Korean Middle School Students’ Cognitive Processes during English Writing

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This study investigated, using think-aloud protocol, what L2 learners focus on, notice and uptake in a series of English writing task and how this cognitive process is affected by their English proficiency. Nine Korean middle school students were engaged in a three-stage writing task, which consisted of the composing stage, the stage of comparing their own text with a reformulated version, and the revising stage. During the first two stages, the students were asked to think out loud in Korean. The results show that in the composing stage the high level students tended to focus on grammatical forms while the low level groups more concentrated on lexical items. When reformulations were provided, the students well noticed the differences between their original texts and the reformulated ones but a majority of their noticing remained simple noticing without a proper reason or ended up with wrong inferences. This overall shallow and incorrect process at the comparing stage resulted in relatively little changes in the revising stage. These findings suggest that not only the quantity but also the quality of noticing is important for acquisition and more guidance and help should be provided for low level learners to benefit from writing and feedback.

I. INTRODUCTION

Writing has been the least emphasized skill in English education in Korea until late years for various reasons. There are few opportunities to write in English in EFL (English as a foreign language) settings while it takes long time to teach and develop

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writing skills. Above all, it has not been tested in the Korean Scholastic Ability Test (KSAT). However, this situation is expected to change along with the upcoming implementation of the National English Ability Test (NEAT) which aims to measure writing directly in addition to other skills. Considering the strong washback effect of English tests in Korea, writing will take a more central role in English classroom particularly at secondary level education.

With the recent emphasis on the process-oriented writing, a typical L2 writing task consists of various steps such as composing, receiving feedback, and revising. There have been a considerable number of studies on learners’ performance at each stage. These studies analyzed writing samples produced by L2 learners in terms of various aspects of language such as vocabulary, structures, cohesion, or organization (Chon & Shin, 2009; Kang, H., 2011; Kang & Oh, 2011; Kim & Ryoo, 2011; Shin, 2011; Yoon & Yoo, 2011). Or they investigated which type of feedback is more effective in improving L2 writing skills (Cho, 2011; Jung, 2010; Kang, D., 2008; Kim, 2005; Ma, 2006). Their significant findings on L2 writing notwithstanding, these studies mainly focused on the outcome of writing while neglecting the cognitive process L2 learners engage in while writing. In order to help learners develop L2 writing skills, it is necessary to understand their cognitive processes, that is, what they focus on and notice while writing a text and processing feedback, and how this noticing contributes to acquisition.

This study was designed to explore Korean middle school students’ noticing during writing and its impact on acquisition using think-aloud protocol. Unlike adult learners who have substantial knowledge of English as well as advanced metacognitive skills and thus can notice the gap between their interlanguage and the target language, it is still a question whether middle school students can be engaged in and benefit from the same cognitive processes while writing. Motivated by the question, this study investigated Korean middle school students’ cognitive processes and performance in the course of writing, reformulation checking, and revising. This study also examined the interaction between noticing and learners’ English proficiency to be able to provide more meaningful suggestions for learners with different levels of English proficiency.

II. LITERATURE REVIEW

1. Noticing through Writing

One of the widely accepted claims in the field of second language acquisition (SLA) is that noticing of linguistic elements is a necessary condition for L2 acquisition to occur
Noticing has been largely conceptualized in relation to input in the SLA literature. For example, Batstone (1996) defined noticing as the intake of grammar which can be obtained by learners’ paying attention to the input. Qi and Lapkin (2001) expanded this definition by arguing that noticing can be generated in output as well. They claimed that “noticing as a result of producing the target language (TL), as in the context of L2 composing, also has important roles to play in L2 development” (p. 279).

The role of output in noticing and acquisition of L2 was elaborated in Swain’s (1995) Output Hypothesis. She argued that “output pushes learners to process language more deeply (with more mental efforts) than does input” (p. 126). In this sense, output is a process of learning, not a simple product. Thus, when learners produce more output, they will have more chance to learn. Specifically, Swain (2005) suggested three functions of output: noticing/trIGGERING, hypothesis testing and metalinguistic (reflective) functions. Particularly relevant to the present study is the noticing/trIGGERING function of writing. While composing in the target language, learners recognize their deficiency in L2 knowledge and search for relevant forms in the input to fill the gap. This noticing/trIGGERING function of output makes learners strengthen the existing knowledge or acquire novel L2 knowledge.

Barnawi (2010) also defined noticing in relation to writing as “a strategy of recognizing gaps, problems, mistakes, or errors in a particular piece of writing” (p. 210). In the process of noticing, learners realize the difference between what they can express and what they want to write or the gap between their interlanguage and the target language. As they tried to solve the problems, they develop their linguistic knowledge and improve fluency and accuracy in writing (Barnawi, 2010). Therefore, writing is an important catalyst for noticing of forms as well as meaning (Cumming, 1990; Qi & Lapkin, 2001).

