

## ***Effects of L2 Writing Proficiency and Reader Awareness on EFL Students' Writing Product and Process On-Line: Computer-based Observation***

**Yeon Hee Choi\***

*Ewha Womans University, Korea*

This study aims at investigating Korean university students' product and process of writing in English to see the impact of L2 writing proficiency and reader awareness, using a software program for recording keyboard activity and compose-aloud protocols with retrospective interviews. It analyzes compose-aloud protocols of eight students of two different levels of English writing ability (LP and HP) for two tasks (one with specific information on the target reader and the other without it), which were combined with the data recorded by the computer program *Inputlog*. The results of the study illustrate the effects of L2 writing proficiency on the written product and writing process on-line of Korean students. Both groups spent most of their time writing, but the HP group did more editing. The LP students verbalized more often for language form searching. The study also reveals some impact of reader awareness, which was more observable in the HP group. The HP students were aware of the reader role in English writing; thus, they used audience-related strategies regardless of the tasks. But its frequency increased in the task where the target reader was given, while no clear impact of reader awareness was noted in the overall quality of both groups' writing.

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In the early 1980s, researching and teaching of writing began “to move away from a concentration on the written product to an emphasis on the process of writing” (Raimes, 1983, p. 10). Since then, writing process has been the key research area in L2 writing (Bosher, 1998; Chelala, 1981; Zamel 1982, 1983) on the basis of psycholinguistically oriented L1 writing process research (Bereiter & Scardamalia, 1987; Emig, 1971; Flower & Hayes, 1977, 1981). Some L2 studies attempted to investigate L2 writing process itself (Zamel, 1983) including text generation (Chenowith & Hayes, 2001), planning (Ellis & Yuan, 2004), and revising or feedback (Berg, 1999; Fathman & Walley, 1990; Ferris, 1995). Other studies compared L1 and L2 writing process (Arndt, 1987; Raimes, 1985; Whalen & Menard, 1995), or examined the transfer of L1 writing process to L2 writing (Edelsky, 1982; Jones & Tetroe, 1987). Korean EFL students' writing process has also been investigated; however, the majority of the research deals with development or effects of process-oriented writing instruction (Im, 2002; Kim, 2000; Park, 2001), analysis of writing strategies (Choi & Lee, 2006; Kim, 2001), and revision or feedback (Kim, 2002; Lee, 2003; Lee & Hong, 2001; Moon, 2000; Song, 1998; Song, 2004). There is not much research on Korean EFL students' process of writing in English, except for Ryu (2003). Ryu's case study of two Korean EFL college students' writing, however, did not control variables which might have influenced their writing process. Thus, a more systematic investigation of Korean EFL students' writing process is needed to gain a valuable insight into their writing process.

Writing process is a complex process in which a variety of elements interact simultaneously (Lindgren, 2005). Writing process may vary with task difficulty, topic familiarity, writing proficiency, language proficiency, writing skills, or reader awareness. Since the late 1980s, reader awareness has been emphasized due to the shift from focusing on the writer/process to focusing on the reader/genre in the approach to researching and teaching of writing in L1 and L2 (Hyland, 2003; Raimes, 1991). Readers or audience<sup>1</sup> have been

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<sup>1</sup> In this study the two terms, reader and audience, will not be differentiated. Their definition or concept is elusive (Ede & Lunsford, 1984), though their role in writing

viewed as a key social-context factor which has a significant impact on the writing performance (Nystand, 1989). The studies on reader factor have analyzed reader needs or expectations (Bazerman, 1988; Berkenkotter & Huckin, 1995), cultural impact on audience-related strategies (Zainuddin & Moore, 2003), reader response or evaluation of writing (Hinkel, 1994; Song & Caruso, 1996), writing textbooks which have instruction on reader awareness (Ramanathan & Kaplan, 1996), or compared responses of readers of different types (Kobayashi, 1992; Weigle, 1994). The majority of the research which has illustrated the meaningful impact of reader awareness on writing process or revision is L1 writing studies (Berkenkotter, 1981; Flower & Hayes, 1981; Gaddis, Napierkowski, Guzman, & Muth, 2000). There are a few L2 writing studies on this issue which examined the impact of informing the target reader before writing or revision after teacher feedback (Roen & Willey, 1988; Rorschach, 1986; Zainuddin & Moore, 2003). On the other hand, no specific studies have investigated the issue of reader awareness in Korean EFL students' writing. Therefore a study on the impact of reader awareness on Korean EFL students' writing is needed to shed light upon their understanding of the reader and its impact on their writing process and product.

The process of L2 writing has been studied in a few ways including

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has been emphasized in composition theory and pedagogy, especially in L1. Ede and Lunsford (1984) suggest two central perspectives on audience in writing: audience addressed and audience invoked. The former refers to "the actual or intended readers of a course, exists outside of the text" (p. 167). Writers may analyze the identity of their audience to identify their needs, attitudes, beliefs, and expectations to shape their rhetorical goals and select appropriate language forms. "But it is only through the text, through language, that writers embody or give life to their conception of the reader" (p. 167). On the other hand, invoked audience refers to the audience the writer constructed, a "created fiction" (Long, 1980, p. 225), that is, the audience the writer "rhetorically implied in the text which can be persuaded to respond to it in certain ways" (Hyland, 2002, p. 36). It is the writer who creates a role for the reader. Ede and Lunsford (1984) thus term "audience addressed, with its focus on the reader, and audience invoked, with its focus on the writer" (p. 167).

concurrent verbal reports (compose-aloud) (Lay, 1982; Martin-Betancourt, 1986; Raimes, 1985), retrospective self-report (Bosher, 1998; Zamel, 1982), video recording of the writer while composing (Matsubishi, 1987; Phinney & Khouri, 1993; Schilperoord, 1996), questionnaire survey or interview (Hall, 1987; Zamel, 1983), or direct observation (Pennington & So, 1993; Zamel, 1983). Besides these, computer-based observation has been suggested as a way of investigating the writing process (Levy & Ransdell, 1996; Schilperoord & Sanders, 1999; Spelman Miller, 2000). Specifically, software such as *J-Edit*, *Scriptlog* or *Inputlog* has been developed to record writing process which provides a full record of keys that a writer strokes in text production including what letter or word was rewritten and also a record of pauses (location, length, and frequency) (Spelman Miller, 2000; Van Waes & Schellens, 2003). The detailed computer-recorded information concerning the text construction process can provide valuable insights into writing process on-line, but it does not present any direct information on the writer's mental process. Thus, if such information is complemented by concurrent verbal protocols, more detailed insights can be provided for writing process.

This study aims at investigating Korean EFL university students' product and process of writing in English, using a keystroke logging program named *Inputlog* complemented by compose-aloud protocols with retrospective interviews. The study will specifically deal with the impact of reader awareness on writing process, which will compare two groups of different English writing proficiencies (higher- and lower-level) performing two writing tasks (one with specific information on the target reader and the other without such information). In the study the reader means audience addressed since specific information on the target reader was given to the participants rather than audience invoked. But audience-related strategies for both concepts will be analyzed.

The research questions for the study are as follows:

- 1) Does Korean university students' English writing product and process vary with their English writing proficiency?
- 2) Does reader awareness have an impact on Korean university students' English writing product and process? Does such impact vary with their English writing

proficiency?

- 3) To what extent does audience awareness relate to the overall quality of Korean university students' English writing?

## **PREVIOUS STUDIES ON L2 WRITING PROCESS**

L2 writing process has been examined to explore its similarities with or differences from L1 process (Arndt, 1987; Chelala, 1981; Raimes, 1985), the transfer of L1 process to L2 (Edelsky, 1982; Gaskill, 1986), or writing strategies including L1 use (Choi & Lee, 2006; Cumming, 1987; Wang & Wen, 2002). Different parts of process have also been investigated: text generation (Chenowith & Hayes, 2001), idea generation (Lally, 2000), planning (Ellis & Yuan, 2004), and revising and feedback (Berg, 1999; Fathman & Walley, 1990; Ferris, 1995). In addition, the use of resources including dictionaries while composing has been examined using computer software to track it (Bland, Noblitt, Armington, & Gay, 1990; New, 1994; Scott, 1996).

