

ORIGINAL ARTICLE

Effects of Lexical Competence on the Reading and Writing Ability of Grade 11 Science Students at Azezo High School, Gondar

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Abstract

The study investigated effects of lexical competence on students' reading and writing ability through ex post facto research design. From eight sections, two randomly selected classes of 119 students were involved in the study. Lexical competence was measured through testing the size, depth and productive dimensions of vocabulary knowledge using VLT, WAT and vocabprofiler instruments respectively. Reading and writing abilities were measured using TOEFL, and above-average and below-average reading /writing ability groups were created based on sample means. Group difference on vocabulary scores was tested using MANOVA. The findings showed that above-average readers scored significantly higher than below average readers on the size and depth dimensions, depth accounting for much of the variance. Above-average writers also scored significantly higher than below average writers, much of the difference being accounted for by the productive dimension. The findings suggest that learners' reading and writing performance difference is largely attributed to the variance of their lexical competence.

Keywords: *Lexical competence, Depth of vocabulary knowledge, size of vocabulary knowledge, productive vocabulary knowledge, reading /writing ability*

Introduction

The aim of this study was to examine effects of lexical competence on EFL learners' reading and writing proficiency. Learning a language in general, and learning to read and write in particular is directly related to the learning of lexis or vocabulary of the language. In this study, pairs of terms such as lexis /vocabulary, lexical knowledge /vocabulary knowledge (VK here after) and lexical acquisition /vocabulary acquisition are used virtually interchangeably to refer to the knowledge of individual words (Larsen-Freeman & DeCarrico, 2010).

As to Barcroft et al. (2011), lexis, which is an ancient Greek term meaning word, refers to all the words in a language or the entire vocabulary of a language. Dictionaries also define lexis as all the words in a language, and used as a synonym for vocabulary (Longman Dictionary of Contemporary English, 2009; Online Merriam-Webster Dictionary, 2020). However, the term lexical competence is the most preferred expression in the literature in order to capture the wide range of VK constructs that are appropriate in receptive and productive language use situations.

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Despite having EFL status, English in Ethiopia plays a tremendous role in the socio-economic and political aspects of the country like ESL does in many other countries around the world. In Ethiopia, English language is offered as a course beginning from grade one to higher education institutions, and it also serves as a medium of instruction starting from grade nine to tertiary education. What this means is that students who begin learning English at grade one are expected to have acquired the level of proficiency that is adequate to study school subjects in English from grade nine upwards to higher education. English also serves as a working language, at least in written form, in governmental and nongovernmental organizations including hospitals, banks, insurance corporations, telecommunication, and airlines (Abebe, 1997). It is stated that English also serves as the language of some state-owned and private broadcast corporations and newspaper publications such as Ethiopian Television and Radio, the Ethiopian Herald, Reporter, Capital and Fortune newspapers, etc., in tandem with the official language, Amharic. More importantly, English is the language of science, technology, research and publication of academic journals.

In spite of the vital role of English for students' academic success in Ethiopian high schools, complaints about students' poor reading and writing ability having a direct impact on their academic achievements are ubiquitous from almost all walks of life. Teachers, parents, employers and other stakeholders frequently lamented about the poor language performance of EFL learners in general, and pre-university students in particular, where it is said to be terribly below the required level. Although learners' poor English ability is exhibited on the four skills in general, it seems more noticeable in the written skills (reading and writing) that the target learners are commonly engaged in as their everyday academic exercise.

EFL learners' performance on the written skills of English assumed to vary with respect to their level of lexical competence that is measured in terms of three dimensions of VK: size of vocabulary knowledge (SVK), depth of vocabulary knowledge (DVK) and productive vocabulary knowledge (PVK), i.e., the number and type of words EFL learners know the written form. Measure of SVK indicates how many English words are known by the learner, whereas DVK reveals how well these words are known (Barrow et al., 1999). Ethiopian pre-university students', to whom English is a foreign language, low level of proficiency in the written skills of English, i.e., poor reading/writing performances, may also correspond to their low level of lexical competence. Having been learning EFL for the last ten years or so, students' language proficiency in general and their reading and writing ability in particular has remained below the expected level. With relatively recent research history worldwide, to the researchers' knowledge, studies on the relationship between learners' lexical competence and their reading /writing proficiency are rarely available in Ethiopia.

