike use analysis. Each participant’s production score was calculated by dividing the number of targetlike conditional clauses the participant produced by the total number of the target clauses attempted. After a training session, two raters coded approximately 10% of the production data, and the inter-rater agreement was 92%.

IV. RESULTS

1. Acquisition

The first purpose of the present study was to investigate which of the three instructional techniques employed in the study -TIE, PCW, and TIE+PCW- best promotes the acquisition of the English past hypothetical conditional for Korean college learners of English. Table 1 shows the descriptive statistics for the pretests and the posttests of the
three experimental groups.

### TABLE 1

<table>
<thead>
<tr>
<th>Tests</th>
<th>Groups</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TIE (N=17)</td>
<td>M 63.89</td>
<td>74.02</td>
<td>M 60.38</td>
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<td></td>
<td>SD (13.70)</td>
<td>(23.66)</td>
<td>(28.27)</td>
<td>(31.56)</td>
<td>(10.47)</td>
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<td></td>
<td>PCW (N=12)</td>
<td>M 60.38</td>
<td>82.78</td>
<td>M 60.38</td>
<td>82.78</td>
</tr>
<tr>
<td></td>
<td>SD (26.77)</td>
<td>(22.04)</td>
<td>(31.56)</td>
<td>(31.56)</td>
<td>(10.47)</td>
</tr>
<tr>
<td></td>
<td>TIE+PCW (N=29)</td>
<td>M 54.23</td>
<td>85.27</td>
<td>M 54.23</td>
<td>85.27</td>
</tr>
<tr>
<td></td>
<td>SD (13.70)</td>
<td>(9.83)</td>
<td>(26.11)</td>
<td>(26.11)</td>
<td>(15.18)</td>
</tr>
</tbody>
</table>

**The results for the control group (N=21) are: receptive knowledge pretest (M= 60.88, SD=18.00), posttest (M=66.68, SD=18.00); production pretest (M=77.46, SD=22.00), posttest (M=74.20, SD=22.00)**

First of all, one-way ANOVAs were run to examine whether there were any differences in the receptive knowledge and production pretest scores among the three groups before the experiment. As shown in Table 2, the differences in the receptive knowledge pretest scores and the production pretest scores among the three groups were not statistically significant (F=1.857, p=.166 for the receptive knowledge pretest, F=.560, p=.575 for the production pretest). These results indicated that the three experimental groups were similar in both receptive knowledge and production ability on the English past hypothetical conditional prior to the treatments.²

### TABLE 2

<table>
<thead>
<tr>
<th>Sum of squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
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<tr>
<td>Pretest</td>
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<td></td>
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</tr>
<tr>
<td>(Receptive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>1064.098</td>
<td>2</td>
<td>532.049</td>
<td>1.857</td>
</tr>
<tr>
<td>Within Groups</td>
<td>15754.153</td>
<td>55</td>
<td>286.439</td>
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<tr>
<td>Total</td>
<td>16818.251</td>
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<td></td>
<td></td>
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<tr>
<td>Pretest</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>(Production</td>
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</tr>
<tr>
<td>Knowledge</td>
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<tr>
<td>Between Groups</td>
<td>871.808</td>
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<tr>
<td>Within Groups</td>
<td>42842.900</td>
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<td>778.962</td>
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<tr>
<td>Total</td>
<td>43714.708</td>
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</table>

Then, in order to examine the effect of three different treatments on the participants’ learning of the form, the ANOVAs were performed on the receptive knowledge and

² Hatch and Lazaraton (1991) suggest that when the variance of scores of each treatment group is not homogeneous and the number of the participants in each treatment group is different, Kurskal-Wallis Test, which is a non-parametric test, may be also performed to obtain a more powerful and accurate statistical result. Since the variance of receptive knowledge pretest scores of each treatment group was found to be not homogeneous (Levene statistics=3.424, p=.040) and the number of the participants of each treatment group was different (TIE=17, PCW=12, TIE+PCW=29), Kurskal-Wallis Test was also performed. The test result showed that the three groups were not different in the receptive knowledge pretest scores (Chi-square =5.175, p=.075). They also were found to be not different in the production pretest scores (Chi-square =2.065, p=.356).
production posttest scores of the three experimental groups. Table 3 shows the results. As can be seen in Table 3, the receptive knowledge posttest scores of the three groups were not statistically different (F=2.236, p=.117). This result indicates that the three different treatments were not different in their effect on the improvement of the participants’ receptive knowledge on the target form.

