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Roles of Output and Noticing in SLA:  
Does Exposure to Relevant Input  
Immediately After Output Promote  
Vocabulary Learning?

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# Roles of Output and Noticing in SLA: Does Exposure to Relevant Input Immediately After Output Promote Vocabulary Learning?

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## **Abstract**

This study aims to investigate how noticing forms in relevant input presented immediately after output encourages learners of English to take lexical items into their IL systems. Twenty nine university students, classified into 3 proficiency levels, took part in an experiment, in which they worked on guided composition, and then took notes of what forms they had noticed in looking at relevant input presented immediately after output. The participants were asked to work on the same guided composition in the following week to examine how they retained lexical items from the relevant input. The results are: 1) The output-input process leads advanced learners to retain more lexical items; 2) The uptake is promoted when: i) the participants analyze a form in the relevant input syntactically, and/or ii) the participants perceive a form in the model as being in contrast with its counterpart in their own output and realize ungrammatical or less appropriate status of the latter; and 3) The output-input process helps learners gain lexical knowledge on use.

## **1. Introduction**

It has been established that input of a target language is indispensable in learning a foreign language. In order to learn English, learners should be given enough opportunities to decode input of English. Merely decoding input, however, does not foster the ability to use grammatically correct expressions. This is because decoding input does not require learners to attend to all the information in it. VanPatten (1996) argues that learners' attention tends to be drawn to certain parts of input, particularly those that are immediately necessary to understand the message. In decoding input, L2 learners are first likely to search for content words such as verbs, nouns, and adjectives. As content words usually convey more meaning than function words and morphological forms,

L2 learners can understand the input quite successfully without syntactic parsing. The act of producing language (speaking or writing), on the other hand, demands syntactic processing (Swain and Lapkin, 1995), which requires learners to allocate their attentional resources to morphological forms and function words as well as content words. Producing target language leads learners to realize that they cannot precisely realize their intended messages linguistically. Experiencing linguistic difficulty in output, or noticing holes, encourages learners to attend to the relevant linguistic forms in input if it is offered in a well-timed manner. Then learners compare their own linguistic realizations with the counterparts in the input, notice the gap between them, and internalize the correct linguistic forms into their IL systems according to their needs.

Noticing is regarded as a necessary cognitive process for acquiring a foreign language. Noticing linguistic forms triggers such cognitive processes as mapping forms with their proper meanings and internalizing new knowledge (Doughty, 2001). As Peters (1998) proposes, it seems reasonable to suppose that in every domain of language learning (phonology, grammar, vocabulary, discourse structuring and so forth), learners have to attend to and notice any source of variation that matters, whatever makes a difference in meaning and that unattended learning, if any, is limited compared to attended learning.

Most discussions regarding the role of noticing in IL development focused on morphology and syntax and only a few have dealt with lexical learning and pragmatic development (Schmidt, 2001). This is where our primary concern lies. The present study aims to clarify how noticing forms in relevant input presented immediately after output encourages learners to retain lexical items from the relevant input.

## **2. Theoretical Background**

### **2.1 Output and Noticing in SLA**

Although it is now generally agreed that the act of producing language constitutes part of the process of second language learning, the term “output” was used to indicate the outcome, or product, of language learning in the 1980s. This view was questioned by Swain (1985), who claimed that the act of producing language constituted part of the process of second language learning. She then refined her theory and outlined three functions of output in second language learning: 1) the noticing function, 2) the hypothesis-testing function, and 3) the metalinguistic function (Swain, 1995). Although we believe that output itself is a process of language learning, it is worth noting that not all circumstances of output induce learners to learn new knowledge about the target language. In a casual conversation, for example, learners can avoid using problematic linguistic forms, yet gain their communicative success. “Pushed output,” which induces learners to notice their linguistic holes, is a prerequisite for promoting IL development (Swain, 1993). If learners are pushed to produce output and immediately provided with relevant input, or a model, it is likely that the sensitivity towards the form may be heightened through output, which may, in

turn, prompt them to attend to the relevant parts in the model.

