Writing Knowledge and Writing Performance of Undergraduate Students

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The Relationship Between Undergraduate Students' Writing Knowledge and Writing Performance

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Abstract

This paper describes an investigation of the relationship between students' writing knowledge and second language writing performance. Metacognitive and metalinguistic knowledge contribute significantly to writing performance. As a foreign language, 78 undergraduate students took a writing knowledge class and a writing proficiency test. The knowledge process has a strong influence on writing performance. Except for vocabulary knowledge, other aspects and sub-aspects had no significant effect on writing performance. Vocabulary knowledge had a negative impact on writing performance. In other words, while some aspects and sub-aspects of writing knowledge did not significantly influence writing performance, others did. The pedagogical implication is that all aspects of writing knowledge must be explicitly taught in writing instruction in order to improve students' writing quality. However, there must be a priority of aspect as the core of the material to be taught, with the other aspects and sub-aspects serving as complementary materials. This could result in a moderate relationship finding and a low percentage of contribution. Undergraduate English as a Foreign Language students from various institutions and provinces may have varying levels of language proficiency and writing skills.

Keywords: Foreign language learning; L2 writing; undergraduate students; writing knowledge, writing performance

Introduction

A number of studies on the relationship between writing knowledge and writing performance have been conducted. The findings demonstrated the importance of writing knowledge in developing students' writing skills and shaping students' writing performance. Lu (2006) investigated the relationship between process (metacognitive) knowledge and writing performance, for example. She discovered that different degrees of metacognitive knowledge about academic writing influenced the different nature of students' activities during the L2 writing process and positively influenced the quality of their writing by observing the writing process, interviewing the subjects about their metacognitive knowledge, and analyzing their writing. Similarly, Yang & Zhang (2002) investigated the role of metacognitive knowledge in Chinese students' essays. The students were given the task of writing an essay and then complete a questionnaire. The findings indicated a positive relationship between these two variables.

Lu (2006) and Yang & Zhang (2002), among others, assessed the effectiveness of metacognitive knowledge applied in writing strategies on students' writing performance. The subjects were instructed to write an essay followed by a metacognitive reflection. The findings revealed that the students' lack of metacognitive knowledge influenced their low writing scores. Similarly, Gillespie & Graham (2014) discovered that limited knowledge about substantive writing processes was a predictor of their incomplete knowledge of three types of writing, which affected their writing score, by administering the Test of Written Language (TOWL-3) to fifth-grade students and interviewing them about their writing knowledge. Previous research (Gillespie & Graham, 2014; Surat et al., 2014; Yang X.H. & Zhang, 2002) shows that explicit and implicit teaching of process knowledge is critical for improving students' writing performance.

Hyland (2003) divides system knowledge, also known as metalinguistic knowledge, into vocabulary, grammar, and mechanics. Cook & Bassetti (2005), on the other hand, distinguish between meaning-based (morphemes), sound-based (syllables and phonemes), and writing direction. Because Hyland's classification has a broader scope, the current study employs his writing system elements, namely vocabulary, grammar, and mechanics.

The relationship between vocabulary measures and writing performance was investigated by Olinghouse & Leaird (2009) and Olinghouse & Wilson (2013). Olinghouse and Leaird examined second and fourth-grade students' vocabulary measures in terms of diversity, less frequency, mean syllable length, number of polysyllabic words, and narrative writing. Olinghouse and Wilson, on the other hand, studied fifth-grade students' vocabulary in terms of diversity, maturity, elaboration, academic words, content words, and register, as well as three types of writing (story, persuasive, and informative writing). Both studies used text analyses to assess vocabulary knowledge and discovered that implicit vocabulary knowledge was positively related to the quality of students' writing.