Swain and Lapkin (1995) tested the noticing/trIGGERING function of output in L2 writing through an empirical study with 18 Grade 8 French immersion students. In the study, the students were asked to write and edit an article while thinking out loud. The language-related episodes (LRE) analysis revealed that the students did notice gaps in their linguistic knowledge while writing and engaged in grammatical analysis. This supports the claim that output is not only a final product but a kind of learning process which promotes focus on form as well as focus on meaning. At the same time, however, the study showed that the learners’ grammatical analysis was not always correct, leading to incorrect hypotheses and inappropriate generalization. Also it was found that higher level students focused on forms more than the lower level students, indicating the influence of L2 proficiency in grammar noticing. This suggests that feedback and learners’ L2 proficiency need to be considered to facilitate noticing and acquisition.
2. Reformulation as a Corrective Feedback

Cohen (1983) defined reformulation as a written corrective feedback of “having a native writer of the target language rewrite the learner’s essay, preserving all the learner’s ideas, making it sound as nativelike as possible” (p. 4). Therefore, reformulation means that native speakers rewrite the learner’s draft into more target-like expressions in syntactic, morphological, lexical and cohesive aspects without changing the writer’s original content. Reformulation does not indicate or correct errors directly. It gives negative feedback on errors implicitly and in that sense, it can be considered as a written recast (Adams, 2003). As Adams mentioned, when learners are required to compare their original composition and the reformulated one, they are in the situation where they should try to search for the gap between what they can write and what they intend to express. This triggers noticing and this noticing in turn contributes to L2 development. If a reformulated version is not provided, even though learners perceive their errors in the composition or their interlanguage, they cannot correct them because they do not know how to correct them. Cohen (1989) insisted that reformulation is effective “to obtain deeper feedback than in the simple correction of surface errors, which is often what learners receive as feedback on their essays” (p. 9).

Qi and Lapkin (2001) proposed three advantages of reformulation. First, learners can internalize the L2 knowledge from the reformulated version according to their interests, purposes and contexts. This is meaningful because learners’ personal preferences on teacher’s feedback can be considered. Second, the reformulated writings which are corrected by native speakers and include proper target language structures in the context provide a solution to the learners. If there is no reformulated version, learners should solve the linguistic problems by themselves and it can be a big burden on them. Third, reformulation gives semantic and syntactic feedback equally.

The effectiveness of reformulation as corrective feedback was tested by empirical studies. Santos, López-Serrano and Manchón (2010) compared explicit error correction and reformulation through three-stage of writing (composition, comparison-noticing, and revision) with eight Spanish secondary school students in EFL context. The results showed that while both types of written corrective feedback were equally effective in learner’s noticing, reformulation was not as effective as error correction in uptake. According to the researchers, this is because reformulation includes more modification than error correction and as a result, students should remember more error corrections. They also suspected that the visual effect of explicit error correction which was prominent must have promoted uptake. In the interview, the participants preferred error
correction to reformulation because they could notice and apply it easily while they were not familiar with reformulation as a feedback and needed to adjust themselves to it.

Qi and Lapkin (2001) found that reformulation following composing promoted noticing for two adult Mandarin-speaking ESL learners. Most of the problems that were noticed but not resolved in the composing stage were noticed in the comparison of their own text with the reformulated version. However, this noticing of reformulations did not always lead to improvement in the revision stage. While most of the LREs where the learners accepted the reformulation and provide a reason resulted in changes, the LREs which simply showed noticing without any clear reason failed to lead to changes. Based on the result, Qi and Lapkin suggested that the quality of noticing in the reformulation task is more important than the simple quantity of noticing. Another interesting finding of the study is that the lower level learner showed less noticing in the composing and reformulation processing stages and less change in the revision stage. This resonates Cohen's (1983) claim that reformulation may benefit "learners at intermediate levels and above" and "may have its greatest impact among advanced students" (p. 5). However, given that Qi and Lapkin examined only two learners, the influence of learners' L2 proficiency on noticing and uptake while checking reformulations is at best suggestive. Furthermore, it is not sufficient simply to know that lower level learners have difficulty in noticing language-related problems with less benefit from reformulations. To be able to provide appropriate help for them, we need to understand precisely what they can and cannot notice and how they handle their linguistic problems during writing. This requires more studies on L2 learners' cognitive processes during writing.