As for how output contributes to second language acquisition, Izumi (2002) proves empirically that learners who produced output demonstrate greater learning of the target form than those who were not required to produce output. He demonstrates that providing input after output has a significant impact on the learning of English.

Production has a role of raising learners' awareness of problemat�icity, which makes learners more sensitive to what they can and cannot say or write. Noticing a problem leads learners to be more attentive to relevant linguistic forms in input. Concerning how noticing contributes to IL development, Iwanaka & Takatsuka (2006) show that both noticing a problem and noticing a form prompt the immediate uptake of linguistic forms and play an important role in mapping already learned forms with the new meanings. Noticing, however, does not always contribute to IL development. As cognitive activities triggered by noticing vary depending on circumstances, a qualitative analysis of them is necessary to clarify how noticing contributes to IL development.

We believe that both output and noticing are indispensable for acquiring the ability to produce language which is grammatically correct and sociolinguistically appropriate. Figure 1 illustrates how output and noticing might contribute to IL development together.

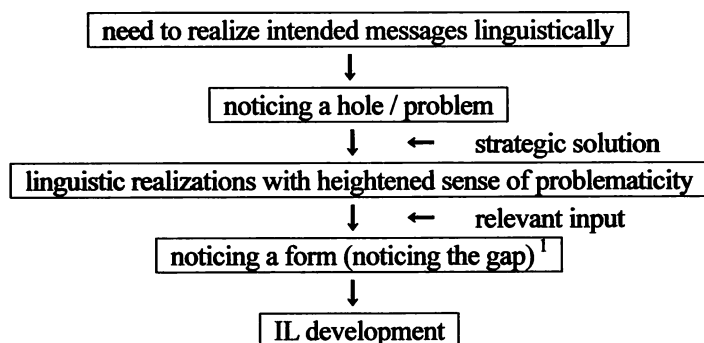


Figure 1. A hypothetical way in which output and noticing contribute to IL development

## 2.2 Learners' English Proficiency and Analysis Triggered by Noticing

While advanced learners have more capacity to attend to details such as morphological forms, pragmatics, and discourse structuring, beginning learners cannot pay attention to all meaningful differences at once because they are cognitively overloaded. They have not acquired easy access to linguistic forms. Even if the same input is provided after output, it is not likely that both beginning learners and advanced learners experience the same degree of noticing. It is more likely that advanced learners notice what beginning learners do not notice. It is also likely that advanced learners' analysis triggered by noticing is more detailed and elaborate. We presume that advanced learners will receive more benefits from the process where relevant input is presented after output (henceforth, the output-input process) than beginning learners.

### **2.3 Aspects of Knowing a Word**

Knowing a word involves three aspects: form, meaning, and use (Nation, 2001). Which aspect of knowledge does the output-input process foster? As output is considered to raise learners' awareness of how a word should be used in a sentence, we assume that the output-input process is likely to develop lexical knowledge on use.

### **2.4 Research Questions**

Based on the above discussion, the following research questions were formulated:

1. What do learners do when they notice a form and what cognitive activities triggered by noticing contribute to the uptake of the form?
2. Does learners' proficiency in English influence the cognitive activities triggered by noticing a form? As a result, does that influence the uptake of the form?
3. Which aspect of lexical knowledge does noticing during the output-input process foster, knowledge on form, meaning, or use?

## **3. Method**

### **3.1 Task Design**

To evaluate the effects of output on IL development properly, the task to be employed in the study should fulfill the following requirements: 1) participants have the freedom to choose what linguistic forms to use, 2) participants have choices to decide what forms are relevant to their developing IL systems, and 3) individual variation in output is minimal.

