

The Contributions of Planning, L2 Linguistic Knowledge and Individual Differences to L2 Writing

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The present study explored the relative contributions of planning, L2 linguistic knowledge and individual differences to Korean EFL students' argumentative essays. Seventy-two university students enrolled in college English writing courses participated in this study throughout one semester. The components of planning, L2 linguistic knowledge and individual differences were identified and measured, and their relationships to the quality of L2 writing were examined. The factors that made a significant contribution to L2 writing were found to be participants' ability to recognize good L2 essays and the quality of content of the outline in planning (21.4% explanatory power); grammar, productive vocabulary and sentence processing speed in L2 linguistic knowledge (42.7%); and eight items from the self-efficacy, strategy, and motivation questionnaires in individual differences (44.8%). When common effects were controlled for, the independent contributions of planning, L2 linguistic knowledge and individual differences to the quality of L2 writing were 7.2%, 14.1%

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and 16.3%, respectively. Based on the relative contributions of the three factors that are involved in L2 writing, pedagogical implications for L2 classrooms are provided.

Keywords: L2 writing process, L2 linguistic knowledge, individual differences, L2 essay

Introduction

What factors are involved in L2 writing? In an attempt to answer this question, some researchers identified factors that affect L2 writing and their relative contributions. For example, Sasaki and Hirose's (1996) early study examined the influence of L2 proficiency, L1 writing ability, and meta-knowledge of L2 expository essay on Japanese university students' English writing. Among these three significant factors, L2 proficiency was found to explain 52% of the L2 writing ability, L1 writing ability 18% and meta-knowledge 11%. In other studies (Schoonen et al., 2003; Schoonen, van Gelderen, Stoel, Hulstijn, & de Glopper, 2011), factors such as linguistic knowledge, speed of processing and metacognitive knowledge in L1 and L2 writing were explored in order to find out their relative importance to L2 writing.

Even though these studies have greatly contributed to the establishment of major factors that have an influence on L2 writing, a comprehensive review of literature on L2 writing revealed that some important factors might be still missing. For instance, many researchers (Ellis & Yuan, 2004; Johnson, Mercado, & Acevedo, 2012; Kellogg, 1988; Ong & Zhang, 2010, 2013) have pointed out the effects of planning on L2 writing. This suggests that planning may also possibly be one of the important factors to determine the quality of L2 writing. In addition, individual differences such as self-efficacy beliefs (i.e., individuals' beliefs in their capabilities rather than what they are actually able to do), motivation and strategy use in L2 writing may be additional factors that can explain one's L2 writing ability. Effects of self-

efficacy (Chae, 2011; Karaglani, 2003; Pajares & Johnson, 1996), motivation (Albin, Benton, & Khramtsova, 1996; Hidi & Anderson, 1992; Park, 2010) and strategy use on L2 writing are documented in the literature.

Therefore, the present study intended to include planning and individual differences in investigating the relative contributions of factors that affect L2 writing. In addition, in order to better examine the relationship of relevant factors to the quality of L2 writing, it was also necessary to elaborate the components (variables) of each factor. Therefore, this study first set up three main factors that affect L2 writing quality: planning, L2 linguistic knowledge and individual differences.

Whether writing in L1 or in L2, most writers need a certain amount of planning time before they actually begin writing. L2 writers, in particular, can greatly benefit from brainstorming a list of ideas related to a topic and putting those ideas in a logical order in the outline. While they attempt to organize their ideas, they may utilize their knowledge of how to write an L2 essay (e.g., knowledge of the structure of an essay, elements of a paragraph). From this cognitive process, we came up with the variables of planning, which are brainstorming, outlining and knowledge of how to write an English essay.

After the planning stage, L2 writers get to move on to the actual writing. Unlike L1 writers, who can translate their ideas into L1 rather automatically, a majority of L2 writers are not equipped with sufficient linguistic knowledge to encode their thoughts into L2 linguistic forms (Hinkel, 2004). Therefore, L2 linguistic knowledge plays a crucial role here. Clearly, L2 linguistic knowledge or L2 proficiency is related to the quality of L2 writing (Sasaki & Hirose, 1996; Schoonen et al., 2003; Schoonen et al., 2011). In the current investigation, we identified the ability in reading, sentence processing speed, grammar, receptive vocabulary and productive vocabulary as the variables of L2 linguistic knowledge.

During the writing processes, the individual differences factor may come into play at any time and ultimately act upon the quality of L2 writing. We employed self-efficacy beliefs, motivation and L2 writing strategy use as

variables of individual differences. For example, when a learner has a higher level of confidence (self-efficacy), pleasure (motivation) and skills to use writing strategies in L2 writing, there is a greater likelihood of the learner producing a better essay.

The purpose of this study is to explore the relationship of planning, L2 linguistic knowledge and individual differences to L2 writing and the interplay within and between them. The results are expected to provide some insightful pedagogical implications for L2 writing classes.

Literature Review

Effects of Planning on L2 Writing

Planning is commonly defined as a certain amount of time given immediately before actual writing (Ortega, 1999). In the Hayes-Flower Model (Flower & Hayes, 1981) for L1 writing, planning is described as a cognitive process that involves idea generation, organizing, and goal setting. While L2 planning involves a similar process to L1 planning, some differences are found to exist between L1 and L2 writing in planning.

First, planning can help L2 writers focus on translating (i.e., putting ideas into words by choosing lexical items and grammatical forms) in the writing process. The concept of working memory, which is defined as “the temporary storage and manipulation of information that is assumed to be necessary for a wide range of complex cognitive activities” (Baddeley, 2003, p. 189), can explain this statement. When they write, L2 writers become involved in complex and demanding cognitive activities such as generating and selecting ideas, determining goals and organization, executing those plans in L2 with proper syntactic structures, grammar and vocabulary, and others. Since working memory has a limited capacity (see Kellogg’s (1996) model of working memory), an L2 writer cannot pay equal attention to them simultaneously while writing. Unlike L1 writers, who have automatic access to syntactic and vocabulary resources (Weigle, 2005), translating ideas into

an L2 already places pressure on working memory for L2 writers. Therefore, if an L2 writer has set a clear idea on the content and organization of the essay in the planning stage, s/he can concentrate on language while writing the main body of a text. Ellis and Yuan (2004) similarly claimed that planning reduces the demands on working memory resources, which allows L2 writers to pay more attention to translation. If an L2 writer is asked to write immediately without planning, he or she has to plan, translate, execute and monitor simultaneously. Due to the limited capacity of one's working memory, however, the L2 writer cannot perform these tasks in parallel. "If several demands are competing... they will be prioritized..." (Ortega, 2009, p. 84). This results in a trade-off of attention. Some L2 writers may focus on the content, but not on the language; others may give priority to language, ignoring the content. Therefore, Ellis and Yuan (2004) suggested that L2 writers should be given a pre-task planning opportunity because it allows them to focus their attentional resources on ideas and organization in planning, ultimately resulting in better language in the subsequent translation process.