One of the first studies on L2 composing process was conducted by Chelala (1981), who did a case study of two Spanish speakers using compose-aloud protocols and interview data. She found effective and ineffective writing behaviors. The latter included L1 use for prewriting and frequent switches between L1 and L2, which contradict the results of later studies (e.g., Cumming, 1987; Lay, 1982). Similarly, Jones (1982) also examined effectiveness in L2 writing of one good and one poor writer with a focus on composing strategies for generating text and reading the text already generated. The poor writer was mainly concerned with writing itself at the expense of ideas, while the good writer focused on idea generation to produce the text. Jones noted that the source of L2 writing difficulty was a lack in L2 composing competence rather than that in L2 linguistic competence. This was also found in Zamel (1982, 1983), who identified similarities between L1 and L2 writing process.

Zamel (1983) investigated the writing process of six advanced ESL writers

by observing them while composing and also doing a retrospective interview. Her study illustrated similarities of L2 writing process with L1 process, as in her previous study (1982). The more skilled L2 writers revised more and spent more time on idea generation and organization like skilled L1 writers. They attended to generating ideas first and then revised at the discourse level, which occurred recursively in their composing process. They edited their text at the end of the whole process. In contrast, the less skilled writers revised less and adhered to accuracy of language forms, as noted in Pianko (1979) and Hall (1987). They edited from the beginning to the end, like unskilled L1 writers.

Raimes (1985) also provided information on unskilled L2 writers. Very little planning at the prewriting and writing stage was observed, as noted from unskilled L1 and L2 writers in other studies (e.g., Jones, 1982; Jones & Tetroe, 1987; Zamel, 1983). Her subjects revised or edited their writing less than expected; rather they reread their text for idea generation. In contrast to the findings from the previous studies (e.g., Zamel, 1983), L2 writers appeared not to be concerned with linguistic accuracy but with idea generation on the writing topic. Raimes found similar writing behaviors between her L2 writers and unskilled L1 writers in L1 studies (e.g., Perl, 1978; Pianko, 1979); however, she noted differences between them. In her later study (1987), L2 writers appeared not to be inhibited by their editing and correcting their text, unlike L1 writers.

Arndt's (1987) study on L1 and L2 writing process of post-graduate Chinese EFL writers showed similar strategies for writing across languages; however, differences between expert and novice writers were noted in their degree of planning, revising, and writing. Novice writers mostly paid attention to word-level problems, adhering to their plans rather than monitoring their writing in terms of the writing purpose. In contrast, expert writers showed efficient use of strategies in both L1 and L2 composing.

More recent studies on L2 writing process have explored its different parts such as text generation (Armengol-Castells, 2001; Chenowith & Hayes, 2001), idea generation (Lally, 2000), planning (Ellis & Yuan, 2004; Whalen

& Menard, 1995), and revising and feedback (Berg, 1999; Cohen & Cavalcanti, 1990; Fathman & Walley, 1990; Ferris, 1995, 1997; Gaskell & Cobb, 2004; Goldstein & Conrad, 1990; Hyland, 1998; Kobayashi & Rinnert, 2001; Liu & Sadler, 2003; Spelman Miller, 2000; Sengupta, 2000; Stanley, 1992). Chenoweth and Hayes (2001) conducted a think-aloud protocol study exploring text generation with a focus on the relation between fluency in writing and linguistic experience. The results of their analysis revealed that as the L2 writer's experience with the language increased, fluency and the average length of strings of words proposed between pauses or revision episodes increased, but the number of revision episodes decreased. Planning for writing was explored in Whalen and Menard (1995), who differentiated pragmatic, textual, and linguistic planning. The analysis of think-aloud protocols revealed more frequency of pragmatic and linguistic planning in L1 argumentative writing, though no quality differences in planning were noted between L1 and L2 writing.

There is not much research on Korean EFL students' process of writing in English, except for Ryu (2003).<sup>2</sup> Ryu conducted a case study of two Korean EFL college students' writing analyzing their verbal protocols. The results of his study revealed the impact of writing tasks (writing on family value or friends) on the two subjects' writing process. One of the writers, who wrote about family value, examined her text at both global and local levels, whereas the other writer, who wrote about friends, produced a longer text mainly attending to idea or text generation. Ryu's study provided a valuable insight into Korean EFL writers' process of L2 writing; however, it did not control the variables including task difficulty, text type, and student English writing proficiency, which might have influenced their writing process. Thus, more systematic investigation of Korean EFL students' writing process is needed to gain valuable insights into their writing process.

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<sup>2</sup> Choi and Lee (2004, 2006) conducted a think-aloud protocol analysis of Korea EFL writers' L2 writing process; however, these studies were mainly concerned with their L1 use as a writing strategy.

## **COMPUTER-BASED RESEARCH ON L2 WRITING PROCESS**

The process of L2 writing has been mainly analyzed using concurrent verbal reports (compose-aloud), retrospective self-reports or interviews. As computer technology advanced, a computer-aided way to investigate writing process was introduced in the late 1990s. The majority of computer-based studies dealt with how to use computer techniques to analyze L1 writing process and provided a report on the results of its application (e.g., Levy & Ransdell, 1996; Lindgren, 2005; Schilperoord & Sanders, 1999; Sullivan, Kollberg, & Palsson, 1997). There are, however, some computer-based studies on L2 writing process (e.g., Scott & New, 1994; Spelman Miller, 2000; Thorson, 2000). They mainly used a software for recording keyboard activity during production of a text using a word processor. Scott and New (1994) analyzed foreign language (FL) writing process of English-speaking learners of French using the software *Système-D*, which is a word processor including a tracking device of using reference tools: a bilingual dictionary, a vocabulary and phrase index, a verb conjugator, or a reference grammar. Their subjects often used the English-French dictionary, but those who wrote better were less dictionary dependent and used the dictionary in a more creative way than those who wrote poorly. New (1999) again employed the same software to explore foreign language writing process of French learners more specifically than in her previous study with her colleague (1994). She analyzed revision process and found that her subjects attended to surface-level revision and “did not revise substantially or spontaneously for meaning” (p. 92).

Thorson (2000) also investigated FL writing process using the computerized tracking device *J-Edit* and *Trace-It*, and compared it with her subjects' L1 process. The results of her analysis revealed that English-speaking learners of German wrote less, but revised more, when composing in FL than in L1. The impact of genre was also noted: the participants tended to revise less in their letter writing in FL than in their article writing.



Spelman Miller (2000) also used *J-Edit* and *Trace-It* to examine L1 and L2 writers' writing process with a focus on pausing and revising while composing. No impact of writing task types was noted between L1 and L2 process. However, the results of the analysis revealed differences between L1 and L2 writers. L2 writers "paused longer at all locations, and particularly so at clause and sentence completion points" (p. 143). She also pointed out that pauses at clause or sentence boundaries helped the writer plan for the next units.

Thorson (2000) claims that the computer software aids writing process research without intruding the process, that is, offering "a natural writing environment, in which writers can feel comfortable and work undisturbed with their texts" (Lindgren, 2005, p. 13). Similarly, Spelman Miller (2000) advocates using the computer for writing process studies, especially "log-file data interactively to replay the writing episode with the writer" (p. 144), which can provide information on the writer's decision-making processes online. However, it does not directly provide any information on the writer's mental process, that is, what he/she does during pauses or why he/she rewrites some parts. Therefore, computer-generated data needs to be complemented by online verbal protocols to explore such mental processes.