The first proviso takes the nature of output process into consideration. Producing language is basically meaning-oriented and it is unrealistic that linguistic forms are predecided before generating meanings. The second requirement takes account of the participants' developmental stages, or individual variation. It should be up to each participant to decide what forms are important to develop his or her IL systems. For this reason, we did not decide target forms in advance. The third condition is important to maximize the effects of output on IL development. An essay-writing task, for example, is susceptible to individual variation. A task is necessary which leads learners to contrast their linguistic realizations with their counterparts in relevant input. Taking the above factors into consideration, we decided on guided composition for our task. The detail of the task and the procedure for collecting data will be given in 3.3.

### **3.2 Participants**

Twenty nine Japanese learners of English participated in the study. They were undergraduate students who were not majoring in English. They were classified into three levels based on their English proficiency: advanced level, intermediate level, and elementary level. We

employed two kinds of proficiency tests: a C-test and a reading comprehension test. The C-test given to the participants consisted of two texts with 33 gaps each, with every 11th word deleted. To evaluate the participants' reading proficiency, we employed a past entrance examination to a university with permission from the university. It consisted of 40 questions and we gave scores to the participants from 0 to 100. The proficiency levels of the three groups were found to be significantly different from each other,  $F(2, 26) = 68.247, p < .05$ . Table 1 shows the mean scores on the proficiency test of the participants with different levels.

Table 1. Mean Scores on Proficiency Test

| Group        | <i>M</i> (max = 166) | <i>N</i> | <i>SD</i> |
|--------------|----------------------|----------|-----------|
| Elementary   | 68.67                | 10       | 19.34     |
| Intermediate | 110.70               | 10       | 8.71      |
| Advanced     | 136.20               | 9        | 7.41      |
| Total        | 106.45               | 29       | 30.50     |

### 3.3 Procedure for Collecting Data

As mentioned above, we decided to employ guided composition for our task. We directed the participants to write a passage to describe a sightseeing spot to one of his or her foreign friends. The passage consisted of five paragraphs, each of which had a few pieces of information that the participants had to encode. It was up to each participant what linguistic forms to use. The participants had been informed of the task procedure in advance. The procedure for collecting data is as follows:

- Stage 1. The participants work on the guided composition and write a passage describing a sight-seeing spot (output 1<sup>2</sup>).
- Stage 2. The participants are provided with relevant input (a model passage).
- Stage 3. The participants underline parts of the relevant input which they think are necessary to improve their writing ability and write down what they have noticed about the underlined parts.
- Stage 4. The participants work on the same guided composition as that of Stage 1 in the next week without previous notice (output 2<sup>3</sup>).

It was up to each participant whether s/he would use the expressions from the model passage at Stage 4.

As we wanted to confirm that the output-input process would help learners of English acquire productive knowledge of lexical items, we decided to give them the same guided composition at Stage 4. As it is generally true that receptive tests are easier than productive tests (Nation, 2001), productive tests should be employed to evaluate learners' productive ability.

### 3.4 Number of Data to Be Analyzed

Reliable criteria are necessary to judge whether the participants noticed a form in the model passage and they retained the form in their IL systems. The following criteria were established for the analysis:

1. The participants noticed a form in the model passage if: 1) s/he underlined a part and mapped the part with its appropriate meaning, and/or 2) s/he underlined a part and mentioned that s/he did not know the expression.
2. The participants retained the form if they produced it correctly in output 2.

Following the above criteria, three investigators independently analyzed all the data. Though there were discrepancies in judging whether noticing a form occurred, there were 342 cases where all the three investigators agreed. The 342 data were used for further analysis. There were few discrepancies in judging whether a form was retained.

Some participants noticed more forms than others. Though there was a tendency that elementary learners noticed less forms than intermediate and advanced learners, the difference was not statistically significant,  $F(2, 26) = 3.122, p = .061$ .

### 3.5 Analysis

We first compared the parts where the participants noticed forms in output 1 with their counterparts in output 2. The analysis by the three investigators put the 342 data into three groups: uptake, no uptake, and others. Each of them is defined as follows:

1. Uptake: The cases where the participants used a form from the model passage correctly in output 2 fall into this group.
2. No uptake: The cases where the participants used the same form, which is different from the counterpart in the model passage, both in output 1 and output 2 fall into this group.
3. Others: The cases which do not belong to either uptake or no uptake fall into this group.