Second, the effects of planning on the quality of text may differ in L1 and L2 writing. Previously, in L1 writing research, Kellogg (1988) found that planning improved the L1 text quality in idea development and general effectiveness of communication, but it did not improve fluency. In L2 writing research, Ellis and Yuan (2004) examined how planning affects the quality of text written by Chinese EFL university students in quantity, fluency, complexity and accuracy. Their results showed that planning enhanced the L2 text in quantity, fluency and complexity of language. However, linguistic accuracy was not found to be affected by planning.

The effect of planning on fluency was confirmed by Johnson, Mercado and Acevedo (2012). However, the results from a more recent study contradicted this finding; Ong and Zhang (2010, 2013) found that planning may actually impede fluency as well as the lexical complexity of L2 texts.

Previously, Ellis and Yuan maintained that L2 writers focused their attentional resources on content and organization of a text in the planning

stage, which eventually makes them able to concentrate on the manipulation of language in the actual writing stage. However, according to Ong and Zhang, L2 writers continued to give priority to content and organization even when writing the body of text. Since the writers still focused their attentional resources on content and organization, it did not lead them to produce language more fluently in actual writing.

A further unique characteristic of L2 planning is that most L2 writers perform planning in their L1. Research has consistently revealed that L2 writers use their first language while generating ideas and organizing the content (Beare & Bourdages, 2007; Krapels, 1990; Wang, 2003; Wang & Wen, 2002; Woodall, 2002). They are often reported to use their L1 even when they are asked not to do so (Cohen & Brooks-Carson, 2001). Jones and Tetroe (1987) found that lower-level L2 writers benefited from the use of their L1 in planning in that they produced more details and developed more abstract thoughts. In addition, Wolfersberger (2003) claimed that writing in L1 how ideas would be organized in the actual text is a compensating strategy for L2 writers. According to him, a compensating strategy is one that “breaks the writing task down to allow the L2 writer to focus on smaller chunks of the task at one time and thus reduce the cognitive load” (p. 9). He maintained that this strategy might be beneficial for L2 writers whose language proficiency is not strong enough to manage generating ideas in L2 in the planning stage. Also, for planning as a writing strategy, L2 writers usually transfer their L1 planning strategies to their L2 writing (Matsumoto, 1995).

Effects of L2 Linguistic Knowledge on L2 Writing

Obviously, when L2 writers are engaged in the actual L2 linguistic encoding (translating) in the writing process, their linguistic knowledge such as grammatical and vocabulary knowledge becomes of paramount importance. For example, L2 grammatical knowledge has been shown to be significantly correlated with L2 writing in comparative studies which investigated the predictive power of various factors (Sasaki & Hirose, 1996;

Schoonen et al., 2003; Schoonen et al., 2011). In an earlier study, Sasaki and Hirose (1996) reported that L2 proficiency explained 32.6% of the total variance in Japanese college students' English writing. Later, Schoonen et al. (2003) identified the contributions that different types of linguistic knowledge make to L2 writing. They set up five variables (vocabulary knowledge, grammatical knowledge, spelling knowledge, word retrieval speed, and sentence building) that comprise linguistic knowledge and analyzed the data from 281 Dutch eighth grade students learning English. It was found that the correlation between grammatical knowledge and L2 writing was very high (.84), and its regression coefficient in the model, which considered the contributions from the other predictor factors, was still significant (.27, $p < .05$). The important role of grammatical knowledge was further confirmed in Schoonen et al. (2011). In this longitudinal study that measured the same sets of variables over three consecutive years, grammatical knowledge was shown to be a significant predictor of L2 writing in Year 1 along with other metacognitive knowledge, spelling knowledge and typing fluency. Moreover, L2 writers' performance measured in Year 2 and 3 was significantly predicted by grammatical knowledge and lexical retrieval speed in addition to the contribution of students' abilities measured in Year 1. This indicates that the relative contribution which grammatical knowledge made to L2 writing significantly increased from Year 1 to Year 2-3. The findings show that grammatical knowledge is a strong predictor for L2 writing.

The importance of vocabulary knowledge in L2 writing appears to be self-evident for many in that one's ideas need to be translated into a written form via vocabulary. The relative contribution of vocabulary knowledge to L2 writing has been investigated. For example, Schoonen et al. (2003) used multiple-choice items in order to measure eighth grade Dutch students' English vocabulary knowledge. An SEM analysis showed that the correlation between the two latent variables of vocabulary knowledge and L2 writing was .63, indicating a relatively strong relationship. However, when the contributions made by other variables such as metacognitive knowledge,

grammatical knowledge, and spelling knowledge were considered together, the effect of vocabulary knowledge failed to make a significant contribution. Instead, orthographic knowledge turned out to be a significant predictor. In a later longitudinal study (Schoonen et al., 2011), a different dimension of lexical knowledge was shown to make a significant impact on L2 writing. The significant predictors for L2 writing were grammatical knowledge, metacognitive knowledge, spelling knowledge, and typing fluency in Year 1, but not vocabulary knowledge. This is consistent with the results from Schoonen et al. (2003) in that the role of vocabulary knowledge was mediated by spelling knowledge. The analysis of data collected in Year 2 and 3 indicated that the lexical retrieval speed made a significant contribution to L2 writing independently, apart from all significant predictors in Year 1. Because the lexical retrieval speed was measured with easy words and indicated by reaction time, this factor addresses the processing dimension rather than vocabulary knowledge.

Another variable that has drawn much attention in second language acquisition (SLA) is processing efficiency of linguistic knowledge. With a limited working memory capacity, it is reasonable to postulate that L2 writers with better processing speed can enjoy more cognitive resources in affording their attention to other important aspects of writing. In Schoonen et al.'s (2003) study, a regression analysis with only speed measures (speed of lexical retrieval and sentence building) as predictors found that 69% of the total variance in L2 writing was explained by these speed measures. However, when these speed measures were analyzed together with other variables using SEM, the regression coefficients of these variables indicated no significant effect on L2 writing. That is, even though speed measures alone make a significant contribution to the quality of L2 writing, they lose their explanatory power when considered with the other variables (i.e., vocabulary knowledge, grammatical knowledge, metacognitive knowledge, and orthographic knowledge). However, in a later longitudinal study (Schoonen et al., 2011), a processing-related variable, lexical retrieval speed became a significant predictor for L2 writing in Year 2-3, even though it did not belong

to the group of significant predictors in Year 1. Such a result suggests that processing efficiency may play an independent role at different proficiency levels.

Effects of Individual Differences on L2 Writing

Self-efficacy beliefs, motivation, and strategy uses are widely investigated topics in individual difference studies. Self-efficacy beliefs are individuals' beliefs in their capabilities rather than what they are actually capable of doing, which help determine what students want to do with their knowledge and skill, how much time and effort they will invest in learning, and how much interest they will have in learning (Bandura, 1997). Self-efficacy beliefs are found to energize learners to pursue learning in various academic contexts including writing. Research findings (Bruning & Horn, 2000; Pajares & Johnson, 1996; Pajares & Valiante, 1999; Zimmerman & Bandura, 1994) revealed that students' self-efficacy beliefs regarding their writing ability served as a powerful predictor of writing outcomes. For example, Karaglani (2003) and Pajares and Johnson (1996) reported that self-efficacy for L1 writing skills made a significant independent contribution to the quality of third graders' holistic stories and ninth graders' holistic essays, respectively. In L2 writing, however, not much research has been conducted, except for unpublished research by Chae (2011). She suggested that students' self-efficacy beliefs significantly predicted L2 writing performance of Korean college students at the beginning of the semester, even though they did not last to the end of the semester.