## **PREVIOUS STUDIES ON READER AWARENESS IN L2 WRITING**

Reader factor in writing process has been analyzed under the impact of genre-based approach. It is important to have a clear picture of target readers or develop "an awareness of the audience and an ability to reflect and exploit that awareness in the way the text is written" (Thompson, 2001, p. 58) to write effectively, especially in English writing. Several issues related to the reader factor have been explored in L1 and L2 writing: reader needs or expectations (Bazerman, 1988; Berkenkotter & Huckin, 1995), cultural impact on audience-related strategies (Zainuddin & Moore, 2003), reader

response or evaluation of writing (Hinkel, 1994; Song & Caruso, 1996), writing textbooks which have instruction on reader awareness (Ramanathan & Kaplan, 1996), or compared responses of readers of different types (Kobayashi, 1992; Weigle, 1994). One of the first studies on the impact of reader awareness in L2 writing is Rorschach (1986), who analyzed three advanced L2 learners' writing with external raters' evaluation and interview data of the learners. Their teachers provided feedback to their writing and then they revised it. The results of the study revealed that when the subjects were aware of the reader they tended to focus more on language form rather than the context. Roen and Willey (1988) also analyzed original and revised essays of 60 university freshmen to explore the impact of attention to audience on improving overall writing quality. They pointed out that audience awareness was effective as a revising strategy, but it was more effective as a drafting strategy. More recently, Zainuddin and Moore (2003) examined the extent to which bilingual Malaysian writers attended to audience in Malay and English persuasive writing and whether audience-related strategies were related to culture and writing proficiency. They noted writer variations. Skilled writers had higher reader awareness than unskilled counterparts. They made constant inferences about their readers, anticipating response and evaluation from them and also making assumptions about their positions. On the other hand, less skilled writers were constrained by their lack of linguistic competence in English and wrote the text to themselves rather than to an external audience. Zainuddin and Moore also noted differences in the notion of audience between skilled and unskilled writers: perceived readers and actual readers. Skilled writers had a more flexible audience stance.

The impact of reader awareness has not been explored, however, in L2 writing of Korean EFL writers. Not much information on it is available: whether Korean students have their readers in mind when writing in English; whether their reader awareness has an important effect on the content, organization, or accuracy of language use of their English writing; or whether their reader awareness influences use of strategies including audience-related

strategies in their writing process. Therefore a study on effects of reader awareness on Korean EFL students' writing is needed to provide insights into their understanding of audience and its impact on their writing process and product.

## **RESEARCH METHOD**

### **Participants**

Eight Korean university students participated in the study. In order to have two groups of English writing abilities and exclude the impact of previous learning experiences of reader awareness, four freshmen and four seniors who had not been educated in English-speaking countries and had not been trained to write in English for specific target readers were recruited. They were all female, ranging in the age of 20 to 30, as shown in Table 1. All of the participants were majoring in English Education (Teaching English as a Foreign Language). All of them had some experience of composing in English on the computer and were relatively skillful in using MS Word, though three of the freshmen evaluated their skill level as novice. By the pretest score of English writing, which was scored by the TWE scoring criteria (maximum 6), they were divided into two groups: higher-level proficiency (HP) group (four seniors) and lower-level proficiency (LP) group (four freshmen).

All of the participants except for one student had learned Korean writing at university or high school. The freshmen studied it to prepare for the college entrance exam. They mainly studied how to develop a given topic logically and organize their writing coherently, that is, they studied with a focus on content and organization. Most of the seniors, on the other hand, had taken a Korean writing course at university, which mainly focused on content, organization, and feedback.

**TABLE 1**  
**Participants' Profile**

Student number	University year	Age	Years of English language education	Experience of learning English writing	Pretest results/ English writing proficiency	English proficiency score	Skillfulness of using MS Word Processor
S1	1st	20	7	1 semester at university; focus on content, organization, and feedback; taught by a native speaker	lower (2.0)	Not taken	Novice
S2	1st	20	8	1 month at language school, focus on grammar and translation from Korean into English; taught by a Korean	lower (2.3)	Not taken	Average
S3	1st	20	10.5	1 semester at university; focus on content, organization, grammar, and feedback; taught by a native speaker and a Korean	lower (3.2)	Not taken	Novice
S4	1st	20	7	1 month at university; focus on writing process; taught by a Korean	lower (1.9)	Not taken	Novice
S5	4th	23	14	1 semesters at university; focus on organization and process (feedback); taught by a native speaker	higher (5.9)	TOEIC 915	First level
S6	4th	23	12	1 semesters at university; focus on organization, grammar/ vocabulary, and process (feedback); taught by a native speaker and a Korean	higher (4.2)	TOEIC 945	Average
S7	4th	23	10	1 semesters at university; focus on organization and process (feedback); taught by a native speaker	higher (4.4)	TOEIC 890	Skillful
S8	4th	30	16	1 month at university; focus on process; taught by a native speaker	higher (3.9)	TOEIC 970	Average

All of the freshmen were studying English writing in an English composition course taught by a Korean professor in a process-oriented approach; two of them had studied English writing at university for a semester with a focus on content, organization, and writing process (including feedback). All of the seniors except for one student studied English writing at least for a year. Their teachers, who were native speakers of English, basically followed a process-oriented approach with a focus on organization and feedback.

### **Writing Tasks**

Three argumentative writing tasks were chosen from the topics of the Test of Written Examination (TWE) developed by ETS: one for the pretest and two for the main writing with or without any information on the reader in the task prompt. The TWE topics were selected since they could be relevant and familiar to the participants. No word or paragraph limits were set for the three topics. The topic difficulty was not measured; however, in order to control the impact of topics, all of the three topics were selected from one general topic field, education, which would be relevant and familiar to the participants, as shown below (see Appendix A).

Pre-test: impact of technology on learning

Task 1: impact of classmates or parents on success of school education

Task 2: high school students' right to select their elective courses

In addition, the order of the two main writing tasks was counterbalanced so that half of the participants did compose-aloud with Task 1 first and then with Task 2 with specific information on the target reader, and the other half, with Task 2 first and then with Task 1 with information on the reader.

The information on the reader was included in the second main writing task prompt. It was designed to lead the participants to think of the reader of their writing and get aware of the impact of the reader on writing. It also

included the information on the reality of the reader: an American rater (evaluator), a trained English writing scorer (see Appendix A).

In the pretest, participants were required to write within 30 minutes since it is the time limit for each TWE task. But, no time limits were set for the main tasks because they had to type and say whatever came to their mind at the same time.

### **Questionnaire**

The questionnaire was constructed to obtain information on the participants' experience of learning English and Korean writing, English proficiency score including the TWE score, skillfulness of using MS Word Processor, experience of English composing on the computer, and length of residence in English-speaking countries, as shown in Table 1. All the questions were open-ended. The participants' experience of training on reader awareness in L1 or L2 writing was not asked since the questionnaire was given before the main writing tasks. This information was elicited in the immediate retrospective interview after the second composing-aloud.

### **Notes from the Observer**

While each participant was composing-aloud, the observer of the process recorded notes of their behavior with a focus on writing process strategies to yield as detailed a picture of the process as possible. She was not supposed to affect their writing process; thus, the impact of her presence was attempted to be minimized. A list of writing process parts that needed to be asked to the writer was constructed for the retrospective interview.

### **Keystroke Logging Software Program: *Inputlog***

A keystroke logging software program was used in the study for observation of the Korean students' English writing process on-line. It was *Inputlog*,

which was developed by Belgian scholars, M. Leijten and L. Van Waes at the University of Antwerp (Faculty of Applied Economics, Department of Management). It has three modules: “(1) a data collection module that registers on-line writing processes on a very detailed level; (2) a data analysis module that offers basic and more advanced statistical analyses (e.g., text and pause analysis); (3) a play module that enables researchers to review the writing session” (Leijten & Van Waes, 2005, p. 1). The first module is ‘record’ function, which records all the keystroke presses (including all insertions and deletions), non-writing (pauses) and cursor movements made by the writer and stores accurate and detailed information about time and occurrence of all of these presses and movements in a log file. The second is ‘generate’ function, which provides five Excel or HTTP files of all the stored information including pause length, as shown in Figures 1 and 2. The last module is ‘play’ function, which replays the whole text as it was inscribed from the beginning to the end, including all the pauses in original time periods and cursor movements. Thus, it “allows retrospective analysis of or reflection on text evolution” (Lindgren, 2005, p. 9). Pause time information from the general logging file was combined with compose-aloud protocols in the data analysis to see when and how long each participant paused.