At international level, however, the effect of lexical knowledge on reading performance has particularly been well researched compared to writing. Scholars have shown that lexical knowledge has both direct and indirect effects on reading / writing performances. For example, Anderson and Freebody (1981), who maintained the direct causal relation, reported that learners with knowledge of most of the words in the reading texts scored better on the reading comprehension tests, and learners knowing only small proportion of words showed poor reading comprehension. The indirect effect is also exhibited in such a way that lexical knowledge is a direct indicator of learners' conceptual knowledge and verbal aptitude that in turn have direct effects on reading performance. It was reported that the vocabulary subset of IQ tests was the greatest indicator of verbal aptitude, and verbal aptitude in turn correlated strongly with reading comprehension (Sattler, 2001).

However, there is also a converse argument that extensive reading can promote students' lexical knowledge (Nation, 2001; Stahl, 1990). Inferencing, an important subskill

of reading, can be helpful in learning some new words from reading (Cain & Oakhill, 2011). However, studies reported that the possibility of learning new words from context is practically difficult before learners' lexical knowledge is large enough to provide them with the meaning of at least 95% of the running words in the text, also called lexical coverage (Horst et al., 1998; Na & Nation, 1985). As to Nation (2006), this is also known as meaning focused input whereby reading materials are designed in relation to the learners' level of language proficiency as in the case of graded readers.

The lexical coverage model of reading comprehension claims that learners with knowledge of 95% words of reading materials of which the proportion of unknown and known words is 1 to 20 are able to infer the meaning of novel or unknown words from context. The lexical coverage theory of reading or meaning focused input has also a direct bearing on Krashen's comprehensible input (i+1) hypothesis of language learning (Krashen, 1985). That is, i (input) represents 95% words that should be known to the reader, and 1 could mean the remaining 5% new words supposed to be learned from context. Nation (2006) made similar assertion when he quoted "Krashen (1985) would call this I+1" (p.2). Although Krashen did not quantify the amount of neither i nor +1 in the comprehensible input hypothesis, studies on the relationship between lexical coverage and reading comprehension suggested that 95% lexical coverage seems to be the minimum requirement (98% being the optimum) for most learners to gain acceptable reading comprehension (score of $\geq 50\%$) on standardized reading comprehension tests. Reading texts with below 95% lexical coverage were, however, found to be incomprehensible to the majority of the readers (Laufer & Ravenhorst-Kalovski, 2010). The lexical coverage threshold for acceptable reading comprehension apparently ranges from 95-98%, yet a key question left unanswered is that which words of the English vocabulary stock that EFL learners need to learn to reach that minimum threshold of lexical coverage. Multiple research results somehow inconsistently revealed, according to vocabulary frequency lists, knowledge of the first 4000-5000-word families are adequate to reach 95% lexical coverage for acceptable reading comprehension (Schmitt & Schmitt, 2014; Laufer & Ravenhorst-Kalovski, 2010).

On the other hand, studies on the relationship between lexical knowledge and writing performance are scant. Despite the same cognitive processes shared between the reading and writing processes, the latter is known to be more complex and demanding skill influenced by several other variables apart from lexical knowledge. For example, grammar is arguably considered to be more essential for writing performance than for reading (Nosratinia & Roustayi, 2016), but vocabulary is simply crucial to both without which any decoding and encoding processes are impossible. Scholars also claim that despite lack of a common model about what makes a composition is less or more communicative, the general consent is that the lexical property is a significant indicator of essay quality.

Researches also show that compositions written by students with rich vocabulary knowledge reflect some typical lexical features that tap into the quality of compositions. Lexical diversity (type /token ratio) is one of the major indicators about the quality of compositions produced by student writers (Johansson, 2008). Students with rich lexical knowledge can produce lengthy and quality essays through employing more diversified words than just repeating limited range of words, whereas students with poor lexical knowledge produce short texts, usually shorter than the minimum requirement, with more repetitions of the same lexical items. Wang (2014) states that lexical ability is an indispensable feature in the complex process of writing. Of course, writing is apparently the most difficult skill to develop as it involves both the higher and lower order cognitive processes ranging from generating ideas, organizing and translating them into readable text to eventually editing and proofreading the final product. However, Douglas (2013) argues that most of the disap-

pointments about the poor quality of students' writing are attributed to the meager knowledge of words. It was also reported that with holistic assessment of essays, raters' judgment of essay quality was found to heavily depend on the lexical richness of the essays (Astika, 1993). That means, effective vocabulary use has a positive impact on the quality of the text and the general language proficiency of the learner (Morris & Cobb, 2004; Lee, 2003).