Previous research on system knowledge has focused on the relationship between grammar and writing performance. Javidnia & Mahmoodi (2015) assigned a grammar knowledge test pertaining to specific grammatical structures to Iranian intermediate EFL students (i.e., simple present, present continuous, simple past, and past perfect). They were then asked to write a free composition and an e-mail about their vacation. The study discovered a link between grammar knowledge and writing performance. It suggests that the more grammar knowledge students have, the better their writing quality. The study also demonstrated that teaching grammar items can improve EFL students' L2 writing performance. Furthermore, Beers & Nagy (2011) investigated

implicit grammatical complexity knowledge as a predictor of writing performance. Students in the seventh and eighth grades were assigned to write persuasive and narrative essays. The findings revealed that different levels of grammatical complexity were positively related to different types of writing texts, such as words per clause as a predictor of persuasive essays and clauses per T-unit as a predictor of narratives.

Furthermore, one essay was completed after the subjects read a passage related to the writing task, and another essay was completed after they read a non-related passage. The results showed that subjects in the thematically-related condition outperformed subjects in the thematically-unrelated condition on written compositions. Both studies discovered a strong link between content/topic and writing performance.

Previous research in Indonesia on the relationship between writing knowledge and writing performance yielded mixed results. This study looked at the relationship between EFL undergraduate students' syntactic knowledge, analytic skills, paraphrasing skills, and syntactical errors in their compositions. Syntactic knowledge, analytic ability, and paraphrasing ability were not found to be predictors of syntactical errors. System knowledge and writing performance had a negative relationship. Similarly, Lutviana et al. (2014) investigated the relationship between system knowledge and argumentative writing performance in terms of lexical richness (lexical frequency profile). She discovered no significant relationship between advanced vocabulary and overall writing scores in EFL undergraduate students.

In order to know students' knowledge about writing, some previous studies reviewed used an oral test in form of an interview for asking about the process knowledge, (e.g. Saddler & Graham, 2007), the process and genre knowledge (Gillespie & Graham, 2014), and the process, context, and genre knowledge (Xinghua, 2010). Another way was by using a survey of metacognitive reflection (Surat et al., 2014). In relation to the test on system knowledge, the previous studies measured the vocabulary knowledge from the written texts (Lutviana et al., 2014; Olinghouse & Leaird, 2009; Olinghouse & Wilson, 2013) and the grammatical knowledge from written texts, too (Beers & Nagy, 2011). Only Javidnia & Mohammadi (2015) used an essay test for the metalinguistic knowledge pertaining to grammatical structures. Content knowledge is measured by providing familiar/unfamiliar or thematically-related/unrelated passages to be read before assigning students to write an essay.

Knowledge is a concept (Hunt, 2003). Knowledge about writing refers to what students know about the concepts or theories of writing aspects obtained from learning and/or experience. Since it is a concept, it cannot be seen. The student's mastery of knowledge only can be observed from its effects on their performance (Hunt, 2003). One method of measuring the students' knowledge is by using a test (Brown, 2000; Hunt, 2003). In line with other researchers stated that the practitioners are expected to implement performance assessment in enhancing students to be a competent English writer (Meldawati & Hamid, 2023). Therefore, the present study used a test to measure the EFL undergraduates' knowledge of writing. Since there is no existing test on knowledge about writing, I developed the test by reviewing theories of writing and adapting several questions used in the previous studies reviewed. Parts of the test were also adopted from existing tests. The test developed was oriented to meet the principles of an effective test, i.e. practicality, reliability, and validity (Brown, 2007).

Literature review

Writing is more difficult to learn than other language skills. Students must master a wide range of knowledge and abilities acquired through training and schooling in order to write well.

They must also understand the writing purpose, audience, and strategies used during the writing process. Writing in L2 is even more difficult for ESL/EFL students due to their limited knowledge of the target language's topic, rhetoric, and linguistics (Vun & Chu, 2017). Furthermore, if their L1 linguistic system differs from their L2 linguistic system, they will have difficulty expressing themselves appropriately in English (Hyland, 2003). Some elements of writing are involved in academic writing, and students are required to possess knowledge related to the elements of writing in order to develop their academic writing skills.