**FIGURE 1**  
**Generate Function of Inputlog**



**FIGURE 2**  
**Sample Output File of Linear Text Analysis**

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I [BS 1]
[BS 1]
I disagree with [BS 1]
[BS 1]
[BS 1]
[BS 1]
[BS 1]
that [BS 1]
[BS 1]
[BS 1]
[BS 1]
[BS 1]
with allowing ho[BS 1]
igh school students to study the courses that students want to study.[ENTER 1]
First of all, now[BS 1]
[BS 1]
[BS 1]
today's high school student's can decide [LEFT 1]
[LEFT 12]
[BS 1]
[RIGHT 15]
[BS 18]
...
```

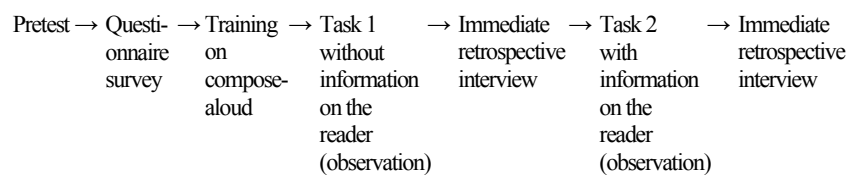
Note: BS = backstroke; LEFT = left movement stroke; RIGHT = right movement stroke; ENTER = enter key stroke

### **Data Collection Procedures**

All the participants took the pretest first within a fixed time limit, 30 minutes, as administered in the TWE, and then completed a questionnaire about educational background of learning English, experiences of learning L1 and L2 writing, length of residence in English-speaking countries, experiences of taking the TWE, skills of using MS Word Processor, and experiences of composing on the computer, as shown in Table 1. Then they attended a short training session on the compose-aloud method with a sample transcript of compose-aloud and a demonstration of compose-aloud using the keystroke logging program named *Inputlog* and MS Word Processor. The research



assistant typed several sentences on the pretest topic while verbalizing her thoughts, illustrating verbalizing anything that was in her mind including meta-comments, false starts, repetitions, rereadings of the text or even thoughts not related to what she was writing.



The two main writing tasks were administered individually by a research assistant in the researcher's office within a week gap. A few days after the training session half of the participants did compose-aloud with Task 1 and the other half with Task 2, without specific information on the target reader, as mentioned before. They did the second writing with specific information on the target reader in the reverse order.

For each main writing task, no time limitation was set. Most of the participants finished the task within 30 minutes to one hour. During their composing-aloud, no interruption was made. If they paused longer than 10 seconds, the research assistant encouraged them to continue composing-aloud. The whole process was audio-recorded and the assistant recorded notes on the participants' key and questionable composing behaviors while observing their writing. Despite the participants' concerns about doing compose-aloud while writing, they all managed to accomplish the tasks without significant problems, except for two freshmen. (One of them often paused very long even when she was encouraged to say whatever came to her mind. The other cried while writing, because of the anxiety of having to write in English, though she finished both tasks without much writing problems.)

After completing each main writing task, each participant was immediately interviewed by the observer of their writing process while listening to the recorded tape about details or unclear or unclassifiable parts of her

composing process. After the interview for the second task, they were asked about their understanding of the reader role in L1 or L2 writing and training of writing in L1 or L2 with considerations on the target reader. The whole retrospective interview lasted about 30 minutes and the interviewer recorded notes of key information.

### **Data Analysis**

The pretest writing was holistically scored by two Korean and English bilingual teachers who have an experience in teaching English writing at university and scoring English essays. Both of them were a doctoral candidate of English Education. The students' English composition was scored using the TWE CBT/PBT scoring criteria (see the scoring criteria in Appendix B). The maximum score was 6. With the pretest scores, the participants were classified into two English writing proficiency groups: higher- and lower-level group (see Table 1). In addition, the output of the two main tasks was scored in the same ways as the pretest to see the relationships between reader awareness and English writing proficiency, and the quality of writing in English.

The compose-aloud tapes were transcribed into compose-aloud protocols. They were transcribed by using the conventions illustrated in Table 2. They were transcribed in the way the participants spoke. That means that spelling and spacing were coded in the way they were said. The protocols were combined with the information from the *Inputlog* output files, as shown in Table 3: the general logging file to insert pause length and see what was typed or deleted between pauses; the linear text analysis file to get information on input action including mouse click or movement (see Figure 2); the pause analysis file to measure average pause length between different linguistic unit boundaries such as 'between words,' or 'between sentences'; and the statistical analysis file to measure quantitative information of the writing such as average word or sentence length.

**TABLE 2**  
**Transcription Conventions**

Transcription conventions	Definition
?	A question mark indicates a rising intonation at the end a phrase.
.	A period indicates a closing of idea unit, or an utterance.
...	Three dots indicate a pause shorter than 1 second.
< >	The brackets < > indicate a pause longer than 1 second without any verbalization. The number within < > is the pause length in second.
<< >	The brackets << > are used to record verbalization during keystroke pause longer than 1 second.
( )	The parentheses ( ) are used to provide keystroke information including deleting or inserting.
{ }	The brackets { } are used to record observation.
Written production	Underlined words or sentences indicate the verbalization made while the writer is writing the text.
“ ”	Quotation marks indicate that the writer is reading aloud the writing prompt or previously written production.

The compose-aloud protocols combined with the computer-based data were coded into three major stages of writing process: planning (P), writing (W), and editing (E).<sup>3</sup> They were further classified into 8 categories: task-examination (TE), discourse organization (DO), idea generation (IG), language form searching (LF) (including lexicon (L), sentence structures (SS), grammar (G), and mechanics (M)), metacomments (MC), re-reading (R), writing (W), and fillers (time-gaining) (F) (see Table 3).<sup>4</sup> Seven categories

<sup>3</sup> Compose-aloud protocols about what was actually typed were classified as editing. Thus, editing and writing stages were integrated.

<sup>4</sup> TE includes two subcategories: TE for the analysis of written prompt and TE-A for the analysis of audience. MC has three subcategories: MC for self-evaluation or monitoring, MC-A for the analysis of audience, and MC-LF for language forms. R includes reading for idea generation (R-IG) and translated reading (T-R) in addition to re-reading (R). Writing includes translated writing (T-W) where the idea was generated in L1, besides verbalization of actual typing (W). In Table 3, the first code

were found in the planning stage (TE, TE-A, DO, IG, MC, MC-A, and F), and besides these seven categories, five more categories were each found in the writing and editing stage (LF, MC-LF, R, W, and WP). The coding scheme was constructed on the basis of the one used by Raimes (1985), Wang and Wen (2002), Wang (2003), and Choi and Lee (2006). Furthermore, audience-related functions were classified on the basis of Berkenkotter (1981) and Zainuddin and Moore (2003) to see the impact of reader awareness. The compose-aloud protocols were coded with supplementary information from notes from the observation and the retrospective interview, the data from the keystroke logging program output files, and the computer replay of the whole process. The assistant did the analysis first and afterwards the researcher reviewed the coding together. The frequency and proportion of each category was calculated in terms of writing process stages, writing tasks and L2 writing proficiency.