Students' beliefs in what they are able to do inevitably affect motivation. Motivation explains "why people select a particular activity, how long they are willing to persist at it, and what effort they invest in it" (Dörnyei, 2001, as cited in Kormos, 2012, p. 394). Two types of motivation have been traditionally recognized: intrinsic motivation, a drive to do an activity for its own sake, for enjoyment or interest, and extrinsic motivation with which people conduct tasks for external rewards such as grades or recognition from others (Deci & Ryan, 1985). It seems that the interest derived from intrinsic

motivation helps to improve writing performance (Albin, Benton, & Khramtsova, 1996). Yet, Hidi and Anderson (1992) argued that such interest was not sufficient to ensure writing success. Park (2010), who investigated the effects of writing knowledge and writing motivation on writing proficiency of Korean EFL middle school students, also reported a significant, yet mild explanatory power for writing motivation on writing proficiency. Noting that there may be other significant factors that affect writing proficiency, Park (2010) called for a future research design that would include a wider range of factors.

Another widely explored area of motivation is its effect and correlation with strategy use. Common findings reveal that the high motivation of learners significantly correlates with their use of various strategies. That is, highly motivated students use various learning strategies more frequently than less motivated students (MacIntyre & Noels, 1996). Another line of research on strategy use in L2 writing compares strategy use by skilled versus novice L2 writers. The consistent pattern found in these studies is that the more skillful writers tend to attend not only to local elements (e.g., word or sentence level processing) but also to global strategies (e.g., revision based on purpose, purpose and/or organization) in their writing. On the other hand, novice writers tend to be limited to local concerns without using much revision and strategies (Bereiter & Scardamalia, 1987; Leki, 1995; Raimes, 1985). Yet other studies of writing strategies showed that the more L2 writers know about strategies and apply them effectively, the higher their writing proficiency will be (McDonough, 1999). These studies described the different types or frequency of strategy use by learners with different levels of motivation and proficiency. However, as Kormos (2012) pointed out, very few studies in the field of SLA have examined the extent to which motivational and strategic factors explain learning outcomes in L2 writing.

Methodology

Participants

The present study was conducted at a university in Seoul, South Korea where the authors taught College English. Participants were freshmen in five College English Writing classes taught by two researchers of this project. Therefore, the selection of classes from which the participants were recruited was made on a convenience basis. There was a total of 72 participants (47 males and 25 females). Originally, there were 125 students; however, the sample size has been reduced to 72 students because students with any missing data were excluded from the analyses. The participants' average TOEIC score, which was administered as a diagnostic test immediately after entrance to the university, was about 600, which is equivalent to an intermediate level of English according to ACTFL guidelines. The participants' majors were engineering (47%), art (20%), sports science (18%), and natural science (13%).

College English Writing is a required course for freshmen, which is a beginning-level writing course in which the learning goal is to write a well-structured five-paragraph essay. The textbook *Writing Essays* (Zemach & Ghulldu, 2011) was adopted to teach writing using a process approach. The course covered the basic writing processes of prewriting (i.e., choosing a topic, gathering ideas through brainstorming and outline), writing and editing (i.e., reviewing and revising structures and content). It also covered the structure of an essay and a paragraph, and different types of paragraphs such as a descriptive paragraph, opinion paragraph, and comparison/contrast paragraph.

Instruments

In order to find out if and how planning, L2 linguistic knowledge and individual differences make a contribution to L2 writing, each factor was measured as follows.

Planning-related variables

Following the Hayes-Flower Model (1981) for L1 writing, we defined planning as goal setting, idea generation, and organizing. The goal setting was operationalized via students' knowledge of L2 writing such as basic elements and types of paragraphs and essays and their abilities to recognize such knowledge in L2 texts. Idea generation was measured by the number of words the students wrote down either in Korea and/or in English during the brainstorm. The number of propositions (i.e., idea units with a subject and a predicate) was also counted. Lastly, the ability to organize ideas was measured by the form and the content of an outline that the participants produced. A brief description of each measurement tool is provided below.

Knowledge of how to write L2 essays (Writing Knowledge: WK)

The participants were taught the classic five-paragraph essay format (i.e., introduction, body 1, body 2, body 3, and conclusion) in class. A test of 23 questions was developed in order to measure participants' knowledge of how to write English essays. It included nine items on the writing process, seven items on paragraph structure, five items on techniques for supporting main ideas, and two items on types of paragraphs. All items were short answer questions and were dichotomously scored. One point was given for correctly providing answers and 0 points for incorrect or no answers. The reliability of the test as measured by Cronbach's alpha was .928.

Recognition of good writing (RecWK)

Another test was developed to find out how well the participants recognize the best topic sentence or concluding sentence (6 items), supporting sentences (3 items), connectors (11 items), sentence unity (2 items), and grammatical and mechanical errors (5 items). There were 18 multiple-choice questions and nine short answer questions, with a reliability of Cronbach's alpha of .706.

Generation of ideas in brainstorming

Before writing the essay, the participants were given five minutes for brainstorming. They had received a lesson on brainstorming in the second week of the semester from which they learned three different ways to brainstorm: free writing, listing and using a mind map. For this study, the participants were asked to write out their ideas as much as they could and were told that brainstorming would be considered part of their grades. The students were allowed to use either Korean, which is their first language, or English. Their brainstorming notes were scored by the number of content words they wrote in Korean (B-KWord) and/or in English (B-EWord) as well as by the number of propositions. A proposition was counted as one idea unit, which included a subject and a predicate in the notes.

Organization of ideas in outlining

After the brainstorming session, five minutes were allotted for outlining the essay. The participants had learned how to outline an essay and practiced the skill in class. The participants were provided an outlining sheet where they were supposed to take notes for a topic sentence, supporting sentences and sub-supporting sentences for each paragraph in boxes provided. Students' ability to outline was measured in terms of form and content. The number of boxes filled out for each paragraph was counted for the form, and the outlining contents were evaluated according to logic and coherence. The given outlining format was identical to the one with which the students practiced in class. Therefore, most of the students had no difficulty organizing their ideas using this form.

L2 Linguistic knowledge-related variables

In the L2 essay writing, the meanings and ideas developed during planning need to be encoded into L2 linguistic forms. In this investigation, participants' L2 linguistic knowledge was measured by reading, sentence processing speed,

grammar, and receptive and productive vocabulary.

Reading

The reading test consisted of 27 items of multiple-choice or true/false questions on the passage, *The Growth of Cities*, extracted from *Making Connections: A Strategic Approach to Academic Reading* (Intermediate). The participants were asked to answer the questions following each paragraph (six paragraphs in total), the length of which ranged from 76 to 169 words. There were four questions identifying the main idea of the paragraphs, fourteen questions on details, four questions on unity (identifying the sentence that breaks the unity of the paragraph), and five inference questions. One point was given for each correct answer. The test reliability was a Cronbach's alpha of .721.