Writing in a second language is a reflection of an interaction that includes intentional and contextualized communication. It is made up of four parts: L2 writers, L1 readers, L2 texts/documents, and L2 writing context (Silva, 1993). Doers (students) who use writing to express their personal knowledge, attitudes, cultural orientation, language proficiency, and motivation are referred to as L2 writers. In the academic context, the writer's classmates and the teacher/lecturer are the primary audiences. The genre, purposes, modes, discourse structures, syntax, lexis, and conventions are all addressed in the L2 text. The context for L2 writing is a situation that informs the reader about why and how a text is written. It is the environment in which students learn (i.e. a college or a university).

Knowledge about writing

Writing as an activity of producing a written product is done in a recursive manner, structured according to the demands and genre, expresses a purpose, and reflects a specific relationship (Hyland, 2003). In order to create a written product, writers must have both metacognitive (process) and metalinguistic (system) knowledge. Hyland (2003) adds three additional types of knowledge held by L2 writers: content, genre, and context knowledge. Process knowledge is important in activating students' metacognition, which becomes the central element of doing recursive writing tasks. It is also known as metacognitive knowledge, and it is regarded as an essential component of self-regulated writing (Englert et al., 1992). Declarative, procedural, and conditional knowledge are all included (Surat et al., 2014). Declarative knowledge is associated with facts and data. It is "knowledge about" or "knowledge concerning" L2 writing, such as knowledge about good writing and good writers' characteristics. Procedural knowledge is concerned with 'how' to carry out cognitive activities related to strategies used in task planning and writing. Finally, conditional knowledge refers to the 'when' and 'why' of a particular strategy or procedure. These three factors have a significant impact on students' ability to write good essays.

A set of rules is applied to the creation of a formal text that is coherent and unified. Students with system knowledge can write compositions fluently and accurately. It is also known as metalinguistic or language-related knowledge (Andringa et al., 2012). Different authors classify system knowledge differently. Hyland (2003) divides it into three categories: vocabulary (lexis), grammar (syntax), and mechanics (punctuation and capitalization). Furthermore, Bowker (2007) divides it into punctuation and grammar. Cook & Bassetti (2005), on the other hand, distinguish between meaning-based (morphemes), sound-based (syllables and phonemes), and writing direction. Finally, Schoonen (Andringa et al., 2012) associate it with vocabulary, syntax, and orthography (spelling). The current study classifies system knowledge according to Hyland's classification.

Lexical or vocabulary knowledge is defined as knowing words. However, it does not simply refer to knowing the meaning of words, but it relates to lexical units (Bogaards, 2000) covering some aspects. He distinguishes the aspects into six: *form* (written and/or spoken), *meaning*

(semantic), *morphology* (derivation and compounding), *syntax* (rule of agreement), *collocates* (combination of words or phrase), and *discourse* (style, register, and appropriateness related to context). On the other hand, divides them only into three: form, meaning, and use; however, these aspects cover all aspects of vocabulary knowledge from Bogaards. Nation's second aspect includes Bogaards' second and third aspects, whereas Nation's third aspect comprises Bogaards' last three aspects.

Each aspect is broken down into receptive and productive vocabulary knowledge. Receptive or passive vocabulary relates to words someone recognizes when hearing or reading. The words are received by a listener from others or by a reader from texts as input, and then he/she tries to understand the utterances or messages. Then, productive or active vocabulary deals with words someone conveys an idea/opinion to others through speaking or writing. Since vocabulary knowledge has a multi-faceted aspect, a test to measure students' vocabulary knowledge must be appropriate and based on the purpose of measurement and the aspect(s) measured.

Mechanical knowledge is a basic writing skill that also contributes to high writing quality. It refers to punctuation, spelling, and capitalization. It seems that mechanics knowledge is not an important aspect to be learned in writing practice, but it is the same important as vocabulary and grammar knowledge in addition to content knowledge. The following is an example of the mechanical problems of an EFL undergraduate in writing an essay:

> *Jobs that are well paid often require specific knowledge which schools aren't able to give them as colleges or universities have a necessary basis for research in different areas and what is more they frequently have connections with various organizations who pay attention to assiduous students so if you get high grades you are able to obtain a working place even before graduation.*

The students wrote a very long sentence without any punctuation, except at the end of the sentence. She does not have a problem with vocabulary and grammar, but her problem with mechanics makes the message she wrote confusing. It shows that mechanics knowledge is also an important aspect of writing. Therefore, mechanics knowledge is also measured in this study.