However, the production posttest scores of the three treatment groups were statistically different (F=4.544, p=.015). To find out where the differences are among the three groups, a posthoc LSD test was conducted. The result of the analysis showed that the mean posttest scores of the PCW group and the TIE+PCW group were statistically different from that of the TIE group (p=.016 for PCW vs. TIE; p=.008 for TIE+PCW vs. TIE); however, the differences in the production posttest mean scores of the two output groups (PCW vs. TIE+PCW) were not statistically significant (p=.764).

**TABLE 3**
ANOVA Results for the Receptive Knowledge Posttests and Production Posttests

<table>
<thead>
<tr>
<th>Sum of squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups (Receptive Knowledge)</td>
<td>1383.620</td>
<td>2</td>
<td>691.810</td>
<td>2.236</td>
</tr>
<tr>
<td>Within Groups (Receptive Knowledge)</td>
<td>17018.436</td>
<td>55</td>
<td>309.426</td>
<td></td>
</tr>
<tr>
<td>Total (Receptive Knowledge)</td>
<td>18402.056</td>
<td>57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups (Production Knowledge)</td>
<td>3709.950</td>
<td>2</td>
<td>1854.975</td>
<td>4.544</td>
</tr>
<tr>
<td>Within Groups (Production Knowledge)</td>
<td>22451.624</td>
<td>55</td>
<td>408.211</td>
<td></td>
</tr>
<tr>
<td>Total (Production Knowledge)</td>
<td>26161.574</td>
<td>57</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Noticing

The second purpose of the present study was to investigate which of the three treatment conditions best draws the participants’ attention to the target form.

**TABLE 4**
Descriptive Statistics for Underlying Scores

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>1st input M</th>
<th>1st input SD</th>
<th>2nd input M</th>
<th>2nd input SD</th>
<th>Average M</th>
<th>Average SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIE</td>
<td>17</td>
<td>30.33</td>
<td>(22.27)</td>
<td>23.93</td>
<td>(18.30)</td>
<td>27.13</td>
<td>(16.40)</td>
</tr>
<tr>
<td>PCW</td>
<td>12</td>
<td>74.25</td>
<td>(9.77)</td>
<td>68.08</td>
<td>(13.64)</td>
<td>71.16</td>
<td>(10.47)</td>
</tr>
<tr>
<td>TIE+PCW</td>
<td>29</td>
<td>72.99</td>
<td>(20.86)</td>
<td>69.06</td>
<td>(19.87)</td>
<td>71.02</td>
<td>(19.17)</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>60.74</td>
<td>(27.60)</td>
<td>55.63</td>
<td>(27.35)</td>
<td>58.19</td>
<td>(26.16)</td>
</tr>
</tbody>
</table>

Table 4 presents the descriptive statistics of the underlying scores of the first input, the second input, and the average underlying scores of the first and second input of the three

---

3 The non-parametric test, Kurskal-Wallis Test was also conducted due to the same reasons. The results were the same as the ANOVA results; the three groups were not statistically different in the receptive posttest scores (Chi-Square=1.652, p=.438), whereas they statistically differed in the production posttest scores (Chi-Square=6.990, p=.030).
treatment groups. The average underlying scores of the PCW and the TIE+PCW groups were 71.02% and 71.16% respectively, whereas that of the TIE group was only 27.13%. This result indicates that in case of the two output groups, approximately 7 out of 10 words, parts of words, or phrases underlined were related to the target form, and in case of the non-output group, about 3 out of 10 underlines were related to the target form. In order to examine whether the average underlying scores of the three groups are statistically different, one-way ANOVA was performed. The result is shown in Table 5. As seen in Table 5, the differences in the average underlying scores of the three groups were statistically significant ($F=40.353$, $p=.000$).