3. Studies on Cognitive Processes in Korean EFL Writing

There have been a considerable number of studies on Korean EFL learners' English writing but a majority of them were focused on learning outcome (Cho, 2011; Chon & Shin, 2009; Jung, 2010; Kang, D., 2008; Kang, H., 2011; Kang & Oh, 2011; Kim, 2005; Kim & Ryoo, 2011; Ma, 2006; Shin, 2011; Yoon & Yoo, 2011). While several studies have explored English writing process, their subjects were mostly college students and data were collected rather introspectively via questionnaire survey (Kim, S., 2001) or learners' self-description of English writing process (Choi, 2011). One of the problems of these introspective data is that respondents often write what they are supposed to do rather than what they actually do. This is why the protocol analysis is considered a more valid data collection method in investigating writing process (Flower & Hayes, 1981).

The present study was designed to fill the gap in research on cognitive processes during L2 English writing by investigating younger learners and adopting the think-aloud protocol analysis. Considering the increasing importance of writing in secondary
level English education along with the upcoming implementation of the NEAT, it is necessary to understand what L2 learners notice and uptake while writing in English. This cognitive process can be more directly shown via the think-aloud protocol. Nine Korean EFL middle school students with different levels of English proficiency participated in a three-stage writing task consisting of composing, reformulation checking and revising. Their performance and think-aloud protocol at each stage were analyzed in terms of noticing and uptake. The influence of their English proficiency was also examined. Specifically, this study addressed the following four questions:

1. What aspects of language do middle school learners focus and notice while writing in English?
2. What do middle school learners notice when they compare their original text with the reformulated version?
3. Is noticing at the reformulation checking stage related to correction at the revision stage?
4. What is the influence of English proficiency on middle school learners’ cognitive processes during English writing?

III. RESEARCH METHOD

1. Participants

The participants of this study were nine Korean EFL middle school students. They were all male second graders from the same class of a public middle school located in Dongjak-gu, Seoul. They participated in this study voluntarily because they thought they could improve their writing skills through this project.

Table 1 presents the English scores of each student in the previous semester. The English scores were based on their performance on a pencil-and-paper test (70 points), a listening comprehension test (12 points), speaking performance assessment (12 points) and classroom participation (8 points). The students were divided into three proficiency groups based on their English scores in the previous semester. The cut point was decided where the largest score differences were found, for example between S3 and S4 and

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1 The number of the participants in this study may look small. However, given that this study is exploratory in nature and involves the discourse analysis as well as the protocol analysis of the data collected from three different stages, the participant size is not absurdly small. The previous studies which explored similar topics using similar methods also had only a small number of participants. For instance, Qi and Lapkin (2001) investigated only two learners and Swain and Lapkin (1995) involved nine participants.
between S5 and S6. As a result, four students with the scores of 85 and above were classified into the high level group, two students with the scores of 77 and 78 into the intermediate level group, and three students with the scores of 69 and below into the low level group.²

### TABLE 1

<table>
<thead>
<tr>
<th>Proficiency Level</th>
<th>Students' ID</th>
<th>Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (n=3)</td>
<td>S1</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>S2</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>S3</td>
<td>69</td>
</tr>
<tr>
<td>Intermediate (n=2)</td>
<td>S4</td>
<td>77</td>
</tr>
<tr>
<td></td>
<td>S5</td>
<td>78</td>
</tr>
<tr>
<td>High (n=4)</td>
<td>S6</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>S7</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>S8</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>S9</td>
<td>99</td>
</tr>
</tbody>
</table>

2. Procedure

Data was collected in a classroom by one of the researchers (who was the students’ teacher) after all the regular classes were over. This study followed the procedure used in Qi and Lapkin’s (2001) study. The students were asked to perform a three-stage writing task which consists of writing, reformulation checking, and revising, while thinking out loud in Korean. It can be argued that think-aloud techniques may be too difficult for middle school students to perform. However, studies which employed this method for young L2 learners are not rare. For instance, Swain and Lapkin (1995) made 8th graders of the French immersion class think aloud while writing. Thus, with appropriate training and practice, think-aloud techniques can be a useful tool for investigating adolescent learners’ cognitive processes directly.

The students received a brief introduction to a concurrent think-aloud technique. The researcher demonstrated how to think aloud while writing an assay and let three students

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² As one reviewer pointed out, the division of the groups in this study is rather arbitrary in that the learner with the score of 85 can be regarded as an intermediate learner rather than an advanced learner. Although rough, however, the proficiency division based on the learners’ relative English proficiency is still helpful in showing the influence of L2 proficiency on cognitive processes during writing. Yet, given the limited number of the participants and the relative proficiency division in this study, it is necessary to examine individual data as well as group data. This study presented both group and individual data so that the readers can interpret the results beyond the grouping made in this study.
demonstrate the think-aloud technique in front of the participants. After individual practice of think-aloud protocols, the three writing stages followed in three separate sessions.