**TABLE 3**  
**Coding Scheme Used to Analyze Compose-Aloud Protocols**

Functions	Definition	Examples
Task-examination - Analysis of writing prompt (TE)	Analyzing the writing prompt or task	(S6-1) [P-TE]"Task A. Do you agree or disagree with the following statement? agree or disagree." <i>It asks whether I agree or disagree.</i> (S3-2) [W-TE]"children's success in school." <i>Do I have to write about success? What does 'success' mean here?</i> (S6-2) [E-TE]Wait a second. <i>The task requires examples. Did I give examples?</i>
- Analysis of audience (TE-A)	Analyzing audience and constructing audience characteristics	(S5-2) [P-TE-A]Then ... <i>scorer. OK. I will assume the reader is a trained writing scorer and think about the topic.</i>

in the square brackets in the excerpts of the compose-aloud protocols refers to each stage (P, W, or E); the second code represents the function category; and the third, the subcategory. S represents student; the number after S indicates student number; and the second number refers to the task number. The italicized English expressions are the translation of Korean expressions verbalized by the participants.

Discourse organization (DO)	Planning and evaluating the organization of the text (lexical cohesion)	(S6-1) [W-DO] <i>In the last part I will summarize my writing briefly and then...summarize it and then, finally, I will present my opinion.</i>
Idea-generation (IG)	Verbalization for planning, writing and revising the content of the writing	(S2-2) [W-IG] <i>And, eat. What else? Sleep?</i> (S7-1) [E-IG] <i>Do not write that they should be respected. Rather, if their ability is valued</i>
Language form searching (LF)	Searching appropriate lexical items, sentence structures, grammar, and mechanics	(S4-1) [W-LF-LS] {searching words in Internet} condition? circumstance? (S6-2) [E-R] "First of all, ... through certain rights." [E-LF-LS] rights? chance? chances? (S5-2) [W-LF-G] significantly<5.2> rose. <13.6> rise, rose. rose. (S3-2) <u>th</u> <3.7> [W-LF-M] <i>What's the right spelling?</i> t.h.o.u.g.h. [W-W] <u>rough</u>
Meta-comments - self-evaluation or meta-comments of writing (MC)	Self-evaluation and metaconcerns about the appropriateness or qualities of text production (for idea generation and discourse organization)	(S3-1) [W-MC-IG] <i>I think I am kind of repeating the same thing over and over.</i> (S8-1) [E-F] hum... [E-MC-DO] <i>What should I insert between the first and the second one to make their connection smooth?</i> (S8-1) <2.5> <u>stue</u> (deletion of 'e') <u>dents by</u> <<4.3> [E-MC-IG] <i>The contents are very redundant.</i>
- analysis of audience (MC-A)	Self-evaluation and metaconcerns on audience or audience characteristics	(S5-2) [W-MC-A] <i>Too much ... The reader may not understand if he/she reads without any background knowledge on this.</i> (S3-2) [E-R] "For that reason, classmates are more effectible than child's parents on their success in school." [E-MC-A] <i>Well, the reader will understand that it is about school days since it is about school education.</i>
- language form searching (MC-LF)	Self-evaluation or metaconcerns about appropriateness of language forms	(S5-2) [W-IG] constitute... [W-MC-LF-L] <i>Is it kind of spoken language style?</i> (S1-1) [E-MC-LF-G] <i>Is it not so good to use adverbs over and over?</i>
Re-reading (R)	Re-reading or translated reading (L1 to L2 or vice versa) of the written product, especially for idea generation	(S2-1) [W-R-IG] "to know children's school life and make it successful,"> [W-W] <u>P</u> (deletion of 'P') <u>parents should k</u> <1.1> <u>now av</u> (deletion of 'v') <u>bh</u> (deletion of 'h') <u>ou</u> (deletion of 'know about') (S7-2) <u>Ther</u> <1.0> <u>e would be more reasons for the idea</u> <<3.0> [W-T-R] <i>though there would be lots of reasons</i> > [W-W] <u>but the mentioned two reasons</u> <1.9> <u>are enough</u>

Writing (W)	Verbalization of actual typing behavior including translated typing from ideas in L1	(S4-1) <2.8>so (deletion of 'so') <14.0> [W-IG] A variety of jobs is created. [W-T-W] R (deletion of 'R') recentp (deletion of 'p') ly <1.6>, <4.8> many new <1.0> d (deletion of 'd') <1.3> jobs are (S6-2) [E-R] "they have only studied so called 'important' courses that schools have obliged to them.." [E-IG] they have been forced to study. [E-MC-IG] Shall I write this way? > [E-W] (after 'have' in the fourteen sentences before) been forces (deletion of 's') d to study
Comments on word processor functions (WP)	Reference to functions of word processor	(S5-1) [W-WP] It is changed automatically. (automatic change of 'friends') (S5-2) [E-R] "course-selections." [E-WP] Why does the line pop up? (use of the language check program of Word) ah, (change of the spelling of 'selection') (S6-2) [W-WP] I can't switch to Korean.
Fillers (F)	Fillers or words for time gaining in order to plan next units	(S4-1) [P-F] um. [P-MC-IG] Let's think about examples. [P-F] um... (S8-2) [E-F] um... um... [E-MC-IG] I have to write about the reasons why the role of parents is getting downgraded.

## RESULTS AND DISCUSSIONS

### Quantitative Data of Written Product and Writing Process

The length of student written products was measured in terms of total number of words, sentences and paragraphs, as shown in Table 4.<sup>5</sup> The writing process was examined by measuring the actual tape-recorded planning and composing time and by analyzing the data from the computer-generated output files, which provide information on total number of characters, words, sentences, paragraphs, and total pause and action time.

<sup>5</sup> The number of words, sentences, and paragraphs generated by computer is not identical to that of the written product because the computer program records all the keystrokes including deletions, the sentence is automatically identified by a period or question mark, and the paragraph, by the enter key.

The written product of the HP group was longer than that of the LP regardless of tasks (see the mean of the total number of words in Table 4), while not much differences were noted in sentence and paragraph numbers between the two groups. This indicates that the mean sentence length (number of words per sentence) was larger in the HP group (LP 12.84, 14.89,

**TABLE 4**  
**Quantitative Data of Writing Product and Process by L2 Writing Proficiency and Task**

Writing Product/ Process	Quantitative Data	Pretest		Task 1 (-RA)		Task 2 (+RA)	
		LP	HP	LP	HP	LP	HP
written	mean number of words	215.00	248.50	238.25	316.00	258.75	373.00
product	mean number of sentences	16.75	14.25	16.00	16.50	17.75	20.00
	mean number of paragraphs	3.25	3.75	3.50	3.25	4.25	3.75
	mean holistic scores	2.33	4.60	2.91	4.85	3.25	4.93
writing	mean planning time (mins)			3.73	1.33	4.98	3.63
process	mean composing time (mins)			54.20	67.68	69.98	86.28
	mean number of characters			1519.5	2438.5	1702.25	2887
	mean number of words			381.5	591.75	440.75	734
	mean length of words			4.1425	4.134	4.067	3.981
	mean number of sentences			21.75	24	24.75	29.25
	mean length of sentences			70.3918	106.534	76.394	99.703
	mean number of paragraphs			1.25	1.75	1.75	1.75
	mean length of paragraphs			1131.125	1816.042	1189.4375	1919.5
	mean action time (mins)			3.20	5.64	2.16	5.85
	mean pause time (mins)			48.18	60.75	53.22	65.03
	mean session time (mins)			55.17	67.96	60.35	74.51

and 14.54; HP 17.19, 19.15, and 18.65), which was also found in the

computer output files recording every keystroke. Both HP and LP group wrote more in the second task, where the target reader was given. This was more noticeable in the HP group. However, it is not clear whether the finding resulted from the impact of reader awareness or of repeated writing.

The writing of the two groups was scored holistically to see the impact of reader awareness on the overall quality of their writing. As shown in Table 4, the score of the second task was higher than that of the first and also of the pretest for both groups. Thus, this might be caused by repeated writing rather than reader awareness, as indicated by the length of writing. Zainuddin and Moore (2003) noted a relationship between reader awareness and the overall quality of writing, but it was not evident in this study.