Sentence processing speed

Sentence processing speed may vary greatly according to structural differences between L1 and L2. Because Korean and English have structurally distinct features (e.g., a word order), we deemed that a measure of sentence processing speed should include not only simple clauses but also three kinds of dependent clauses (noun clauses, adverb clauses, and adjective clauses). Using only high frequency words, we came up with 40 simple clauses and 20 dependent clauses for each type. There were 100 items in total. Half of the 100 sentences were changed in a way that a sentence did not make sense semantically (e.g., *A semester starts in sky). The participants' job was to decide whether the sentence made sense semantically. Each sentence was presented in a PowerPoint presentation screen for five seconds for simple clauses and seven seconds for dependent clauses on average. Longer sentences were given one or two more seconds. The order of presentation was 40 simple clauses, 20 noun clauses, 20 adverb clauses, and 20 adjective clauses. The reliability of sentence processing speed test was Cronbach's alpha of .916.

Grammar

We followed the same format as the TOEFL structure section (paper pencil). Twenty five items in total were tested, with 15 error recognition questions and ten sentence completion questions. The error recognition questions dealt with number agreement (2 items), article (1 item), pronoun insertion (2 items), voice (2 items), grammatical word choice (2 items), and word form (6 items). Ten sentence completion questions asked the participants to complete a blank with a correct expression of adverbs (1 item), comparatives (1 item), noun phrases (2 items), verb phrases (2 items), adjective clauses (1 item), and prepositional phrases (1 item). The reliability of the grammar test was a Cronbach's alpha of .814.

Receptive vocabulary and productive vocabulary

In order to measure the participants' ability in vocabulary, two types of vocabulary tests were administered: a receptive vocabulary test (40 items) and a productive vocabulary test (20 items). The vocabulary items were chosen from the word list for high school students provided by the Korean Ministry of Education. Vocabulary tests were administered while the students were taking the mid-term; however, they were told that the score for this part would not be included in their grade. For the receptive vocabulary test, the participants were asked to recognize English words and write down their meanings in Korean. The productive vocabulary test used 20 high frequency words that were chosen from the same source as the receptive vocabulary test, but this time the students were asked to think out and write down an English word that fits the given sentence most appropriately. The corresponding Korean word was given with the intention of helping participants recall the target word. This type of controlled production vocabulary test was found to be reliable, valid and practical (Laufer & Nation, 1999). A correct answer was given one point, and the values for the correct items were summed. The reliability for the receptive vocabulary test was a Cronbach's alpha of .931 and, for the productive vocabulary test, it was a Cronbach's alpha of .819.

Individual differences-related variables

We included three variables for individual differences: self-efficacy, L2 writing strategies and motivation. These variables were measured in the following manner.

Self-efficacy

To assess participants' writing self-efficacy, the Writing Self-Efficacy Scale (WSES; Pajares, 2007; Pajares & Valiante, 1999) was used. The WSES consists of 10 questions, asking the participants to provide judgments of their confidence in their ability to successfully write a well-organized paragraph with a good topic sentence, supporting sentences and a concluding sentence as well as to write an essay with an introduction, body and conclusion with unity and precision. It also asks the respondents to judge their confidence in using correct grammar and mechanics (e.g., spelling and punctuation). The present study used the 7-point Likert scale from 1 (not at all confident) to 7 (absolutely confident). The reliability for the self-efficacy questionnaire was a Cronbach's alpha of .943.

L2 writing strategies

The participants' perceived writing strategies were assessed with a strategy questionnaire, which was revised from He's (2005) taxonomy of composition strategies. The revised version was translated into the students' L1, Korean. He's questionnaire asked the students how often they used 18 writing strategies in five categories of planning (items 1-3), monitoring/evaluation (items 4-7), revising (items 8-11), retrieving (items 12-14), and compensating (items 15-18). To He's questionnaire, we added four compensating strategy items in order to find more about the kinds of resources the participants use to compensate for gaps in their L2 linguistic knowledge. The participants were asked to check how often they use each strategy when they write in English on a 7-point Likert scale from 1 (not at all) to 7 (almost always). The

reliability of this questionnaire was Cronbach's alpha of .898.

Motivation

A questionnaire on motivation for writing was adapted from the questionnaire on motivation for reading by Kim (2011), who revised it from the questionnaires by Wigfield and Guthrie (1997), Mori (2002) and Takase (2007). The questionnaire was translated into Korean. Twenty seven questions were asked in terms of intrinsic motivation (Items 2, 7, 8, 11, 12, 16 & 19), learning goal-oriented motivation (Items 3, 4, 5, 9, 10, 13, 14 & 15), and utility value (Items 1, 6, 17 & 18). Cronbach's alpha for the reliability of the motivation questionnaire was .656.

Quality of L2 writing texts

Given the prompt, "Do you agree or disagree with the following statement? Only people who earn a lot of money are successful. Use specific reasons and examples to support your answer," the participants were asked to write an argumentative essay in 40 minutes. Their essays were analytically evaluated in terms of content, grammar, vocabulary and mechanics. Five points were allocated for each criterion. The four criteria to assess the participants' essays are described in Table 1.

The three researchers of the current study scored the same essay simultaneously in the same room in order to ensure inter-rater reliability. In cases of disagreement of more than one point in each criterion, the researchers had a discussion and reached an agreement. The inter-rater reliabilities were as follows: Kappa=0.679 for content, .788 for grammar, .767 for vocabulary and .743 for mechanics; any value between .61 and .80 indicates a substantial strength of agreement (Landis & Koch, 1977). The total score of each criterion was used to indicate the participants' L2 essay quality.

TABLE 1
Four Criteria for Scoring the L2 Essay

Criteria	Descriptions
Content	<ul style="list-style-type: none">- relevance to given topic- development of thesis- originality of ideas
Grammar	<ul style="list-style-type: none">- correctness in agreement, tense, number, word order, articles, prepositions, etc.- sentence structures in terms of complexity, diversity and effectiveness
Mechanics	<ul style="list-style-type: none">- spelling, punctuation, capitalization, paragraphing, indentation, essay format
Vocabulary	<ul style="list-style-type: none">- range- word/idiom/usage choice

Procedure

The data were collected over one semester. The motivation survey, the reading test, and the sentence processing speed test were administered on the first day of the semester as the diagnostic tests. The grammar test was given on the second day as part of the diagnostic tests. Receptive and productive vocabulary tests, along with the tests on knowledge on how to write L2 were given during the mid-term exam. The surveys on self-efficacy and writing strategy use were given in the 12th week of the semester. The data on brainstorming, outlining, five-paragraph argumentative essays were collected during the final exam. All the tests were given in the form of a paper-and-pencil format except for the L2 essay test, which was administered on desktop computers during class.