**Stage 1**, writing: The researcher gave the students a prompt picture which was used in Qi and Lapkin’s (2001) study (see Appendix). Then she let the students write up stories about the picture for 30 minutes. The students were encouraged to do self-correction before they submitted their essays. Throughout the session, the students were asked to think aloud in Korean, which was audio-recorded.

**Stage 2**, reformulation checking: The students’ essays were reformulated by an English native teacher of the school. He corrected linguistic errors without changing the students’ own ideas. In the second session which was held three days later, the students received their original drafts and the reformulated versions. They were asked to compare the two versions and find the differences while thinking out loud in Korean.

**Stage 3**, revising: One week after Stage 2, without any notice, the researcher let the students revise their original drafts which were newly typed and had enough spaces to correct. This was to measure whether the noticed forms in the first two stages resulted in acquisition.

The students could not use dictionaries in all the stages and the researcher did not provide any help except for interrupting to facilitate their think-aloud performance.

3. Data Analysis

For the think-aloud protocol analysis, language-related episodes (LREs) were used. LREs are originally defined as “any part of a dialogue where students talk about language they are producing, question their language use, or other- or self-correct their language production” (Swain & Lapkin, 2001, p.104). Adapting Qi and Lapkin’s (2001) extended definition, this study defined LREs as the episodes which are made from learners when they find or solve language-related problems during the process of writing or self-correcting the draft or comparing the draft and reformulated one.

The LREs from Stage 1 were coded into three categories: (1) lexical, (2) form, and (3) discourse. There is one example for each category.

(1) Lexical LRE: S9’s protocol in the writing stage

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"The liquor is flowing... cup in the..." What is ‘heulida’ in English? ‘Heulida’... ‘Water’?"
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When S9 described the situation of the given picture, he wanted to find the proper word for ‘heulida’ in English. However, he found the wrong word, “water”.

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(2) Form LRE: S3’s protocol in the writing stage

"There is two women. Not “is” but “are” is right. ‘Just’...This can be removed."

S3 made a mistake by using “is” instead of “are” but he noticed and corrected it by himself.

(3) Discourse LRE: S5’s protocol in the reformulation checking stage

"There is a dagger on the wall. It’s better to write ‘on the wall’ because it makes the situation more clear."

S5 did not include the specific location “on the wall” when describing the detail of the pictures in the writing stage, but he noticed that he needed to give specific information for better discourse and accepted it.

The protocol data from Stage 2 was coded into “noticing only” LREs and “accepting with a reason” LREs depending on whether the students provided a reason for the reformulation they noticed. The inter-coder reliability on LREs between the researchers was .871 (Cronbach’s Alpha) and this is an acceptable level to assure consistency in LREs’ coding between the researchers.

Finally, the students’ revised texts were analyzed in terms of whether they corrected the errors they made in the original text.

IV. RESULTS AND DISCUSSION

1. LREs in the Writing Stage

Table 2 shows the total number and type of LREs that the students made in the writing stage. The total number of LREs was the highest for the low proficiency group (9.3 on average), which was followed by the high proficiency group (7 on average) and the intermediate group (6.5 on average). There was no big difference in the proportion of correctly and incorrectly resolved LREs among the three proficiency groups. Approximately a half of the LREs were correctly resolved in all the three groups. These results are not consistent with Qi and Lapkin’s (2001) finding that the higher level student produced and correctly resolved more LREs than the low level student.

When the type of LREs was considered, 82% (5.8 out of 7) of the high group’s LREs and 54% (3.5 out of 6.5) of the intermediate group’s LREs were regarding form. The low group, however, produced more LREs on lexical features (6.3 out of 9.3) than LREs on form (3 out of 9.3). This indicates that the low level learners still more engaged in
semantic processing than syntactic processing.

Another notable difference among the groups was found in the ratio of correctly resolved LREs on form. While the high group could correctly resolve 43% of the LREs on form (2.5 out of 5.8), the intermediate and low groups correctly resolved only 14% (0.5 out of 3.5) and 10% (0.3 out of 3) of the LREs on form, respectively. This shows that even when the intermediate and low level learners noticed problems on language form, they could not resolve them correctly by themselves probably because of their limited knowledge on English. In contrast, the high proficiency learners not only noticed form-related problems but also could resolve many of them correctly.