As predicted from the writing length, the HP group spent more time composing, which was also noted in Zamel (1982, 1983). On the other hand, their planning time (from the beginning of compose-aloud till starting the actual typing) was relatively short, compared to the LP group. This finding is contradictory to the results of the studies on L2 writing process, which illustrated that more skilled L2 writers planned more (e.g., Raimes, 1983, 1985). The composing time for the second task with the information on the target reader was longer than that for the first task. This was also noted in their actual action time, pause time, and whole session time recorded by computer (except for the action time of the LP group), as shown in Table 4.<sup>6</sup>

Frequency and location of pauses in keystroke logging recorded by the computer program were also compared between L2 writing proficiency groups and task types (see Table 5). The number of pauses was higher in the HP group since their writing time was longer than the LP group. This pattern was found in the number of pauses in different locations, within words, and between words and sentences. The pause analysis data also show that both the HP and LP groups had more pauses in the second task regardless of their location, except for pauses between sentences. This was more noticeable in the HP group. These findings illustrate the impact of L2 writing proficiency

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<sup>6</sup> Some differences were noted between the tape-recorded time and the computer-recorded time.



rather than that of task types (reader awareness).

**TABLE 5**  
**Pause Analysis Data of Writing Process by L2 Writing Proficiency and Task**

Pause analysis	LP		HP	
	Task 1 (-RA)	Task 2 (+RA)	Task 1 (-RA)	Task 2 (+RA)
mean number of pauses	2977.75	3043.5	4935.25	5654
mean number of pauses within words	1147.25	1276.25	1854.5	2164.5
mean number of pauses between words	1454.5	1570	2645.25	3068.25
mean number of pauses between sentences	368	186	432	414.25
mean number of pauses between paragraphs	8	11.25	3.5	7

### **Frequency and Length of Compose-aloud Protocols for Different Purposes in L2 Writing Process**

The frequency and length of the Korean EFL writers' compose-aloud protocols was calculated for different purposes in terms of L2 writing proficiency and writing tasks, as shown in Table 6. Fillers are a little different from the other functions since they are words used for time gaining. Thus they were not included in the total at each stage.

Both proficiency groups frequently verbalized for examining tasks before their actual typing and also for generating ideas, while the LP group verbalized more for the latter (see Table 7). Their planning behaviors were relatively similar, though the HP group planned less as shown in Table 4. Another variation was noted in the frequency and length of verbal protocols for discourse organization. The HP group composed-aloud longer to organize their text (see Table 7), as shown in (1), which was found in Zamel (1983) and was noted in L1 use of more skilled Korean EFL university students' writing process in Choi and Lee (2006).

**TABLE 6**  
**Frequency of Functions Identified in Compose-aloud Protocols by L2 Writing**

EFL Students' Writing Product and Process On-Line

<b>Proficiency and Task</b>					
Process Stages	Functions	LP		HP	
		Task 1 (-RA)	Task 2 (+RA)	Task 1 (-RA)	Task 2 (+RA)
Planning	P-TE	5 (20.0%)	9 (23.7%)	4 (22.2%)	8 (25.8%)
	P-TE-A	0 ( 0.0%)	0 ( 0.0%)	0 ( 0.0%)	1 ( 3.2%)
	P-DO	2 ( 8.0%)	8 (21.0%)	5 (27.7%)	3 ( 9.6%)
	P-IG	10 (40.0%)	17 (44.7%)	6 (33.3%)	11 (35.5%)
	P-MC	8 (30.0%)	3 ( 7.9%)	3 (16.6%)	6 (19.4%)
	P-MC-A	0 ( 0.0%)	1 ( 2.6%)	0 ( 0.0%)	2 ( 6.4%)
	<i>Total</i>	<i>25 ( 1.9%)</i>	<i>28 ( 2.7%)</i>	<i>18 ( 1.0%)</i>	<i>31 ( 1.5%)</i>
	Writing	W-TE	2 ( 0.2%)	9 ( 0.9%)	6 ( 0.6%)
W-DO		5 ( 0.6%)	3 ( 0.3%)	5 ( 0.5%)	6 ( 0.5%)
W-IG		212 (25.7%)	227 (23.1%)	196 (20.3%)	286 (25.6%)
W-LF		109 (13.2%)	111 (11.3%)	56 ( 5.8%)	41 ( 3.7%)
W-MC		52 ( 6.3%)	74 ( 7.6%)	69 ( 7.1%)	65 ( 5.8%)
W-MC-A		0 ( 0.0%)	0 ( 0.0%)	2 ( 0.2%)	3 ( 0.3%)
W-MC-LF		2 ( 0.2%)	7 ( 0.7%)	13 ( 1.3%)	26 ( 2.3%)
W-R		186 (22.5%)	248 (25.3%)	265 (27.4%)	354 (31.7%)
W-W		256 (31.0%)	299 (30.5%)	354 (36.6%)	328 (29.3%)
W-WP		1 ( 0.1%)	2 ( 0.2%)	1 ( 0.1%)	4 ( 0.3%)
<i>Total</i>		<i>825 (64.0%)</i>	<i>980 (70.5%)</i>	<i>967 (53.9%)</i>	<i>1118 (54.2%)</i>
Editing	E-TE	3 ( 0.7%)	0 ( 0.0%)	0 ( 0.0%)	3 ( 0.3%)
	E-DO	1 ( 0.2%)	2 ( 0.5%)	0 ( 0.0%)	1 ( 0.1%)
	E-IG	41 ( 9.3%)	31 ( 8.3%)	75 ( 9.3%)	70 ( 7.7%)
	E-LF	67 (15.3%)	66 (17.7%)	83 (10.3%)	73 ( 8.0%)
	E-MC	73 (16.6%)	54 (14.5%)	105 ( 0.1%)	124 (13.6%)
	E-MC-A	0 ( 0.0%)	1 ( 0.3%)	1 ( 0.1%)	4 ( 0.4%)
	E-MC-LF	4 ( 0.9%)	4 ( 1.1%)	35 ( 4.3%)	39 ( 4.3%)
	E-R	197 (44.9%)	155 (41.7%)	372 (46.0%)	459 (50.3%)
	E-W	51 (11.6%)	54 (14.5%)	131 (16.2%)	134 (14.7%)
	E-WP	2 ( 0.5%)	5 ( 1.3%)	6 ( 0.7%)	5 ( 0.5%)
<i>Total</i>	<i>439 (34.1%)</i>	<i>372 (26.8%)</i>	<i>808 (45.1%)</i>	<i>912 (44.3%)</i>	
Fillers		171	260	193	259

**TABLE 7**  
**Compose-aloud Protocol Length by L2 Writing Proficiency and Task**

Process Stages	Functions	LP		HP	
		Task 1 (-RA)	Task 2 (+RA)	Task 1 (-RA)	Task 2 (+RA)
Planning	P-TE	256 (34.7%)	459 (46.5%)	196 (40.1%)	441 (48.5%)

	P-TE-A	0 ( 0.0%)	0 ( 0.0%)	0 ( 0.0%)	49 ( 5.4%)
	P-DO	26 ( 3.5%)	12 (11.3%)	123 (25.1%)	212 (23.3%)
	P-IG	376 (50.9%)	403 (40.7%)	154 (31.5%)	130 (14.3%)
	P-MC	80 (10.8%)	13 ( 1.3%)	16 ( 3.3%)	72 ( 7.9%)
	P-MC-A	0 ( 0.0%)	3 ( 0.3%)	0 ( 0.0%)	6 ( 0.6%)
	<i>Total</i>	<i>738 ( 8.1%)</i>	<i>990 (11.6%)</i>	<i>489 ( 4.3%)</i>	<i>910 ( 7.6%)</i>
Writing	W-TE	10 ( 0.2%)	138 ( 3.0%)	43 ( 0.8%)	27 ( 0.6%)
	W-DO	41 ( 1.0%)	19 ( 0.4%)	56 ( 1.1%)	36 ( 0.7%)
	W-IG	1352 (33.6%)	1137 (24.4 %)	1197 (24.5%)	1371 (28.0%)
	W-LF	533 (13.2%)	678(14.5%)	275 ( 5.6%)	273 ( 5.6%)
	W-MC	267 ( 6.6%)	292 ( 6.2%)	409 ( 8.5%)	305 ( 6.2%)
	W-MC-A	0 ( 0.0%)	0 ( 0.0%)	10 ( 0.2%)	46 ( 0.9%)
	W-MC-LF	8 ( 0.2%)	26 ( 0.6%)	71 ( 1.5%)	125 ( 2.6%)
	W-R	844 (21.0%)	1075 (23.0%)	1289 (26.4%)	1425 (29.9%)
	W-W	965 (24.0%)	1294 (27.7%)	1535 (31.4%)	1268 (25.9%)
	W-WP	3 ( 0.1%)	7 ( 0.1%)	2 ( 0.0%)	14 ( 0.3%)
	<i>Total</i>	<i>4023 (44.0%)</i>	<i>4666 (54.6%)</i>	<i>4885 (43.1%)</i>	<i>4890 (40.9%)</i>
Editing	E-TE	64 ( 1.5%)	0 ( 0.0%)	0 ( 0.0%)	36 ( 0.6%)
	E-DO	3 ( 0.1%)	4 ( 0.1%)	0 ( 0.0%)	13 ( 0.2%)
	E-IG	322 ( 7.3%)	154 ( 5.3%)	365 ( 6.1%)	325 ( 5.3%)
	E-LF	407 ( 9.3%)	403 (13.9%)	372 ( 6.2%)	303 ( 4.9 %)
	E-MC	359 ( 8.2%)	180 ( 6.2%)	461 ( 7.7%)	557 ( 9.1%)
	E-MC-A	0 ( 0.0%)	5 ( 0.2%)	8 ( 0.1%)	48 ( 0.8%)
	E-MC-LF	17 ( 0.4%)	11 ( 0.3%)	180 ( 3.0%)	200 ( 3.2%)
	E-R	3054 (69.8%)	1984 (68.6%)	4226 (70.8 %)	4342 (70.5%)
	E-W	144 ( 3.3%)	131 ( 4.5%)	328 ( 5.5%)	313 ( 5.1%)
	E-WP	8 ( 0.2%)	22 ( 0.8%)	29 ( 0.5%)	21 ( 0.3%)
	<i>Total</i>	<i>4378 (47.9%)</i>	<i>2894 (33.8%)</i>	<i>5969 (52.6%)</i>	<i>6158 (51.5%)</i>
Fillers		182	272	199	266

- (1) Examples of verbal protocols for discourse organization at the planning stage
- (S3-2) [P-DO]ponron-ey-nun tu kaji tul-ko. kuray noh-ko kyulron-ey-su... (*In the body part I will mention two reasons and then in conclusion...*) [P-IG]chungsokyun-ki- nun... (*In the adolescent period...*)
- (S6-2) [P-DO]kurugkey ha-ysu monmun 1, 2, 3-ul ccass-ko, tonguy-hanta-nun kul suron-ey chuyshi-lul ha-ko. suron-ey-su chomtu... chomtu ilban-juk-i-n yayki-ey-su shijak-ha-ysu kuchucuk-uro, kuraysu ponron-ey yunkyul-i chal toy-dorok ha-ryumun. (*In this way I planned the three parts of the body and I will say I agree in the introduction.. In the introduction I will begin with general points and then move into specific ones. So I will make it well connected with the body part.*)
- (S7-1) [P-DO]ildan. chut pupun-ey-su-nun sahoj-juk-uro iron key issue-ka toy-ko iss-ta-nun kut-ul alruchyu-oja toy-nikka. kuron pupan-lul munu ssu-ko. ponron pupun-ey-su na-y-ka tonguy-hanunji an ha-nunji-lul ss-uya-kess-ta. (*Well, since I have to say these kinds of things are social issues these days in the first part I will write about them. In the body part I will write whether I agree or disagree.*)