One of the criteria for good writing is well-formed sentences. They are not used as an "extension of grammar" in writing, but rather to express ideas that students are willing to convey for specific purposes and contexts ((Hyland, 2003). Researchers investigated students' syntactic knowledge by analyzing the use of clause-specific syntactic complexity (Beers & Nagy, 2011), specific grammatical structures in terms of tenses (Javidnia & Mahmoodi, 2015), error correction and language analytic ability (Roehr, 2007), Grammar Judgement Tests (GJTs), and explanation of ungrammatical sentences (Gutiérrez, 2012). The findings show that syntactic complexity and grammatical structures (tenses) have a positive relationship with writing quality. Furthermore, metalinguistic knowledge about error correction and language analytic ability is strongly related to L2 proficiency. The final study, Gutiérrez' (2012), reveals that implicit and explicit grammar knowledge is significantly related to writing performance. Finally, error analysis is appropriate for assessing students' grammatical/syntactic knowledge.

The third aspect of writing knowledge is content. It refers to the topics or themes on which students are required to write (Hyland, 2003). It is a key point in transforming a paragraph into a coherent idea. Students planning before writing is influenced by their content knowledge. The extent to which students comprehend the topic or theme of the writing assignment influences how they organize and translate ideas into text (Berry, 2001). He goes on to say that during the writing

process, students' awareness of revision is influenced by their familiarity with the topic. When students are familiar with the topic, their awareness of revising the draft grows. As a result, when designing writing instruction, familiar topics must be considered.

Students benefit from familiar topics. They can write better than when writing a text on an unfamiliar topic (Berry, 2001; Esmaeili, 2000; He & Shi, 2012). However, some topics for writing activities in writing instruction, such as earthquakes, left-handedness, the computer revolution, and popular music styles, may be unfamiliar to many students. It is simple for students who have personal knowledge of such topics to organize and write meaningful texts about them (Hyland, 2003). Others who have no experience with such topics find the topics less or less familiar, and they have difficulty planning and writing the tasks. Teachers use a variety of techniques to help students cope with unfamiliar topics, such as brainstorming, asking students to search for and read related articles in a library or on the internet, and working in groups.

The last two aspects of writing knowledge are genre and context. Genre is a classification of texts based on their communicative purpose. It is closely related to three contexts: situational, cultural, and other genre contexts (Devitt, 2004). The context of genre construction can be described as a writer and a reader acting in accordance with the genre set. For example, students may be assigned to write a letter to the editor of a magazine. The students must act as citizens (rather than students) and write a letter to the editor about a current issue. They "must determine their persona, their audience, (and) their purposes" before writing the task (Devitt, 2004). Then, the genre is constructed by the cultural context, which refers to the rhetorical pattern of thought. Whatever writing genre students are assigned, they tend to use the same writing rhetoric they use when writing in their first language (L1).

As Kaplan's (1966) findings in his study of 600 international students' expository paragraphs, language and culture are interrelated. He classifies five divergent patterns of writing based on a family of languages. He, then, describes that the thought patterns of the English language are linear and deductive, Arabic language (Semitic languages) is parallel, Oriental languages are circular or indirect, and Roman and Russian languages are digressive. Other genres' context refers to existing and established classifications of texts and forms in a society (Devitt, 2004). Students are assigned to write a critical review, but instead write a narrative or personal experience essay, which is an example of a genre constructed by another genre. A critical review is an unfamiliar textual type/form for students, whereas narrative and personal experience essays are. As a result, they tend to write the unfamiliar text as if it were the familiar text. This phenomenon demonstrates how the genre learned shapes the new genre learned (Devitt, 2004). In a person's life, the genre is always present. Situation, culture, and other existing genres all influence and are influenced by it. According to Devitt, "context of the situation, the context of culture, and context of genres all influence the actions of writers and readers, and they do so in part through the genre." (2004).