The main characteristic of the high level students was that more LREs did not necessarily mean more correct sentences. For example, S7 and S9 concentrated on making up a story and meaning negotiation and consequently made only one LRE in total. Nevertheless they produced more correct sentences than S8 who made as many as 23 LREs. In general, if students make LREs, they may make efforts to solve language-related problems and as a result they are more likely to produce target-like sentences. However, if the students are highly proficient, they do not need to make LREs. They still can produce correct sentences unconsciously without making efforts just like S7 and S9.

S5 in the intermediate level group also spent most of writing time for meaning negotiation and made only one LRE. His draft, however, was different from those of S9.
S5 wrote a short passage which included simple structures of sentences consisting of 4 to 6 words in a sentence. Moreover, many of the sentences started with ‘there is’ with little consideration of coherence. The difference between S5 and the two high level students seems to suggest that intermediate level students cannot negotiate meaning and make correct sentences at the same time because of their deficiency of L2. However, when they focus on language-related issues and produce more LREs, they can produce more correct sentences, as shown in S4 who made more LREs and produced better outcome than S5.

In the low level group, S3 who made the most LREs in the think-aloud protocol produced more correct and better sentences than the other students. This result resembles the pattern found in the intermediate group. However, no student in the low level group only concentrated on making up a story without producing LREs like the three students in the intermediate and high level groups (S5, S7, and S9). This is because the low level students needed to search for right vocabulary and forms continuously while they were writing and thus they could not afford to focus on the content and development of the story. This is manifested in the fact that there was no LRE on discourse produced by the low level learners and their drafts overall lacked logical sequencing and coherence.

2. Noticing in the Reformulation Checking Stage

1) Low Level Students

Table 3 presents the number of errors reformulated by the native speaker in the students’ first drafts and the number of errors the low level learners noticed with or without providing reasons.

<table>
<thead>
<tr>
<th></th>
<th>Lexical</th>
<th>Form</th>
<th>Discourse</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E NO AR</td>
<td>E NO AR</td>
<td>E NO AR</td>
<td>E NO AR</td>
</tr>
<tr>
<td>S1</td>
<td>9 1 22</td>
<td>42 9 6 36</td>
<td>2 0 0 0</td>
<td>53 10 7 32</td>
</tr>
<tr>
<td>S2</td>
<td>13 2 31</td>
<td>43 11 3 33</td>
<td>5 0 0 0</td>
<td>61 13 5 30</td>
</tr>
<tr>
<td>S3</td>
<td>12 0 25</td>
<td>23 4 2 26</td>
<td>7 1 0 14</td>
<td>42 5 5 24</td>
</tr>
<tr>
<td>Avg.</td>
<td>11.3 1 27</td>
<td>36 8 3.7 33</td>
<td>4.7 0.3 0 6.4</td>
<td>52 9.3 5.7 29</td>
</tr>
</tbody>
</table>

Note: E: The number of reformulated errors, NO: The number of errors noticed only, AR: The number of accepted reformulation with a reason, %: NO+AR/E
On average, the low level students received 52 reformulations on their errors in the first draft. Of them, only 29% were noticed either with or without a reason. The most frequent errors reformulated in this group were those on form (36 on average), while only a small number of errors on discourse were reformulated (4.7 on average). It was observed that the low level students cared about lexical items most in the writing stage and could resolve many of them correctly. This concentration on lexical features, however, prevented the low level learners from paying adequate attention to making grammatical sentences. Furthermore, even when they encountered form-related issues, they could not resolve them correctly by themselves as shown in Table 2 probably due to their limited English proficiency. This resulted in many errors on form, which elicited the most reformulations. On the other hand, only a few errors on discourse were found in their drafts. This is simply because it was beyond their ability to consider and express discourse features and thus there was little room for errors and reformulations on discourse to appear.

Most of the errors at the lexical level were misspelling or inappropriate word choice as in Excerpt 1.

(4) Excerpt 1 – S2’s original writing

_Woman is sceary_ [“scary” was the proper form the student intended to write.]

When reformulations were provided on the lexical errors, only 27% of them were noticed or accepted by the students. Even though they considered lexical items most in the writing stage, they missed a large number of reformulations on words in the reformulation checking stage. It seems that these learners’ attention to lexical items during writing was not carried over to the feedback stage so as to prompt the learners to search for relevant input. This is probably because there were too many problems at the writing stage to remember and solve at the feedback stage.

Even when lexical reformations were noticed, they were not always correctly accepted. Excerpt 2 shows that S2 made a wrong inference on “looking at” in the reformulation checking stage. He could not notice that his original word choice of “see” was right and the error was in the wrong preposition “on”. Instead, he thought that “looking at” was used in the reformulation as a meaning of “looking for” and concluded that he should have chosen the words to express a different meaning.