<p>| Table 5: ANOVA Results for Average Underlying Scores |</p>
<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>$F$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>23199.247</td>
<td>2</td>
<td>11599.624</td>
<td>40.353</td>
</tr>
<tr>
<td>Within Groups</td>
<td>15810.000</td>
<td>55</td>
<td>287.455</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>39009.247</td>
<td>57</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In order to find out where the differences are, a posthoc LSD test was conducted. The result of the test showed that the average mean underlying scores of the PCW group and the TIE+PCW group were significantly different from that of the TIE group ($p=.000$ for PCW vs. TIE; $p=.000$ for TIE+PCW vs. TIE), whereas the average underlying scores of the PCW group and the TIE+PCW group were not statistically different ($p=.981$).

These results indicate that the two groups (PCW and TIE+PCW) which received a picture-cued writing opportunity noticed or attended the target form significantly more than the group (TIE) which did not receive such an opportunity. The results of the analyses also show that combining typographical input enhancement technique with the picture-cued writing task did not result in more noticing of the target form; the effect was the same as the output task alone.

V. DISCUSSION

The first purpose of the study was to investigate the effect of three different attention-drawing instructional techniques (TIE, PCW, TIE+PCW) on learning of the English past hypothetical conditional. Statistically significant differences were found among three groups in the improvement of the written production of the target form; both PCW group and TIE+PCW group outperformed TIE group, and no differences were found between PCW group and TIE+PCW group.

4 The result of non-parametric Kurskal-Wallis test also showed that the average underlying scores of the three groups were statistically different (Chi-Square=30.46, $p=.000$).
These results indicate that as far as the improvement of the participants’ ability to produce the English past hypothetical conditional in written form, the picture-cued writing approach was more effective than non-output approach in which the participants read the typographically enhanced reading passage only for comprehension. Adding typographical input enhancement technique to picture-cued writing technique did not have any impact on the improvement of the learning of the target form. That is, input-output technique was found to be more effective than input-only technique in promoting the written production of the target form. These findings are consistent with previous studies (Izumi, 2002; Yeo, 2002) which found superior ability to produce target forms by the output subjects as compared to the typographically enhanced input subjects who were reading the text for the sole purpose of comprehension.

The positive effect of output (picture-cued writing) demonstrated in this study implies that comprehensible input alone, even when it is visually enhanced, is not sufficient in developing L2 learners’ ability to use the target form. The finding of the study lends supports for the Output Hypothesis proposed by Swain (1985, 1995, 2000, 2005). Of the four functions of the Output Hypothesis, the noticing function of output posits that while producing the target language, learners may “notice that they do not know how to say (or write) precisely the meaning they wish to convey” (Swain, 2005, p. 474), which then may bring their attention to something they need to solve their linguistic deficiency. According to the hypothesis, output opportunities facilitate the noticing of problems in learners’ interlanguage and the related features in the input. If relevant input is immediately available after producing output, learners may focus their attention to the input and process it more meaningfully (Izumi, 2002).

The superior performance of the participants in the picture-cued writing treatment groups in producing the target form may be explained within the theoretical assumption of the noticing function of the Output Hypothesis. The PCW and TIE+PCW participants who received output opportunities may have felt difficulty producing the target form while performing the picture-cued writing task; thus, in the second input provided immediately after their first output, they may have drawn their attention to the target form and may have revised their interlanguage rule about the target form. In short, pushed output may induce the participants to process the given input more effectively for their greater IL development (Izumi, 2002).

In contrast to the positive results of output, typographical input enhancement with no output opportunity failed to induce greater improvement on the written production of the target form, although it had an impact on the improvement of the receptive knowledge of the target form. As mentioned previously, one of the differences between output and typographical input enhancement is that, while attention in the former arises internally through production processes, attention in the latter is induced externally. Izumi (2002) argues that “these two approaches to focus on form do not promote learning with an equal
level of efficacy even though they both supposedly involve learner attention as the crucial variable; output, as an internal priming device, clearly works better to promote learning” (pp. 566-567). He also claims that output condition creates a favorable condition for the learners to make a cognitive comparison between their IL form and the TL form; therefore, it leads to better acquisition.