Research method

As the purpose of the study was to examine the relation between variables in a single group of subjects, this study employed a quantitative correlational research design. The correlation was seen from the two variables, i.e. knowledge about writing and writing performance. How much each aspect and sub aspect of knowledge about writing influenced students' writing performance was also scrutinized. The students' knowledge about writing and writing performance were measured by using direct tests. The students were assigned to write an essay, and their compositions were rated by using an analytic scoring rubric. Then, they were asked to do a test on

knowledge about writing, and the results were graded. Both scores were analyzed to see the relation between the overall aspect of knowledge about writing and writing performance, and to examine the influence of knowledge about writing-on-writing performance.

Participants

The present study was conducted in the Indonesian context. It involved EFL undergraduate students in an Indonesian institution. The number of the population was 156 students divided into six parallel classes. Each class comprises 20 – 33 students. Three classes of students were involved in the pilot study, and the other three were involved as the research sample. The sample was selected randomly, and Class IVB, IVC, and IVE became the research sample. The students were assigned to write an essay, and their compositions were rated by using an analytic scoring rubric. Then, they were asked to do a test on knowledge about writing, and the results were graded. Both scores were analyzed to see the relation between the overall aspect of knowledge about writing and writing performance, and to examine the influence of knowledge about writing on writing performance.

Instruments

Test on knowledge is about about writing. The test items were developed by reviewing previous studies on various aspects of knowledge about writing and by referring to concepts of knowledge about writing possessed by L2 writers from Hyland (2003) and Surat et al. (2014). The aspects included process, content, system, and genre knowledge. The development of most items was based on Hill (1998), Brown (2000), Bowker (2007), Oshima and Hogue (2007), Murray (2012), and online materials. In addition to the development of most of the test items, an existing vocabulary knowledge test developed by Read (1993) and TOEFL ITP test on grammar were adopted as parts of the test on knowledge about writing.

Writing Test. It was used to collect data pertaining to students' writing performance. The students were assigned to write an essay in form of a timed-impromptu test. This test had limitation for looking at an authentic sample of real performance, but it was useful for eliciting a sample of writing performance indicating students' writing ability (Brown, 2004). The writing test was developed based on the syllabus and instructional objective of Writing Course III.

Pilot Study

Before collecting the data, a pilot study was carried out to make sure that the instruments used for the present study were valid and reliable. It was begun by trying out the instruments to both students and writing lecturers as raters. For the first day, the students were asked to write an essay in 90 minutes. They were given writing prompt containing the description of the topic, the instruction, and the way of scoring. For the second day, they were assigned to do the test on knowledge about writing in 90 minutes, too.

In order to know the validity and reliability of writing scoring rubric, five writing lecturers were invited to rate seven pieces of compositions based on the writing rubric developed and validated before all of the students' compositions were rated. The raters were writing lecturers who taught Writing III (now Essay Writing) during the study. They were categorized into three experienced and two inexperienced lecturers of writing. Firstly, they were asked to rate one composition selected randomly in one room. The purpose was to make them have the same perception towards the scoring rubric they used to rate. Then, they were given six compositions to rate individually. The next step was to input the students' responses on the test on knowledge about

writing, the students' compositions, and the raters' scores on the sample compositions. After that, all of the data were calculated by using SPPS. If the reliability coefficient was ≥ .70, it was considered high. After the instruments were calculated, the content knowledge items were revised, tested, recalculated, and retested. The final step was to calculate the scores from the students' essays and test on knowledge about writing by using Pearson correlation.