(5) Excerpt 2 – S2’s accepting with a wrong reason

Original writing: _other see on the dead men._

Reformulation: _Other people were looking at the dead man._

“I needed to write ‘looking at’ which means ‘look for’, not ‘saw’.”
At the form level, as Excerpt 3 shows, the low level students made many errors on basic grammatical rules such as word order, subject-verb agreement, tense, and capitalization.

(6) Excerpt 3 – S1’s original writing
One men sit down the chair. [A man is sitting on the chair.]

As they made many errors on form, they also noticed more of them (33% of the total reformulations on form). However, they failed to provide proper reasoning for two thirds of the noticed errors (8 out of 11.7). This is probably because they lacked grammatical knowledge which is indispensable to composing sentences and noticing the inter-sentential errors. S2 did not know the differences between the usage of “other” and “another”, and “a” and “one”. Consequently, he failed to use them properly in his composition and could not accept the reformulations with a proper reason, as shown in Excerpt 4.

(7) Excerpt 4 – S2’s noticing only
Original writing: one man is dead, other men smoking.
Reformulation: A man is dead and another man is smoking.
“There’s no big difference except ‘a’.”

Compared to structural errors, word-level grammatical errors seemed to be easy for the low level students to notice and accept the changes. In Excerpt 5, S1 noticed his errors on noun and understood why plural nouns were proper forms.

(8) Excerpt 5 – S1’s accepting with a reason
Original writing: cup and candle on the table
Reformulation: Cups and candles are on the table.
“Candles are more than two, so it should be plural.”

As they were unsuccessful in considering the discourse in their original writing, so were they in noticing and accepting the reformulations on discourse features. Only one student noticed one discourse error although he could not provide a reason, as shown in Excerpt 6.

(9) Excerpt 6 – S3’s noticing only
Original writing: Cup in the water fall the slower why they in the room?
Reformulation: There is a cup with water in it. Anyways, why are they in the room?
“What is ‘anyways’? I’m not getting this… ‘anyways, why are they in the room’?”

2) Intermediate Level Students

As Table 4 shows, the intermediate level students received 41 reformulations on average, 44% of which were noticed either with or without a reason.

<table>
<thead>
<tr>
<th></th>
<th>Lexical</th>
<th>Form</th>
<th>Discourse</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E NO AR %</td>
<td>E NO AR %</td>
<td>E NO AR %</td>
<td>E NO AR %</td>
</tr>
<tr>
<td>S4</td>
<td>7 1 1 29</td>
<td>26 7 11 69</td>
<td>3 2 0 67</td>
<td>36 10 12 61</td>
</tr>
<tr>
<td>S5</td>
<td>9 1 2 33</td>
<td>33 8 2 24</td>
<td>4 1 0 25</td>
<td>46 10 4 30</td>
</tr>
<tr>
<td>Avg.</td>
<td>8 1 1.5 31</td>
<td>29.5 7.5 6.5 47</td>
<td>3.5 1.5 0 43</td>
<td>41 10 8 44</td>
</tr>
</tbody>
</table>

Note. E: The number of reformulated errors, NO: The number of errors noticed only, AR: The number of accepted reformulation with a reason, %: NO+AR/total error

The two learners in this group showed wide differences in the number of errors reformulated and noticed. While S5’s performance was almost close to that of the low level learners, S4 received fewer reformulations but noticed far more than the low level learners. Despite this individual variation, the distribution of the reformulations across error types was similar to that of the low level group. The most frequently reformulated errors were regarding form (29.5 on average), which were followed by lexical errors (8 on average), and discourse errors (3.5 on average).

At the lexical level, both learners noticed about 30% of the reformulations of their lexical errors, most of which were regarding spelling errors. There were still some cases where they could not provide a reason for the change, as shown in Excerpt 7.

(10) Excerpt 7 – S4’s noticing only

Original writing: the old man short to he
Reformulation: So the old man shot him.
“It should be ‘shot him’ instead of ‘short to he’.”

When the reformulations on form were provided, the two learners showed extremely different levels of noticing. While S4 noticed 69% of the differences between their original drafts and the reformulated versions, S5 only recognized 24% of the reformulations. S4’s high level of noticing, however, was not always accompanied by reasons. Many of the noticed reformulations still remained at the level of noticing only
(7 out of 18). There was also a case of wrong reasoning that seems to come from lack of grammatical knowledge as in the low level group. S4 confused past tense and past particle in Excerpt 8.

(11) Excerpt 8 – S4’s accepting with a wrong reason
Original writing: People is look the dead man to surprising.
Reformulation: People are looking at the dead man with surprised faces.
“I shouldn’t write ‘surprising’ because they look surprised... It’s past tense. So, I need to use ‘surprised’ with ‘ed’.”