As Izumi (2002) argues, it is possible that the cognitive comparison may be induced by typographical input enhancement as well. But the typographical input enhancement whose sole function is to draw the learners’ attention to the form, may not necessarily encourage further cognitive processing that may be necessary for acquisition of productive skills. These arguments may provide some explanation as to why typographical input enhancement resulted only in the improvement of receptive knowledge of the target form, not in the improvement of the production of the target form, which may require more in-depth processing of input.

The second purpose of the study was to investigate the effect of the three focus-on-form approaches on the noticing of the target form. The finding of the study showed that in the first and second input respectively, two output groups (PCW and TIE+PCW) underlined the target forms far more than the TIE group. The average amount of noticing of the target form for the first and second input among the three groups were statistically different; both PCW and TIE+PCW groups’ average amount of noticing of the target form were far greater than that of TIE group, and no statistical differences were found between the two output groups in the average amount of noticing of the target form. Adding typographical input enhancement technique to picture-cued writing technique did not result in more noticing of the target form. These results indicate that output condition (PCW and TIE+PCW) promoted significantly greater noticing of the target form than did typographically enhanced input only condition (TIE).

First of all, the greater amount of noticing of the target form in the first input by the two output groups may be explained in relation to the foreknowledge of different task characteristics. In the experiment, the PCW and TIE+PCW output groups were informed that they would write a short passage about a similar situation to that of the input passage with the aid of picture prompts. Therefore, it is possible that when reading the first input passage, the participants’ attentional resources were more drawn to the target forms because they may have assumed that the target forms were more useful for their subsequent writing than the content. On the other hand, the TIE participants were informed that they would answer the reading comprehension questions regarding the input passage. Thus, it is possible that in order to complete the given task, the participants may have not considered the target form important enough to carefully attend to. These arguments can be supported by the findings of a study by Yoshimura (2006), in which foreknowledge of distinct output tasks resulted in differences in learners’ reading behavior and noticing of a form. Thus, it can be argued that the picture-cued writing task has more advantage over the
enhanced input-based reading comprehension task in drawing learners’ attention to the target form in the input text.

In addition to the interpretation based on the foreknowledge of task types, the greater average amount of noticing of the target form in the second input by the two output groups may be explained in relation to the noticing function of the Output Hypothesis mentioned above. After performing the first picture-cued writing task, the two output groups may have experienced some difficulties in writing a short passage using the target form even though they noticed the target forms in the first input and the picture prompts were provided. Thus, in the second input, they may have focused their attention more to the target forms. However, the non-output TIE group may have felt the need less than the two output groups.

The findings of the study support the Noticing Hypothesis which posits that the more attention to the form, the better its chance of acquisition (Schmidt, 2001). The PCW and TIE+PCW groups, whose average amount of noticing of the target forms was far greater than that of TIE group, outperformed the TIE group in the production posttest. However, a question remains as to why the TIE group, whose average underline score of the target form was much lower than those of the two output groups also showed improvement in the receptive knowledge posttest, as the two output groups did.

One possible explanation can be found in the measurement problems that may be associated with underlining (Izumi & Bigelow, 2000). It is difficult to argue that the presence of underlining on the target form does not mean that at least some attention was paid to it (Izumi, 2002). However, it is not difficult to imagine a situation where one notices target forms, but does not underline them. That is, the problem with underlining in this study may be with underestimation of actual noticing of the target form. That is, the participants in the TIE group may have noticed the target forms which became perceptually salient through typographical enhancement, but may have not underlined them. Thus, the overall quantity of noticing of the TIE group may not have been different from that of the PCW and TIE+PCW groups.

If this is the case, it is possible that attention evidenced by the typographical input enhancement might have taken place at a relatively shallow level without necessarily shifting to deeper and more elaborate processing level which is necessary for complete acquisition of forms. As Izumi (2002) claims, the qualitative aspect of attention induced by output and typographical input enhancement may be different. These arguments may explain why the TIE group showed improvement in the receptive posttest, but not in the production posttest. The quantity of noticing may be enough for the improvement of receptive knowledge of the target forms, but not for the improvement of productive knowledge of the target forms.
VI. CONCLUSION

Drawing on the empirical evidence that attention plays a key role in L2 acquisition, this study set out to investigate the effect of three different focus-on-form techniques (TIE, PCW, TIE+PCW) on learning and noticing of the English past hypothetical conditional. From the study, it was found that the three techniques were not different in their impact on the improvement of learners’ receptive knowledge of the form; however, two output techniques (PCW and TIE+PCW) were found to be more effective than non-output technique (TIE) in improving learners’ productive knowledge on the form. In addition, two output techniques induced more noticing of the form than the non-output technique. In short, output technique overall was more effective in noticing and learning of the target form.