Of the 342 data, 93 fell into uptake, 124 into no uptake, and 125 into others. Let us look at a typical example belonging to the third group. In looking at the expression *is located between Okayama and Hiroshima*, for example, a participant underlined the part and mapped the form with its meaning. At Stage 4, he used the expression *is locate between Okayama and Hiroshima*. He tried in vain to use the form from the model passage. Examples like this were abundant and they also show that the output-input process influences learners' IL development along with uptake. In order to clarify what cognitive activities encourage participants to retain lexical items, we gave a qualitative analysis to the 342 data. The participants' cognitive activities triggered by noticing were classified into two categories: semantic analysis, where the participants mapped a



form with its appropriate meaning and syntactic analysis, where the participants commented on how a form should be used in a sentence.

#### 4. Results and Discussion

Analysis of the data showed three findings. The first finding is concerned with the relationship between the participants' proficiency and uptake scores. Table 2 shows the mean uptake scores of the participants with different levels. As was discussed in 2.2, advanced level learners took more forms from the model passage into their IL systems than intermediate and elementary learners,  $F(2, 26) = 3.771, p = .036$ . Bonferroni's multiple comparison showed that the effect of learners' proficiency was statistically significant between the advanced level learners and the elementary level learners at an alpha level of .05.

Table 2. Mean Uptake Scores of Participants With Different Levels

| Group        | <i>M</i> | <i>N</i> | <i>SD</i> |
|--------------|----------|----------|-----------|
| Elementary   | 2.10     | 10       | .99       |
| Intermediate | 3.10     | 10       | 1.91      |
| Advanced     | 4.44     | 9        | 2.46      |
| Total        | 3.17     | 29       | 2.04      |

To explain why the advanced level learners could retain more lexical items, it is necessary to consider the role of analysis triggered by noticing. In the study, we did not let the participants use dictionaries. When they noticed a form in the relevant input, they analyzed it only with their own knowledge. That means they could depend only on their prior knowledge for performing analytic operations such as making inferences, comparing, and classifying. When new knowledge gets internalized resting on present knowledge, the amount of the latter plays a crucial part in the success of the process (Marzano, 2001). This explains why the advanced level learners retained more lexical items in output 2. Their good prior knowledge about English encouraged them to retain lexical items more successfully.

The second finding is about the effects of cognitive activities triggered by noticing on uptake. When the participants had partial knowledge of a form, they often commented on how the form should be used in a sentence. In other words, they commented on syntax, such as “*Edo-period* can be used as an adjective,” “*Against* is necessary after *fight*,” and “*Serves* can have an inanimate thing as its subject.” When the participants commented on how a word should be used in a sentence, the part was produced more successfully than when the participants commented on only form-meaning relationship. This result accords with Izumi (2003), who points out that analysis at the level of meaning is not as useful for intake as an analysis at the level of syntax. Table 3 indicates how syntactic analysis of a form promotes the uptake of it.

Table 3. Contingency Table of Syntactic Analysis and Uptake

|                    |     | Uptake |     | Total |
|--------------------|-----|--------|-----|-------|
|                    |     | (+)    | (-) |       |
| Syntactic Analysis | (+) | 74     | 98  | 172   |
|                    | (-) | 19     | 151 | 170   |
| Total              |     | 93     | 249 | 342   |

The results of statistical analysis show that syntactic analysis of a form and the uptake of it are not independent,  $\chi^2(1, N = 342) = 43.798, p = .00$ .