However, compared to the low level group and S5, S4 was more successful in noticing and finding a reason when he encountered a reformulation on form, as shown in Excerpt 9.

(132) Excerpt 9 – S4’ noticing with accepting
Original writing: he look the dead man and thinking.
Reformulation: He is looking at the dead man and thinking.
“I missed ‘is’. It should be present progressive tense because he is doing so right now.”

In terms of discourse, neither of the intermediate level students was successful in accepting reformulations on discourse with a reason. In Excerpt 10, S4 noticed the difference between his original text and the reformulated version but did not know that he needed “there is” and “next to him” to clearly describe the situation and the location he wanted to explain.

(13) Excerpt 10 – S4’s noticing only
Original writing: dead man open eyes next to gun.
Reformulation: A dead man’s eyes are open and there is a gun next to him.
“I see that I need to write ‘next to him’.”

This indicates that the intermediate students still had difficulties in dealing with the inter-sentential level of features.

3) High Level Students

Table 5 shows the high level students’ noticing of reformulations.
Although the high level students made the longest compositions amongst the three groups, they overall made fewer errors (34.8 on average) than the other two groups. Furthermore, when the reformulations were provided on their errors, they noticed about a half of them with or without a reason. The errors on form were still the most frequent type for this group but unlike the other two groups the number of errors on discourse increased almost to the level of lexical errors. It can be assumed that the high level students could afford to consider discourse features while writing and yet because of their insufficient knowledge on discourse organization, they came to make more errors at the discourse level than the other two groups.

At the lexical level, the students could provide reasons for changes not only in spelling but also in word choice, as shown in Excerpt 11. S9 was aware of the meanings of “encourage” and “comfort” and capable of noticing their different nuance. With this knowledge, he accepted that “comfort” was better in this case to convey his intention.

Excerpt 11 – S9’s accepting with a reason

Original writing: And a servant next to the crying woman is encouraging her.

Reformulation: And a servant next to the crying woman is comforting her.

“Encouraging her... comforting her”... They are the same meaning but maybe there’s difference in nuance. ‘Encourage’ is literally giving encouragement and ‘comfort’ is somehow closer to the meaning of consolation... so choosing ‘comfort’ may be a better idea...”

Even with this level of proficiency, however, the students could not provide proper reasons for reformulations all the time. In Excerpt 12, S6 found out that “bottle of” was inserted in the reformulation but he did not mention why it is needed. This came from his lack of linguistic knowledge about countable and uncountable nouns.
(15) Excerpt 12 – S6’s noticing only
Original writing: *There is a wine on the table*
Reformulation: *There is a bottle of wine on the table."

"There is a bottle of’... ah... I should include ‘bottle.’"

At the form level, they consistently showed a high percentage of noticing (on average, 57% of reformulations). Furthermore, they tried to provide reasons for reformulations using their advanced knowledge on English grammar, as shown in Excerpt 13, although their attempts were not always successful.

(16) Excerpt 13 – S9’s accepting with a wrong reason
Original writing: *Who was killed him?*
Reformulation: *Who would have killed him?"

"‘would have killed’... but why should I use present perfect tense? Because he already died? Already in the condition of being dead?”

The notable difference between the high level group and the other two groups was in the increasing number of reformulations provided at the discourse level. Furthermore, unlike the other two groups, the high level students could occasionally provide reasons for the reformulations on discourse with due consideration on the flow and organization in writing. In Excerpt 14, S7 wanted to express that the restaurant was his hypothetical hometown but he failed to describe it clearly. When the reformulation was provided, he was able to understand the difference between his own writing and the reformulated version appropriately.

(17) Excerpt 14 – S7’s accepting with a reason
Original writing: *This restaurant is his another home town. Because there are haven’t a family.*
Reformulation: *For him, this restaurant is like his another hometown because he has no family.*

"For him... this restaurant is like his another hometown’... What is important is the restaurant’s meaning to him. To him, what this restaurant means...”