The whole procedure was designed to be naturally incorporated into the writing class. The students were informed of their individual results from all of the tests, and they discussed in small groups what they could do to improve their writing ability. In short, the tests were not conducted only for

the present research study, but the collected information was also used to diagnose students' linguistic and writing ability and to find ways to improve their writing skill.

Results

Relationship of Variables of Planning to L2 Writing

The variables that were used to indicate the planning construct in L2 writing process were the scores on an L2 writing knowledge test (WK), a recognition test on writing knowledge (RecWK), brainstorming-Korean word (B-KWord), brainstorming-English word (B-EWord), brainstorming-ideas (B-Ideas), outline-form (O-Form) and outline-content (O-Content). Means, standard deviations, and intercorrelations of the planning variables are presented along with their correlations with L2 writing in Table 2.

TABLE 2
Planning Variables Means, Standard Deviation, Correlations with L2 Writing and Intercorrelations

	M	SD	L2								
			Writing	1	2	3	4	5	6	7	
1. WK	16.96	5.04	.258*	1							
2. RecWK	17.00	3.6	.346*	.358**	1						
3. B-KWord	25.01	12.62	.102	.063	.177	1					
4. B-EWord	3.94	5.68	.245*	.070	.216	-.025	1				
5. B-Ideas	4.28	2.72	.147	.037	.115	.768**	-.068	1			
6. O-Form	9.78	3.98	.219	-.078	-.106	.109	.134	.148	1		
7. O-Content	8.58	3.97	.258*	-.004	-.137	.119	.086	.234*	.911**	1	

Note. * $p < .05$, ** $p < .01$

The variables that had a significant correlation with L2 writing were WK (.258), RecWK (.346), B-EWord (.245), and O-Content (.258). This means that the participants with better knowledge of how to write English essays (WK) and a higher ability to recognize good English writing (RecWK) wrote better essays. Also, the more students wrote down English words in the brainstorming process, the higher essay score they received. Interestingly enough, the number of Korean words written down in the brainstorming had no significant correlation with L2 writing. Note that the average number of Korean words used in the brainstorming process was 25.01 words while that of English words was 3.94. English words were scarcely used in the brainstorming stage; yet, this had a significant correlation with the quality of L2 writing. A possible interpretation is that when a student used English words in the planning stage, he or she has a higher chance of possessing a higher English proficiency, thus resulting in better writing. Finally, the content of the outline (O-Content) correlated with the L2 writing significantly, meaning that those who came up with good content in the outline stage wrote essays with a higher score.

The patterns of intercorrelations among the planning-related variables were consistent with one's general intuitions about them. The participants with more L2 writing knowledge were better able to recognize such knowledge in L2 texts ($r=.358, p<.01$), and those who produced more Korean words also generated significantly more ideas during the brainstorming stage ($r=.768, p<.01$). Similarly, more ideas during the brainstorming stage were significantly correlated with the quality of contents in the outline ($r=.234, p<.05$). Lastly, the form and content of outline were significantly related to each other ($r=.911, p<.01$).

Even though these correlations reveal valuable information regarding the relationships among the variables, it is highly likely that there are some shared variances among them in explaining L2 writing. In order to evaluate whether all of the planning-related variables were necessary to predict L2 writing, a stepwise multiple regression was conducted. In step 1 of the analysis, RecWK and O-Content were entered into the regression equation

and were significantly related to L2 writing $F(2, 69)=9.421, p<.001$. The multiple correlation coefficient was .463, indicating that approximately 21.4% of the variance of the L2 writing could be accounted for by RecWK and O-Content. The other variables did not enter into the equation in step 2 of the analysis: WK($t(df)=1.216$), $t(B-KWord)=-.037$, $t(B-EWord)=1.302$, $t(B-Ideas)=.280$, $t(O-Form)=-.540, p>.05$ for all. As a result, the regression equation for predicting L2 writing based on the planning variables was like the following.

$$\text{Predicted L2 writing} = .368 \times \text{RecWK} + .267 \times \text{O-Content} + 5.099.$$

This equation means that, among the variables of planning, the combination of the ability to recognize good writing and the content of the outline was the best predictor of the quality of L2 writing.

Relationship of L2 Linguistic Knowledge Variables to L2 Writing

The variables for the L2 linguistic knowledge construct were the scores on the English reading test, the sentence processing speed (SPS) test, the grammar test, the receptive vocabulary test (RecepV) and the productive vocabulary test (ProduV). Means, standard deviations, and intercorrelations of the L2 linguistic knowledge variables are presented along with their correlations with L2 writing in Table 3. The result showed that all of the L2 linguistic knowledge variables were significantly correlated with L2 writing and were inter-correlated among themselves.

To investigate if all of these L2 linguistic knowledge related variables were necessary to explain L2 writing, they were entered into a stepwise multiple regression. The first step of the analysis indicated that Grammar, ProduV and SPS were the best possible combination of the variables for predicting L2 writing: $F(3, 68)=16.896, p<.001$. The multiple regression coefficient was .654, indicating that approximately 42.7% of the variance of L2 writing could be accounted for by Grammar, ProduV, and SPS. Reading

and RecepV were not entered into the equation in step 2 of the analysis: $t(\text{reading})=1.601$, $t(\text{RecepV})=-.132$, $p>.05$ for all. Thus, the regression equation for predicting L2 writing based on the L2 linguistic knowledge variables was like the following.

$$\text{Predicted L2 writing} = .245 \times \text{Grammar} + .235 \times \text{ProduV} + .082 \times \text{SPS} + .669.$$

This indicates that one's knowledge in grammar and productive vocabulary along with one's sentence processing efficiency significantly explains the quality of L2 writing.

TABLE 3
L2 Linguistic knowledge Variables Means, Standard Deviation, Correlations with L2 Writing and Intercorrelations

	<i>M</i>	<i>SD</i>	L2					
			Writing	1	2	3	4	5
1. Reading	21.44	2.95	.461**	1				
2. SPS	83.97	9.69	.521**	.451**	1			
3. Grammar	16.08	4.90	.561**	.406**	.568**	1		
4. RecepV	21.56	7.98	.323**	.360**	.411**	.325**	1	
5. ProduV	9.00	3.56	.438**	.358**	.354**	.312**	.501**	1

Note. * $p<.05$, ** $p<.01$

Relationship of Individual Differences Variables to L2 Writing

The individual differences construct has three sub-constructs of (1) self-efficacy as writer (10 items), (2) writing strategy (22 items) and (3) motivation (19 items). Each sub-construct was first analyzed using a stepwise multiple regression in order to determine the items with a significant effect on L2 writing. Out of 10 self-efficacy items, the participants reporting that they could spell words correctly (SEitem01, $r=.409$, $p<.01$) and wrote grammatically correct sentences (SEitem04, $r=.409$, $p<.01$) performed better in L2 writing.