The impact of reader awareness was also noted in both groups (from the verbalization for audience analysis). However, it was more noticeable in the HP group (see exemplary protocols in Table 3), as noted in Zainuddin and Moore (2003). The HP students had a more specific analysis of the target reader given in the prompt including his/her expectation, as illustrated in (2). Since the target reader was a writing scorer, S5 mentioned that she would pay more attention to language accuracy.<sup>7</sup>

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<sup>7</sup> In Rorschach (1986), the L2 writers were mainly concerned with language forms when they were informed that their writing would be evaluated by external raters.

(2) Examples of verbal protocols for audience analysis at the planning stage

(S2-2) [P-MC-A]suron-eyisu-nun uttun tokja-tul-eykey (*for which readers at the introduction*)

(S5-2) [P-TE-A]ildan-un kurumyun...scorer. OK. uttun treyining-ul pat-un writing scorer-i-rako shulchung-ul ha-ko chupkum-lul ha-y-po-ayya-kess-ta. writing score... na-y-ka... yukisu ssu-nun chakmun-un nuka kunyang ilk-nun ku-y ani-ra chakmun-ul ... chukchung-ha-ki uyha-ysu...chakmun shihum-eyisu na-y-ka ssu-nun ku-rako sangkak-ul ha-y-po-ko. kurumyun kucho iron ku tanu-ey chomtu shinkyung-ul ss-usu ha-y-po-aya-ji. (*Then ... scorer. OK. I will assume the reader is a trained writing scorer and think about the topic. Writing for writing scorers. This writing will be scored to measure my writing ability...I will assume I am writing for a writing test. Then I should have more concerns on structure and vocabulary.*)

Both groups uttered more words for task examination at the second task because its writing prompt was longer to provide the information on the target reader (see Appendix A). The relatively large proportion of verbal protocols for organizing the whole essay was identified at the planning stage of the LP group in the second task. This might result from their concerns for the target reader (see Tables 6 and 7).

The two groups' writing behaviors were relatively similar, as noted in the frequency of verbal protocols for different purposes, except for that of language form searching and audience analysis. Both groups verbalized frequently for re-reading and writing as well as idea generation at the writing stage. However, the LP students composed-aloud more frequently and longer to search appropriate language forms than the HP students, as noted in Jones (1982) and Hall (1987) and in lower-level Korean EFL university students' writing process in Choi and Lee (2006).

- (3) Examples of the LP group's verbal protocols for language form searching at the writing stage
- (S1-1) [W-LF-G]nervous-ka hyungyongsa-i-nka? Myungsa-i-nka? (*Is 'nervous' an adjective? Or a noun?*)
- (S1-2) [W-LF-LS]chimhay-ha-ta. (*Trespass.*) [W-T-R]invade? [W-LF-LS]chimpum-ha-ta. (*Invade.*) chimhay-ha-ta. (*Trespass.*)
- (S4-1) [W-LF-LS]{searching words in Internet} condition? circumstance?
- (S4-2) [W-LF-LS]mulry-u pat-nunta-nun kut-ul yungu-ro mu-o-rako phyohyun-ha-ji? (*How do we say 'inheritance' in English?*)

On the other hand, the HP group verbalized more for audience analysis as shown in Tables 6 and 7. (No occurrence of this category was identified in the LP group.) Though its frequency was similar between the two tasks, the amount of verbalization was larger for the second task, which illustrates the impact of reader awareness, as shown in (4). S8 verbalized the native speaker's expectation on English writing since she was aware of good writing style in English.

- (4) Examples of the HP group's verbal protocols for audience analysis at the writing stage
- (S5-1) [W-MC-A]irun yayki-nun uri-nara thuksung-i-rasu mal-ha-ki-ka chom kurug-ko. (*This is kind of unique features in Korea so I don't think it is appropriate to mention it.*)
- (S5-2) [W-MC-A]numu...i yayki-lul paykyung chishik-i ups-nun sangwhang-eyu tu-l-umyun chunhyu ihay-ka an toy-l ku katuntey. (*Too much ... The reader may not understand if he/she reads without any background knowledge on this.*)
- (S8-2) [W-MC-A]kuntey manyak-ey rater-ka woykukin native-nikka, woykukin native-i-n kyungu-ey sumun-ey na-uy chuchang-ul ssu-chu-nun ke-y chungyo-ha-ntey. kuruntey yangcco-uy ipjang-lul ta ssu-ko na-n tamum-ey conclusion-eyu na-y-ka yayki-ul ha-y-ju-myun...ihay-lul chal ha-lkka? (*Since the rater is a native*

*speaker of English, it is important to write my argument at the introduction for him/her. Would he/she understand well if I write about both sides (arguments and counter-arguments) and present my opinion in the conclusion?)*

The impact of reader awareness was also noted in the frequency and length of task examination while writing in the LP group. A similar finding was noted in the composing process of lower-level Korean EFL university student in Choi and Lee (2006).

(5) Examples of the LP group's verbal protocols for task examination at the writing stage

(S2-2) [W-TE]na-nun child-ka myut sal-i-nji moru-kess-u. ildan hakkyo-lul tani-nin na-i-nikka. chotung-haksang-i-nka? chung-haksayng-i-nka? way student-rako an-ha-ko child-rako ha-yss-ji? chal moru-kess-ney. chanyu-i-n ku kat-a. pumo-ey tayha-n. (*I don't know how old a child is supposed to be. Well, is he/she an elementary or middle school student since it is about school age? Why is 'child' mentioned rather than 'student' in the prompt? I can't understand. Well, maybe someone's child. About parents.*)

(S3-2) [W-TE]"children's success in school." kkok sungkon-i-rako haya toy-na? eokisu mal-ha-num success-ka mu-o-l mal-ha-ji? (*Do I have to write about success? What does 'success' mean here?*)

A similar editing behavior pattern was found between the two proficiency groups, except for the higher frequency of language form searching identified in the LP group, as they illustrated in their writing stage, and that of metacomments on language forms and on audience analysis in the HP group (see Tables 6 and 7). The effect of task types was illustrated by both groups, which was more evident in the HP group.

The frequency and length proportion of each stage was compared between

the two proficiency groups and the two tasks. Both groups verbalized more frequently in the writing stage (LP 67.25%, HP 54.05%) than in the planning stage (LP 2.3%, HP 1.25%) or in the editing stage (LP 30.45%, HP 44.7%), whereas the HP group edited more. Similarly, the high occurrence of revision was noted from skilled L2 writers in Zamel (1982), but they revised at the discourse level while the HP group of this study had more concerns on language forms like the subjects of New (1999). On the other hand, the LP group planned more, as indicated by the planning time in Table 4. This might have been caused by their lack of writing experiences in L2, which was mentioned in the retrospective interview.

Since the participants used a word processor, their verbalization about its functions was identified, as shown in Table 3 and (6). Moreover, they did some Internet search, especially for appropriate lexical items, as illustrated in (3).

- (6) Examples of verbal protocols for word processor functions at the writing and editing stage
- (S5-1) [W-WP]teenages way ppalkan chul-i ttu-ji? (*Why does a red line pop out?*)
- (S5-1) [W-WP]chujulro kochuyj-uss-ney (*It is changed automatically.*) (automatic change of 'friends')
- (S5-2) [E-R]"course-seletions." [E-WP]way chul-i ttu-ji? (*Why does the line pop up?*) (use of the language check program of Word) ah, (change of the spelling of 'selection')
- (S6-2) [W-WP]hankul pyunhwan-i chatong-uro an-toy-ney. (*I can't switch to Korean.*)
- (S7-1) [E-R]"Because they have already been educated in prior schools." [E-WP]kuntay way chorok-sak chul-i kujeji-ji? (*Why is it underlined in green?*)

These findings illustrate that writing process on-line as well as the final written product would be influenced by writing modes, writing on paper or



on the computer. The HP group might have edited their writing frequently since it was easy for them to edit their writing on the computer, as shown in (7).

(7) Examples of the HP group's verbal protocols for long-distance editing at the editing stage