There were 19 cases where the participants used forms from the model passage correctly without syntactic analysis. In these cases, the participants perceived a form in the model as being in contrast with its counterpart in their own output and realized ungrammatical or less appropriate status of the latter. Take *bullet train*, for example. Though no participants used it at Stage 1, 6 participants used it correctly at Stage 4. Their comments in looking at *bullet train* at Stage 3 were: "I did not know this expression," "I have to use this expression from now on," "This expression describes *shinkansen* properly" and so on. These comments indicate that they felt it necessary to retain the form. On the other hand, some participants did not feel the necessity to retain it, which was reflected in their comments. Typical examples were: "I remember that the term 'super express' was used in a train," and "*Shinkansen* should be thought of as a proper noun." In these cases, the participants did not retain the form.

The third finding is concerned with which aspect of lexical knowledge is obtained through the output-input process. Of the 93 cases, the participants took completely new lexical items into their IL systems in 19 cases. In these cases, they did not have any partial knowledge on the lexical items which they took in before they were provided with the model passage. Although new lexical items were noticeable enough to draw participants' attention,<sup>4</sup> the number of uptake was rather small. When the participants noticed new lexical items, the most prevailing cognitive activity was to map the forms with their appropriate meanings, or semantic analysis. It is generally true that semantic analysis alone is not likely to lead to the uptake of lexical items. In the other 74 cases, the participants had partial knowledge on the lexical items which they took in before they were provided with the relevant input. In these cases, instead of establishing a form-meaning relationship, the participants allocated their attentional resources to such aspects as what words should be used with the lexical item in question and in what patterns the lexical item in question should occur. As discussed above, such cognitive activities have a great influence on the uptake of lexical items. Although such cognitive activities rarely happen in looking at completely new lexical items, they are suitable for learning how a lexical item should be used in a sentence.

Our findings can be summarized as follows: 1) The output-input process leads advanced learners to retain more lexical items; 2) The uptake is promoted when: i) the participants analyze a

form in the relevant input syntactically, and/or ii) the participants perceive a form in the model as being in contrast with its counterpart in their own output and realize ungrammatical or less appropriate status of the latter; and 3) The output-input process helps learners gain lexical knowledge on use.

## 5. Conclusion

Though output and noticing play important roles in IL development, we should not neglect to note that the method we employed to investigate the effects of output and noticing on IL development also triggered the uptake of lexical items to some extent. At Stage 3, the participants underlined a part in the model passage and wrote down what they had noticed. We think that this also contributed to the uptake of lexical items along with output and noticing.

Though further research is required, the findings of the study show that output and noticing triggered by output help learners take linguistic forms into their IL systems. Exposure to relevant input immediately after output offers learners of English an opportunity to contrast their own linguistic realizations with their counterparts. Immediate juxtaposition of their own production and models is considered to offer an ideal situation for developing learners' IL systems (Saxton, 1997). The results also suggest that output and noticing triggered by output are likely to help learners of English acquire the ability to produce the target language on their own.

## Notes

1. Noticing the gap cannot always be separable from noticing a form because the latter usually involves the former.
2. Henceforth, the product of Stage 1 is called output 1.
3. Henceforth, the product of Stage 4 is called output 2.
4. More than 20 participants underlined words such as *bullet train*, *canal*, *ogres*, and *pottery* in the model passage and mapped the forms with their appropriate meanings.

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#### **Appendix: Model Passage Used in the Study**

Kurashiki is a traditional Edo-period Town. It is located between Okayama and Hiroshima. It takes about 5 hours by bullet train from Tokyo.

First, I recommend you to go to the traditional area along the canal and look at the old rice storehouses. Nowadays, the storehouses have been converted into museums and shops. You can take a look around the shops and find some interesting souvenirs.

Try *kibi dango*, a traditional Japanese sweet made of rice and sugar. It is said that Momotaro, the hero in a famous old story, took these with him when he went to fight against ogres.

Second, you shouldn't miss Ohara Art Museum. Besides western paintings, you can see beautiful Japanese folk art: pottery, textiles, and woodblock prints made by Japanese artists during the 1920s.

Finally, you should definitely go to a place called Tsurugata for lunch or dinner. It is near Ivy Square. It serves only tofu dishes.