The strategy items that were entered into the first step of a stepwise multiple regression equation were four items (02, 09, 13 & 22), even though only two of them were shown to have a significant correlation with L2 writing. Those having reported that they checked grammaticality of their sentences (Sitem09, $r=.325$, $p<.01$) and tried to use newly learned words while writing (Sitem13, $r=.294$, $p<.05$) had significantly better scores in L2 writing. For motivation, two items indicating intrinsic motivation were shown to be significantly correlated with L2 writing. Those reporting to be good at writing in English, which supposedly motivates them to write more, performed better in L2 writing (Mitem08, $r=.463$, $p<.01$). Those who had reported that they did not feel like writing even if the topic was interesting (Mitem15, $r=-.397$, $p<.01$) performed significantly poorly in L2 writing. Means, standard deviations, and intercorrelations of the monitoring variables are presented along with their correlations with L2 writing in Table 4.

TABLE 4
Individual Differences Variables Means, Standard Deviation, Correlations with L2 Writing and Intercorrelations

	L2		L2								
	M	SD	Writing	1	2	3	4	5	6	7	8
1. SEitem01	4.72	1.24	.409**	1							
2. SEitem04	4.78	1.37	.409**	.530**	1						
3. Sitem02	4.89	1.13	-.099	.249*	.439**	1					
4. Sitem09	4.14	1.45	.325**	.431**	.586**	.302**	1				
5. Sitem13	3.76	1.36	.294*	.430**	.366**	.166	.196	1			
6. Sitem22	3.78	1.87	-.204	.046	.058	.101	.006	.179	1		
7. Mitem08	1.82	0.78	.463**	.329**	.374**	.169	.450**	.16	-.183	1	
8. Mitem15	2.03	0.89	-.397**	-.301*	-.320**	-.207	-.277*	-.322**	.131	-.382**	1

Note. SEitem01 means item01 in the self-efficacy inventory. Sitem02 means item02 in the strategy inventory. Mitem08 means item08 in the motivation inventory (* $p<.05$, ** $p<.01$).

Another stepwise multiple regression was conducted in order to determine whether all of the eight individual differences variables were necessary to predict L2 writing. In the first analysis, only five items (SEitem01, SEitem04, Sitem02, Mitem08, and Mitem15) were entered into the regression equation and were significantly related to L2 writing $F(5, 66)=10.702, p<.001$. The multiple regression coefficient was .669, indicating that approximately 44.8% of the variances of L2 writing could be explained by five individual differences related variables. The variables not entered into the model in step 2 were Sitem09 ($t=-.004$), Sitem13 ($t=.067$) and Sitem22 ($t=-.125$) $p>.05$. Thus, the regression equation for predicting L2 writing was as follows.

$$\text{Predicted L2 writing} = 1.180 \times \text{Mitem08} + .517 \times \text{SEitem01} - 1.112 \times \text{Sitem02} + .755 \times \text{SEitem04} - .837 \times \text{Mitem15} + 12.590.$$

This equation shows which items in each sub-construct together made a significant contribution to L2 writing and is interpreted as follows. Those who perceived themselves as being more competent in spelling (SE01) and grammar (SE04) performed better in L2 essay writing. The motivation items with a significant predictive power were concerned with intrinsic motivation; those who reported to be good in L2 writing (Mitem08) and responded negatively to avoiding writing English essays even when the topic is interesting (Mitem15) scored better. However, those who had reported to spend much time to understand a prompt in an essay test (Sitem02) scored poorly in L2 writing. We speculate that the significant negative contribution of Sitem02 may be due to the relatively clear and easy essay prompt used in the present study. In other words, if a participant spends longer trying to understand an easy prompt, it is probable that his or her English proficiency is lower, which naturally results in an L2 essay of lower quality.

Independent Contribution of Planning, L2 Linguistic Knowledge and Individual Differences to L2 Writing

The aim of the second research question was to determine whether each of the three constructs (planning, L2 linguistic knowledge, and individual differences) makes an independent contribution to explaining the different levels of performance in L2 writing after the shared variances are controlled for. Examining the contribution of each construct above and beyond the other two constructs can inform us as to whether each construct is needed for pedagogical attention on its own. To investigate this, a series of hierarchical multiple regression analysis was performed. The rationale for using a hierarchical multiple regression analysis is that if the ΔR^2 of the last construct turns out to be significant after the other two constructs are controlled for, the independent contribution of the last construct will be confirmed. Hence, three hierarchical multiple regression analyses were run; two of the three constructs were entered together in step 1 as control variables and the last construct, in step 2. The results of the analyses are presented in Table 5.

The unique variances that each construct explains in L2 writing after controlling for the shared variances were 1.8% ($p=.228$) for planning, 14.1% ($p=.000$) for L2 linguistic knowledge and 16.3% ($p=.000$) for individual differences. Even though the planning variables, O-Cont and RecKW, explained a significant portion of the variances in L2 writing (21.4%) when entered as the only predictors, the construct of planning was found to share its significant variances with the other two constructs (i.e., L2 linguistic knowledge and individual differences) and did not have a significant independent predictive power; the beta coefficients for the predictors in planning were O-Content, $\beta=.143$, $t=1.736$, $p=.088$; and RecKW, $\beta=.046$, $t=.490$, $p=.626$. However, the other two constructs of L2 linguistic knowledge and individual differences explained significant unique variances after the contribution made by the control measures had been taken into account. Beta coefficients for the predictors in L2 linguistic knowledge were SPS, $\beta=.225$, $t=2.350$, $p<.05$; ProduV, $\beta=.143$, $t=1.549$, $p=.127$; and grammar,

$\beta=.209$, $t=1.990$, $p=.051$; and beta coefficients for the predictors in individual differences were SEitem01, $\beta=.069$, $t=.722$, $p=.473$; SEitem04, $\beta=.253$, $t=2.480$, $p<.05$; Sitem02, $\beta=-.311$, $t=-3.617$, $p<.001$; Mitem08, $\beta=.188$, $t=2.110$, $p<.05$; and Mitem15, $\beta=-.118$, $t=-1.320$, $p=.192$.

TABLE 5
Hierarchical Multiple Regression Analyses Predicting L2 Writing

Predictor	Planning		L2 Linguistic knowledge			Individual differences		
	ΔR^2	β	Predictor	ΔR^2	β	Predictor	ΔR^2	β
Step 1	.629**			.506**			.484**	
Control variables								
Step 2	.018			.141**			.163**	
O-Cont		.143	SPS		.225*	SEitem01		.069
RecWK		.046	ProduV		.143	SEitem04		.253*
			Grammar		.209	Sitem02		-.311**
						Mitem08		.188*
						Mitem15		-.118
Total R ²	.646**			.646**			.646**	
n	72			72			72	

Note. Control variables for planning are SPS, produV, grammar, ESitem01, SEitem04, Sitem02, Mitem08, and Mitem15. Control variables for L2 linguistic knowledge are O-Content, application, ESitem01, SEitem04, Sitem02, Mitem08, and Mitem15. Control variables for monitoring are O-Content, application, SPS, produV, and grammar (* $p<.05$, ** $p<.01$).

Initially, we expected that planning, L2 linguistic knowledge, and individual differences would all make an independent contribution to L2 writing. However, planning by itself did not have significant predictive power to explain the quality of L2 writing.