Data collection and Analysis

The research data were collected in two days. On the first day, the students were assigned to write a timed-opinion essay in 90 minutes. The students were given writing prompt to help them understand the topic and instructions clearly. Then, the written compositions were collected. Even though the test on knowledge about writing was discussed earlier in this proposal, in the procedure of gathering data, the test was administered after the students did the writing test. The reason was to avoid the students' writing from the influence of their answers on the test. Therefore, on the second day, the students were asked to do the test on knowledge about writing for about 90 minutes. The test was an objective test – multiple choices comprising 116 items. The students' answer sheets were checked and graded by the researcher. At the same time, the essays were rated by two raters experiencing in teaching L2 writing. Then, both scores from the writing test and test on knowledge about writing were input and analyzed statistically and descriptively.

The two sets of scores were analyzed by using Pearson correlation. The statistical calculation was done by using a computer with SPSS program. For the second question, the data were calculated by using regression analysis. There were three stages of calculation by using regression analysis. Firstly, the data were calculated by using simultaneous test (F-test) to examine the contribution of the overall aspect of knowledge about writing to the writing performance. Secondly, the data were calculated by using partially by using t-test to see the contribution of each aspect and sub aspect to the writing performance. Finally, the data were calculated by using Goodness of fit to examine how much the influence of the overall aspect of knowledge to the writing performance.

Result and discussion

Relation between aspects of knowledge about writing and writing performance

The relationship between writing knowledge and writing performance is positive. Writing knowledge is divided into process, system, content, and genre knowledge, and system knowledge is further divided into vocabulary, grammar, and mechanics knowledge. The overall and subaspect relationships of knowledge to writing performance are examined.

Table 1. The Correlations between Students' Writing Knowledge, Writing Performance and Individual Aspect

Correlations				
		x1	x2	y
x1	Pearson Correlation	1	.443*	.464*
	Sig. (2-tailed)		.018	.013
	N	28	28	28
x2	Pearson Correlation	.443*	1	.554**
	Sig. (2-tailed)	.018		.002
	N	28	28	28
Y	Pearson Correlation	.464*	.554**	1
	Sig. (2-tailed)	.013	.002	
	N	28	28	28
*. Correlation is significant at the 0.05 level (2-tailed).				
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 2. Descriptive Analysis of Students' Writing Knowledge, Writing Performance and Individual Aspect

Factor	*M*	*SD*	*N*
Writing Knowledge	2.79	0.438	100
Writing Performance	2.84	0.553	100
Individual Aspect	3.68	0.412	100

According to the statistical analysis, the relationship is moderate, which means that if students have a high level of writing knowledge, their writing performance is also high, but not excessively so. The relation degree of an individual aspect cannot be seen because the relation is seen from the overall perspective. This finding, however, emphasizes the significance of aspects and subaspects of writing knowledge to write performance. Furthermore, Sukmawan et.al (2021) stated that the main effect of proficiency level on writing performance is significant such that the students who have a higher level of writing proficiency have better performance than the students who have a lower level of writing proficiency.

The current study's findings are consistent with those of previous studies. Despite the fact that this study focused on the overall aspect, whereas previous studies focused on an individual or several aspects of writing knowledge, both findings show a positive correlation between writing knowledge and writing performance (Beers & Nagy, 2011; Gillespie & Graham, 2014; Javidnia & Mahmoodi, 2015; Olinghouse & Wilson, 2013). If Beers and Nagy (2011) show the strong influence of system knowledge (grammar) on writing performance pertaining to a specific genre of texts, Gillespie (Gillespie & Graham, 2014) demonstrate positive relation between process knowledge and genre knowledge in which the writing performance is under controlled. Beers and Nagy (2011)consider teaching the types of genres explicitly while Gillespie & Graham (2014) suggest the involvement of teachers and students in discussing structures of each type of genre during the writing process. In a nutshell, explicitly teaching the aspects and sub-aspects of knowledge about writing is needed to develop students' writing skills.

The teaching of knowledge about writing can be done in two ways. The first way is teaching the aspects of knowledge about writing implicitly or through practice. Mostly the students' activities in the classroom are practices to write by imitating text models or summarizing a text by answering several questions as guidance for making a short paragraph. The second way is teaching the aspects of knowledge about writing explicitly. As done by Esmaeili (2000) when willing to discover the effect of content on writing performance, students were assigned to read two reading passages before writing two essays. Firstly, they read a thematically-related passage, and then wrote an essay based on the text. Secondly, they read a thematically unrelated passage and wrote an essay unrelated to the text. These activities showed that reading texts related to topics makes the students easy to write an essay and enables them to improve their writing performance pertaining to the content of an essay. These activities build students' awareness about the importance of knowing the topic through reading before writing the task.