The pedagogical implication that can be found in the findings of the study is that output activities such as the picture-cued writing task are very effective in improving learners’ ability to use the form accurately. Although not a purely creative writing activity, the picture-cued writing task employed in the study can be used in a grammar or writing class as an additional exercise which can control the learners’ attention to selected forms without sacrificing the meaning and context.

This study has several limitations. First, the participants in each experimental group were not randomly sampled; they were from intact classes. Therefore, the number of the participants in each treatment condition was not the same. Second, as mentioned in the previous section, underlining, although it has been used in some previous studies, may not have fully measured the participants’ noticing of the target form. Therefore, in future studies, more direct measures such as think-aloud techniques or stimulated recalls should be used to tap learners’ actual cognitive processing (Leow, 2001).

Although there is a general agreement on the positive role of attention in L2 development, there has been a lot of empirical investigations and debate over the types of instruction, approaches, or techniques which best lead to noticing and, consequently to the acquisition of the form. This study contributes to adding one piece of new empirical evidence to the whole puzzle of “attention and SLA.” Subsequent research should be conducted using different grammatical forms and different attention-inducing instructional techniques.

REFERENCES


Leow, R., Egi, T., Nuevo, A. M., & Tsai, Y-C. (2003). The roles of textual enhancement and type of linguistic item in adult L2 learners’ comprehension and intake. *Applied Language Learning, 13*, 1-16.


APPENDIX A

Input Text for TIE and TIE+PCW Groups (Sample from the 2nd Session)

Last summer vacation, Hee-jin worked as an assistant at an English camp held in Jeju Island. However, she regrets having done so.

If Hee-jin had stayed in Seoul, she would have taken Statistics course in the summer session. If she had enrolled in a driving school, she would have applied for the driving test. If she had worked full-time at a museum in June and July, she would have traveled to Europe in August. She would have had a great time with her friends if she had gone to Busan.
APPENDIX B
Sample Items from the Pretest and the Posttest

(지시문)

다음 영어 문장을 듣고 각각의 영어문장이 문장이 문법적으로 옳은 문장이면 yes에 동그라미 표시하고 문법적으로 옳지 않은 문장이면 no에 동그라미 하세요. 그리고 no라고 표시한 경우에는 문법적으로 오류가 있다고 생각하는 곳에 밑줄을 긋고 문법에 맞게 바로 고쳐봅시다. 자 시작합시다.

Receptive Knowledge Test (Sample items)

1. I would have graduated from college two years ago if I’d had more money. YES/NO
2. The sun rises from the east.
3. I would be on time for class yesterday if I had caught the bus.
4. If I didn’t go to the party yesterday, Tom would have been very upset.
5. I wish I could help you.
6. The view was very beautiful. I would have taken some pictures if I had a camera.
7. I enjoyed reading comic books when I was young.
8. If the weather had been better last weekend, the picnic would have been much more fun.
9. It would be very nice if I see you.
10. If I were rich at that time, I would have traveled to Europe.
Production Test (Sample questions)

다음 주어진 사항을 읽고 여러분이 직접 문장을 만들어 봅시다.

II. 은영이는 지난 여름에 태국으로 혼자 여행을 갔었습니다. 여행을 다녀와서 여행에 대해 몇 가지 아쉬웠던 점에 대해 생각을 합니다.

“디지털 카메라를 가져갔더라면 사진을 많이 찍었을 텐데...”

If I ________________________________, __________________________________.

“호텔 예약을 좀 더 일찍 했더라면, 좀 더 좋은 호텔에서 묵을 수 있었을 텐데...”

If I ________________________________, __________________________________.

“친구와 함께 갔더라면 외롭지 않았을 텐데...”

If I ________________________________, __________________________________.

Applicable level: college
Key words: typographical input enhancement, output, Noticing Hypothesis, Output Hypothesis

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