Relationship of Planning, L2 Linguistic Knowledge and Individual Differences to Content, Grammar, Mechanics and Vocabulary of L2 Writing

In this section, we address how planning, L2 linguistic knowledge and individual differences relate to content, grammar, vocabulary, and mechanics of L2 writing. We anticipated that the best linear combinations of the predictor variables would differ depending on the focus of the scoring in L2 writing. To examine this, planning, L2 linguistic knowledge, and individual differences as predictors were entered into a series of stepwise multiple regression equation using the scores for content, grammar, mechanics and vocabulary as outcome variable. Table 6 presents the results.

A predictor that showed a prominent change depending on different criteria was L2 linguistic knowledge. Grammar was found to be the only variable to significantly predict quality of content in L2 writing (20.6%), and productive vocabulary functioned as the sole significant predictor for the vocabulary use in L2 writing (17.8%). In addition, reading, sentence processing speed and productive vocabulary served as significant predictors for the quality of mechanics. Interestingly, the use of vocabulary in L2 writing was least accounted for by L2 linguistic knowledge; the contribution of L2 linguistic knowledge to vocabulary was 17.8% in comparison to 20.6% to content, 54.8% to grammar, and 40.4% to mechanics.

Individual differences also turned out to be flexible in making significant contributions to the content, grammar, mechanics and vocabulary of L2 writing. In particular, individual differences variables (i.e., self-efficacy, strategy use, and motivation) were shown to have stronger explanatory powers for mechanics (41.1%) and vocabulary (44.4%) than content (22.2%) and grammar (26.2%). In addition, the combination of predictors tended to vary in different criteria. It was self-efficacy and strategy items that made significant contributions to content. The items that made significant contributions to grammar concerned self-efficacy and motivation. Lastly, it required the self-efficacy, strategy and motivation items to explain significant

variances in mechanics and vocabulary; note that specific items of a significant contribution varied in different outcome variables.

TABLE 6
Results of Stepwise Multiple Regression Analyses in Four Sub-scoring Areas and the Composite Score

Predictors	Outcome variables (L2 writing)				Composite score
	Content	Grammar	Mechanics	Vocabulary	
Planning variables	RecWK	RecWK	RecWK	RecWK	RecWK
R ²	O-Cont		O-Cont	O-Cont	O-Cont
	.175**	.134*	.180**	.192**	.214**
L2 linguistic knowledge variables	Grammar	SPS	SPS	ProduV	SPS
		ProduV	ProduV		ProduV
R ²		Grammar	Reading		Grammar
	.206*	.548**	.404**	.178**	.404**
Individual differences variables	SEitem04 ⁺	SEitem01 ⁺	SEitem10 ⁺	SEitem01 ⁺	SEitem01 ⁺
	Sitem02 ⁻	Mitem08 ⁻	Sitem12 ⁻	Sitem02 ⁻	SEitem04 ⁺
			Sitem22 ⁻	Mitem08 ⁺	Sitem02 ⁻
			Mitem08 ⁺	Mitem15 ⁻	Mitem08 ⁺
					Mitem15 ⁻
R ²	.222**	.262**	.411**	.444**	.448**
n	72	72	72	72	72

Note. ⁺ indicates a positive relation, and ⁻ indicates a negative relation with each outcome variable (* $p < .05$, ** $p < .01$).

More specifically, those with more confidence in writing grammatical sentences (SEitem04) and reported spending less time to understand an essay test prompt (Sitem02) performed better in L2 writing content. This result for the grammatical aspect was consistent with the findings for the contribution of L2 linguistic knowledge to content. None of the motivation items made a significant contribution to L2 writing content. As far as structural diversity and accuracy (grammar) are concerned, those with more confidence in their spelling competence (SEitem01) and more intrinsic motivation (Mitem08) performed better in overall quality of grammar use. In addition, there was no strategy item that made a significant impact on grammar. For mechanics, those with more confidence in the ability to stay focused on the topic and write about it (SEitem10) were more accurate in the mechanics of their writing. Moreover, those who reported writing whatever comes to mind without analyzing the grammatical elements (Sitem12) and who reported using search engines to check their expressions less (Sitem22) did better in mechanics as well. Lastly, vocabulary use was predicted significantly by four different individual differences items. The students who performed better in vocabulary were those who had more confidence in spelling (SEitem01), those who reported spending less time to understand essay test prompts (Sitem02), those with more intrinsic motivation because of their confidence in overall writing ability in English (Mitem08), and those who responded negatively to avoiding writing English essays even when the topic is interesting (Mitem15).

To summarize, planning contributed to content, grammar, mechanics and vocabulary somewhat evenly (from 13.4% to 21.4%); however, L2 linguistic knowledge and individual differences were shown to have a differential effect on different criteria of the L2 essay. That is, L2 linguistic knowledge had a stronger influence on grammar (54.8%) and mechanics (40.4%) but a weaker influence on content (20.6%) and vocabulary (17.8%). Individual differences had a stronger influence on vocabulary (44.4%) and mechanics (41.1%) but a weaker influence on content (22.2%) and grammar (26.2%).

For planning, we had one additional question to test. Previously, it was

reported that the unique variance explained by planning was not significant in explaining the composite score for L2 writing after L2 linguistic knowledge and individual differences were controlled for. Because we hypothesized that good planning skills would offer more cognitive resources, which in turn lead to a better quality of L2 writing, we looked into whether planning made an independent contribution to any of the four criteria for L2 essays. A series of hierarchical multiple regression analyses were run in order to investigate the role of planning. The results are presented in Table 7.

TABLE 7
Hierarchical Multiple Regression Analyses Predicting Content, Grammar, Mechanics and Vocabulary of L2 Writing

Predictor	Content		Grammar		Mechanics		Vocabulary	
	ΔR^2	β						
Step 1	.352**		.608**		.582**		.500**	
Control variables								
Step 2	.073*		.000n.s		.015n.s		.028n.s	
Planning	P1	.283**	P1	.088	P1	.080	P1	.143
	P2	.051	P2	.010	P2	.130	P2	.148
Total R ²	.425**		.608**		.597**		.528**	
n	72		72		72		72	

Note. Control variables for Content are Grammar, SEitem04, and Sitem02. Control variables for Grammar are SPS, ProduV, Grammar, SEitem01, and Mitem08. Control variables Mitem08 for Mechanics are SPS, ProduV, Reading, SEitem10, Sitem12, Sitem22, and. Control variables for Vocabulary are ProduV, SEitem01, Sitem02, Mitem08, and Mitem15. P1 indicates O-Cont, and P2, RecWK (* $p < .05$, ** $p < .01$).

It was found that planning did make a significant independent contribution to the content of L2 writing above and beyond L2 linguistic knowledge and individual differences. The variance that planning independently explained was 7.3% ($p < .05$) for content, 0% ($p > .05$) for grammar, 1.5% ($p > .05$) for mechanics, and 2.8% ($p > .05$) for vocabulary. In other words, 7.3% of the

total variance in the content of L2 writing cannot be explained by any other variables but planning. Thus, it is concluded that planning is a necessary construct to predict L2 writers' performance, particularly in the content of L2 writing. However, it should be also noted that, since planning independently affected the content only, not the grammar and vocabulary, of L2 essays, planning does not seem to help L2 writers focus more on language while they are writing the body of an essay. This contradicts the role of planning claimed by previous researchers (Ellis & Yuan, 2004; Kellogg, 1996). According to them, planning reduces the demands on working memory resources and thus allows L2 writers to work more on language in actual writing. However, the result of the present study did not support their claim.