Some researchers have looked into the effectiveness of both implicit and explicit methods of teaching L2 knowledge, including L2 writing. The findings indicate that either implicit or explicit instruction on grammar knowledge is effective for use in the classroom (Andringa et al., 2011; Soleimani et al., 2015). Similarly, both implicit and explicit vocabulary instruction through reading is effective for vocabulary development (Khamesipour, 2015). In contrast to previous research, Nazari (Nazari, 2013) discovered that students who learn the Present Perfect Tense explicitly outperform those who learn it implicitly on grammar and writing tests. It demonstrates that explicit instruction in grammar knowledge is more effective than implicit instruction. Hyland (2003) also emphasizes explicit writing instruction on knowledge aspects.

According to the findings of this study, aspects of writing knowledge must be explicitly taught. The current study tested four aspects of writing knowledge, and all of them must be included in writing instruction. However, the importance of teaching each aspect varies. It is determined by the writing instruction's orientation. Furthermore, the priority of teaching can be determined based on the findings of data analysis pertaining to the contribution of each aspect to writing performance.

Contribution degree of aspects and sub-aspects of knowledge about writing to the writing performance

Concerning the second question, the overall aspect of writing knowledge makes a significant contribution to writing performance. According to the statistical analysis, none of the aspects or subaspects contribute equally to writing performance. Only process knowledge has a significant impact on writing performance. Because of its importance, it is the best predictor of writing performance. This finding is consistent with the literature, which states that process knowledge is the most important aspect of performing writing tasks (Hyland, 2003). Other aspects and subaspects have little influence, but they do contribute to writing performance. Partially, the system, content, and genre have no effect on writing performance, but they have a significant impact on it.

In relation to the priority of teaching the aspects and sub-aspects of knowledge about writing, the process knowledge becomes the orientation of the writing instruction. As the process knowledge becomes the core element of teaching knowledge about writing, the other aspects and sub-aspects are taught as complementary elements. They function to help students enhance their writing skills. Therefore, these aspects and sub-aspects are also included in the writing instruction to support writing development (Hyland, 2003).

In the present study, partial vocabulary knowledge negatively contributes to writing performance. It is contradictory to the findings of the previous studies that vocabulary knowledge is the predictor of writing performance (Roche & Harrington, 2013). It might be caused by the type of test which is not usual for students. In Roche and Harrington's study, the test on vocabulary knowledge is in form of YES/NO questions, so it is easy for the students to do the test. The test on vocabulary knowledge used in the present study is a Word Associates test in which the students have to choose four out of eight choices associated with the main word. This kind of test is new for the students, and they are not accustomed to doing such kind of test. They tend to choose only one correct word as the answer. In addition, many students did not do the test seriously, so they choose the answers to the questions without thinking deeply.

With regard to the contribution degree, the overall knowledge about writing influences 33% of the quality of writing. The other 67% are affected by other factors not included in the present study. Based on the literature, there are some other elements influencing the students' writing products, like motivation, interests, needs, limitations, and opportunities (Scarcella & Oxford, 1992). Another factor that influences writing performance is L2 proficiency (Cumming, 1986) as she found in her study that it is an additional factor in increasing writing performance. Therefore, for further study, these factors can be considered as the predictor variables of writing performance.

Conclusion

The positive relationship between writing knowledge and writing performance suggests that the overall aspect of writing knowledge is important in writing development, and students as writers are expected to have the knowledge. The pedagogical implication of this study is that aspects of writing knowledge must be explicitly taught during writing instruction in order to improve writing quality, particularly for students with low L2 proficiency. However, depending on the orientation of the writing instruction, the emphasis on teaching each aspect varies.

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