(S6-2) [E-R]"they have only studied so called 'important' courses that schools have obliged to them.." [E-IG]they have been forced to study. [E-MC-IG]irugkey ha-lkka? (*Shall I write this way?*)> [E-W] (after 'have' in the fourteen sentences before) been forces (deletion of 's')d to study

(S5-2) [E-MC-DO]Uh! Iku-lul yuki-ro ka-myun tu mal-i toy-l ku kat-a. (*If this sentence is moved into here, it would be more logical.*)> {move of the sentence beginning with 'Students learn ...' before the sentence beginning with 'This is supported...'} }

S6 rewrote a sentence in the middle of her writing while rereading it at the editing stage; and S5 moved a whole sentence to another location.

## CONCLUSION

The analysis of written product has revealed differences between the two proficiency groups. The HP group's writing in general and in sentence length was longer than the LP group's. Both groups wrote longer for the second task, where the target reader was given. Their holistic scores were also higher for it. These findings, however, might be caused by the impact of repeated writing rather than that of reader awareness, since the LP group did not exhibit much concerns on the target reader but still wrote longer and received higher scores in the second task.

The pause analysis of writing process on-line also has illustrated the influence of L2 writing proficiency. The HP paused more frequently,

especially within words and between words and sentences. They paused more in the second task, where they wrote longer. Further studies are needed to analyze writing behavior between pauses and at different locations to shed more light on the purposes of their pauses in L2 writing.

The verbal protocol analysis complemented by computer-generated output files has revealed that Korean EFL writers spent more time on writing than planning and editing. This was more obvious in the LP group. On the other hand, the HP group edited frequently for language accuracy regardless of tasks, which might suggest the impact of writing mode (computer writing, in which editing is relatively easy). The writing behavior of the two groups was relatively similar. Both of them often verbalized dominantly for task examination and idea generation at the planning stage, for re-reading and writing as well as idea generation at the writing stage; and for language form searching and metacomments as well as re-reading and writing at the editing stage. They also verbalized functions of the word processor. However, differences between the two groups were also noted. For example, the LP paid more attention to language forms including search of appropriate lexical items regardless of tasks due to their lack of linguistic competence, as noted in Jones (1982), Hall (1987), and Choi and Lee (2006).

The impact of reader awareness has also been illustrated, though that of L2 writing proficiency was more noticeable. Both proficiency groups verbalized more for task examination or for audience analysis in the second task. But differences between them were also noted. The LP writers did task examination more than audience analysis, whereas the HP writers did audience analysis more. The HP group's audience analysis was also more specific than that of the LP group.

The results of the study might have been different if a different type of task for reader awareness had been used. The second task included information on audience addressed. If the task encouraged the writer to write with some concerns on audience invoked, as studied in Zainuddin and Moore (2003) or the reader was known to him/her personally, like his/her real teacher or professor, he/she might address his/her audience more directly or specifically.

The findings of the study illustrate that Korean EFL students' understanding of the reader role on writing is very limited, especially that of lower-level students. Thus, further studies with Korean students who have been trained to write for their reader or have more specific understanding of the reader function are needed to explore whether they can be trained to write more effectively with some concerns on the reader or to what extent reader awareness affects their writing. Moreover, some research on their L1 writing is needed to see to what extent they consider the reader in their L1 writing.

Verbalizations for word processor functions and high frequency of local-level editing and long-distance or more global-level editing suggest that writing modes can have significant impact on writing process. Thus, future studies on writing process should deal with their effects since writing on the computer would be more common in the 21<sup>st</sup> Century.

## THE AUTHOR

Choi, Yeon Hee is currently professor of English Education at Ewha Womans University in Seoul, Korea. She received her Ph. D. in Applied Linguistics from the University of Illinois at Urbana-Champaign. Her primary interests include discourse analysis and TESL/TEFL (reading and writing). She has published books on English language teaching and a number of articles on L2 writing.

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## **APPENDIX A**

### **English Writing Tasks**

#### 1. Pre-test

Do you agree or disagree with the following statement? With the help of technology students nowadays can learn more information and learn it more quickly. Use specific reasons and examples to support your answer.

#### 2. Task 1

Do you agree or disagree with the following statement?

Classmates are a more important influence than parents on a child's success in school.

Use specific reasons and examples to support your answer.

#### 3. Task 2

Do you agree or disagree with the following statement?

High schools should allow students to study the courses that students want to study.

Use specific reasons and examples to support your opinion.

Do you write differently depending on the readers? People write differently depending on the reader. You can communicate more effectively if you keep the reader in mind.

The reader of your writing will be an American rater (evaluator), a trained English writing scorer. Think about your reader's expectation when you write the next task.

## **APPENDIX B**

### **English Writing Scoring Scale**

*TOEFL CBT/PBT Test --Writing Scoring Guide*

Score of 6

An essay at this level

- effectively addresses the writing task
- is well organized and well developed

EFL Students' Writing Product and Process On-Line

- uses clearly appropriate details to support a thesis or illustrate ideas displays consistent facility in the use of language
- demonstrates syntactic variety and appropriate word choice

*Score of 5*

An essay at this level

- may address some parts of the task more effectively than others
- is generally well organized and developed
- uses details to support a thesis or illustrate an idea
- displays facility in the use of the language
- demonstrates some syntactic variety and range of vocabulary

*Score of 4*

An essay at this level

- addresses the writing topic adequately but may slight parts of the task
- is adequately organized and developed
- uses some details to support a thesis or illustrate an idea
- demonstrates adequate but possibly inconsistent facility with syntax and usage may contain some errors that occasionally obscure meaning

*Score of 3*

An essay at this level may reveal one or more of the following weaknesses:

- inadequate organization or development
- inappropriate or insufficient details to support or illustrate generalizations
- a noticeably inappropriate choice of words or word forms
- an accumulation of errors in sentence structure and/or usage

*Score of 2*

An essay at this level is seriously flawed by one or more of the following weaknesses:

- serious disorganization or underdevelopment
- little or no detail, or irrelevant specifics
- serious and frequent errors in sentence structure or usage
- serious problems with focus

*Score of 1*

An essay at this level

- may be incoherent and may be undeveloped
- may contain severe and persistent writing errors

*Score of 0*

An essay will be rated 0 if it

- contains no response,
- merely copies the topic,
- is off-topic, is written in a foreign language, or consistently of keystroke characters