3. Uptake in the Revision Stage

Table 6 shows the relationship between noticing in the reformulation checking stage (Stage 2) and changes in the revision stage (Stage 3).
TABLE 6
Relationship between the Noticing in Stage 2 and the Changes in Stage 3

<table>
<thead>
<tr>
<th>Quality of Noticing in Stage 2</th>
<th>Low group (n=3)</th>
<th>Intermediate group (n=2)</th>
<th>High group (n=4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stage 2</td>
<td>Stage 3</td>
<td>Stage 2</td>
</tr>
<tr>
<td>Noticed</td>
<td>LREs</td>
<td>LREs(%)</td>
<td>Noticed</td>
</tr>
<tr>
<td>Noticing only</td>
<td>28</td>
<td>5 (18)</td>
<td>20</td>
</tr>
<tr>
<td>Accepting w/ reason</td>
<td>17</td>
<td>1 (6)</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>6 (13)</td>
<td>36</td>
</tr>
</tbody>
</table>

The percentage of LREs that were noticed in Stage 2 and resulted in correction in Stage 3 was relatively low in all the three groups. The high level group incorporated 25% of reformulations they noticed in Stage 2 into their revision in Stage 3, while the intermediate group and the low group corrected only 6% and 13% of the reformulations they noticed at Stage 2. This shows that the whole activity including Stages 1, 2, and 3 was actually not much helpful for improving the students’ writing skills, particularly for the low and intermediate level learners. Although they could notice their errors through the comparison with the reformulated text, they failed to carry over the noticing and understanding to the revision stage in the form of uptake.

Table 6 also shows that the quality of noticing at Stage 2 resulted in differences in the changes made in Stage 3. Contrary to the expectation, however, the low and intermediate level learners made more changes in the forms that were simply noticed than in the forms that were accepted with a reason. This is not surprising, however, considering that these two groups of learners often made wrong inferences for the changes made in the reformulated version. Although they tried to figure out the reasons for the differences between their own wring and the reformulated version, they did not succeed in fully understanding underlying linguistic rules because of their limited English knowledge. In other words, their noticing was not deep enough to lead to uptake. In contrast, the high level learners made more correction in those forms they could provide reasons for acceptance than in the forms simply noticed. With the advanced knowledge on English, they could experience deeper level of noticing at Stage 2, which contributed to improvement in Stage 3.

V. CONCLUSION

This study investigated what Korean middle school students focus on, notice, and uptake while they are writing in English, processing reformulation feedback, and
In the writing stage, the three different proficiency groups focused on different aspects of writing. While the high and intermediate groups mainly focused on form and also considered the discourse level to some extent, the low level learners more concentrated on searching for appropriate words and produced fewer LREs on form and no LRE on discourse. These results indicate that the low level learners need to be guided and assisted so as to focus on form and discourse in the writing stage. Providing them with some words and expressions they may need to perform a task would be one way to facilitate their focus on form and discourse by saving their pain to search for appropriate words most of the writing time. Also given that the low and intermediate level learners frequently failed to resolve language related problems by themselves, the teacher’s help or group work with peers would be beneficial.

In the reformulation checking stage, a majority of reformulations were made on form in all the three groups. Their noticing of the reformulations on form ranged from 24% to 69%. Although the low level learners mostly focused on lexical features in the earlier writing stage, when the reformulated text was provided, they could notice at least about a third of the changes in form. This seems to indicate the benefits of reformulations as corrective feedback. However, it should be noted that this group as well as the intermediate group frequently made wrong reasoning on the differences. In this case, the students possibly remain with misunderstanding on lexical items and grammatical rules. To prevent this fossilization, the teacher needs to provide more active intervention. Instead of simply leaving learners to find differences between their own draft and the reformulated text by themselves, the teacher may check what students can and cannot notice on their own and discuss why such changes should be made. This combined method will be able to compensate for the shortcomings of explicit corrective feedback and self-correction.

This study further investigated how the noticing in the process of writing is related to improvement in L2 writing. While it was apparent that higher level students noticed more reformulations than lower level learners, overall, the percentage of reformulations which were noticed at Stage 2 and then were incorporated at Stage 3 was relatively low in all the three groups. Even the high level students could use in revision only 25% of the reformulations they noticed at Stage 2. This indicates that simple noticing or uptake at one point does not guarantee long-term acquisition. Students need to be engaged in a deep level of understanding with the teacher’s or peer’s help, if needed. Also this process needs to be repeated for long term memory and ultimate acquisition.

Despite their pedagogical implications for English writing education in middle school, the findings of this study need to be interpreted with caution. Given the descriptive and exploratory nature of this study as an early attempt to investigate Korean middle school students’ cognitive processes during writing through the in-depth protocol analysis, the
interpretation of the results needs to be confined to the context where this study was conducted. Until more data is collected from many more middle school students with a more rigorous operationalization of proficiency, the patterns obtained in this study are suggestive rather than confirmative. Using the findings of this study as a basis, future studies may be able to test the generalizability of the findings to other Korean middle school students and even other age groups.

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Linguistics, 27(3), 81-104.


APPENDIX
The picture for writing adopted from Qi and Lapkin's (2001) study

Applicable levels: secondary education
Key words: writing, noticing, reformulation, uptake, think-aloud protocol

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