Discussion

The study aimed to (1) identify specific variables in the three predictor constructs (planning, L2 linguistic knowledge, and individual differences) that make a significant contribution to L2 writing, (2) investigate whether each construct makes an independent contribution to L2 writing when the common effects of three constructs are controlled for, and (3) determine routes through which each construct makes its path of contribution to L2 writing by looking into the scores for the content, grammar, mechanics, and vocabulary. Identifying more influential variables in each of the planning, L2 linguistic knowledge, and individual differences will help provide evidence-based teaching and learning guidelines.

For the planning variables, the recognition of L2 writing knowledge (RecWK) and the quality of outline in terms of content (O-Cont) were shown to be significant predictors of L2 writing, explaining 21.4% of the total variance in L2 writing. Even though there were four variables with significant correlations with L2 writing – L2 writing knowledge (WK), RecWK, number of English words in brainstorming (B-EWord), and outline contents (O-Cont) (see Table 2), RecWK and O-Cont subsumed the effects of WK and B-EWord. This result suggests the importance of ample opportunity

for examining samples of good writing, recognizing and discussing elements of good essays, and comparing bad essays with good essays. It also calls for writing activities where students can practice effectively putting their ideas in logical order in the outline. These types of activities are expected to promote an improved L2 essay.

However, if planning does not make a significant independent contribution to L2 writing, the argument for the sole emphasis on planning-related activities in an L2 writing program may be void. In fact, this was the case when the role of planning was analyzed over the composite scores of four criteria as an outcome variable. The results showed that planning was significantly correlated only with the content, not with the language of L2 writing. Therefore, even though a writing teacher may firmly believe in planning activities, s/he should not ignore the importance of grammatical and lexical instruction as part of a writing class.

For L2 linguistic knowledge, the variables of reading, sentence processing speed, grammar, receptive vocabulary and productive vocabulary were all significantly correlated with L2 writing. The intercorrelations among them were also significant (see Table 3). When the common effects between these variables were removed, sentence processing speed, grammar and productive vocabulary turned out to explain 42.7% of the variance in L2 writing. These significant L2 linguistic knowledge variables also turned out to have a significant predictive power even when the common effects of planning and individual differences were controlled for. Thus, a higher level of sentence processing speed, grammar and productive vocabulary use becomes critical in order for an L2 writer to obtain a better score on an essay.

An interesting finding on how L2 linguistic knowledge plays a role in L2 writing was obtained when the data were analyzed with the four assessment criteria (content, grammar, mechanics, vocabulary) (see Table 6). Grammar was shown to be the only significant predictor for L2 writing content; 20.6% of the variance in the content was explained by grammar. We speculate that in order for good ideas or content containing sufficiently complex ideas to be properly expressed in an essay, a certain amount of grammatical knowledge

is indispensable. That is, without enough grammatical knowledge, sophisticated ideas and meanings cannot be delivered in L2 writing.

In addition, we should not underestimate the importance of having class activities for productive vocabulary. In vocabulary use for L2 writing, productive vocabulary, not receptive vocabulary, was the only significant predictor. This seemingly obvious finding in fact may have a significant pedagogical implication. It simply indicates that regular activities to promote the use of productive vocabulary, not receptive vocabulary, need to be incorporated in a writing class. In an EFL situation, students tend to memorize a great amount of vocabulary for receptive skills such as reading and listening. Even though it may increase the size of their vocabulary, it does not necessarily guarantee the availability of those words for production. L2 writing teachers should provide productive vocabulary-related activities so that learners can retrieve English words readily for an intended meaning in order to express themselves efficiently in writing.

Overall, the findings on L2 linguistic knowledge suggest that it is inevitable to assign sufficient efforts and time for instruction on L2 linguistic knowledge in any L2 writing programs. Some writing teachers may only emphasize the content of writing (i.e., planning) because they see it as the most important element of writing. However, as we have reported, L2 linguistic knowledge significantly contributes to L2 writing and its content in particular. Therefore, it is safe to say that where there is no L2 linguistic knowledge, there is no content. Therefore, even in a writing class where the generation of creative and original ideas is most encouraged and therefore a teacher spends most of time doing planning-related activities, language practice should not be totally abandoned.

Lastly, individual differences were also found to explain a significant portion of L2 writing (44.8%). All of the sub-constructs, self-efficacy (SE), strategy (S), and motivation (M) were found to make a significant contribution to L2 writing. For self-efficacy, the more confidence an L2 writer had, the higher essay score he or she received. In particular, a higher level of confidence came from the participants' perception of their higher

ability in spelling (SEitem 01) and grammar (SEitem 04). Therefore, spelling practice for high-frequency words may be useful to beginning and intermediate learners. A need for an adequate and necessary amount of grammar instruction in a writing class is once again noted. For strategy, two items from the writing strategy survey were shown to have a significant correlation with L2 writing. Better essays came from those participants who reported that they check grammaticality of their sentences (Sitem09) and try to use newly learned words while writing (Sitem 13). Therefore, promoting the use of these writing strategies seems useful. Finally, significant items from the motivation survey did not attract our special attention because those items were negatively correlated with L2 writing.

Conclusion

We have examined the relationship of planning, L2 linguistic knowledge, and individual differences to L2 writing and the interactions within and between them. As has been discussed, there are some pedagogical implications drawn from the current project. First, the planning stage where students learn how to plan better content is necessary for improvement in L2 writing contents. However, effective L2 writing instruction does not take place unless L2 linguistic knowledge such as grammar, productive vocabulary, and sentence processing efficiency is addressed as an integral component. The findings of our study strongly suggest that swinging from one extreme (only content-centered) to another (only language-centered) instruction is not a desirable direction. Writing teachers should make sure to balance planning with L2 linguistic knowledge in their instruction. Also, individual differences such as self-efficacy, L2 writing strategies and motivation make a significant contribution to L2 writing. Teachers must find ways to foster individual differences in and out of classroom.

One caution for our argument is that the findings do not show causal relationships between the various predictors and L2 writing because it was a comparative study based on correlational analyses. Therefore, caution should

be exercised in interpreting the results of this study. Finally, some limitations of the study should be mentioned. First, the findings of the study are limited to an argumentative essay. The results may not be generalized to different task types (e.g., narrative essays such as short stories and book reports) with different levels of task complexity. Second, it would have been better if the sample size ($n=72$) had been larger for generalization of the results. Third, L1 writing ability, one of the main factors that can affect the quality of L2 writing was not included in the present study. Despite the limitations, the findings of the study are expected to add more information on the factors that are involved in L2 writing and their interplay in more detail and to provide some pedagogical implications.

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The Contributions of Planning, L2 Linguistic Knowledge and Individual Differences...

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