From the researcher's experience, students often had to report that shortage of VK was the major obstacle in their effort of understanding reading materials sufficiently, and expressing their thoughts in writing properly and effectively. Some scholars also suggest a lexical threshold below which learners do not seem to perform adequately in reading and writing tasks (Nation, 2001; Schmitt, 2000; Laufer, 1998). In the Ethiopian Grade 11 context, textbook writers also stated a vocabulary threshold of 2000 words as a minimum learning competence (MLC) although it seems inadequate compared to a wide range of situations students are expected to perform with the language receptively and productively. In addition, an instance of negligence of vocabulary teaching, which Meara (1980) called it a Cinderella / auxiliary skill, was apparent because students were left to take care of the choice and learning of words according to their interest and field of study as the MLC below reads:

[Students] perform with and understand a total number of 2,000 words in different contexts, such as education, traditional and modern medicines, HIV and AIDS, tourism, arts and literature, climate change, disability awareness, poverty and development, science and technology. Students make a note of useful vocabulary for themselves related to their subjects and their interests (Teacher Guide for Grade 11, p. 145).

Henceforth, it is hypothesized that EFL learners' scores on the lexical competence tests significantly vary with respect to differences in their reading / writing performances.

Research Questions

1. Is there a significant difference between above-average and below-average reading ability groups with respect to the DVK and SVK measures of lexical competence?
2. Is there a significant difference between above-average and below-average writing ability groups with respect to the SVK, DVK and PVK measures of lexical competence?

The study was delimited to examine the effect of lexical competence which is the major contributing factor on the reading /writing ability of grade eleven natural science students. Lexical competence is so complex involving several constructs of VK. So, it was operationally defined and delimited to the kind of lexical knowledge that is appropriate for academic reading and writing performances. Because it is difficult to find one or two research tools capable of eliciting data about every aspect of lexical competence simultaneously, any attempt of measuring lexical competence is always focused on the VK constructs relevant to the type of purpose the candidate is expected to use the language. Hence, measuring the conceptual and associational knowledge of words is believed to be sufficient for the purpose of academic reading comprehension. So, 30 sample words from each of the 2000, 3000, 5000 frequency level and Academic Word List (AWL) were tested to estimate the test-takers' conceptual knowledge of words (SVK), and 40 adjectives were tested to elicit knowledge of word associations (DVK).

However, VK in relation to the writing purpose requires, apart from the size and depth dimensions, evidence on the candidates' productive vocabulary knowledge (knowledge of orthography) which is simply crucial because any word that is known receptively is not

assumed to be known productively. As a result, the candidates' productive vocabulary knowledge was elicited in terms of the number of word family (head words) each writer was able to produce on a free writing task. This was extracted from the subjects' academic essay using Cobb's (2000) web-based text analyzer software called vocabprofiler.

The researcher was also well aware of the multiple variables interfering with learners' reading and writing performances, some of which include knowledge of grammar, knowledge of the world, cognitive characteristics, attitude, motivation, etc. Although it is unlikely to measure or control every one of these variables in reality, differences are assumed to cancel each other due to randomization of cases. The fact that participants come from the same level of education, field of study and relatively same cultural and socio-economic family background, they are not assumed to differ significantly with respect to at least the extrinsic factors of learning to read and write in English. Again, with regard to the levels and genres of reading and writing tasks, only the academic reading ability (reading to learn), and argumentative essay writing ability (writing to persuade) performances were focused.

Local studies on the relationship between lexical knowledge, and reading and writing performances are rare to-date. Perhaps, a related study available only recently was Endalamaw's (2018). The study was aimed at exploring the predictive power of vocabulary knowledge, syntactic, and metacognitive awareness reading strategies on grade eleven students' reading comprehension. The findings showed that scores of vocabulary knowledge and syntactic awareness were positively and strongly correlated to reading comprehension, the former producing significant prediction on reading performance. Abiy (2013) also investigated the relationship of five different variables involving English proficiency, L1 writing ability, English reading ability, grammar and vocabulary to the writing performance of grade eleven students. The finding showed that only three of the predictors namely English proficiency, reading ability and L1 writing ability significantly predicted the participants' writing performance in English.

Internationally, studies designed to detect the explanatory power of lexical knowledge on the reading and writing proficiency have been common mostly in applied linguistics. Especially, the relationship between vocabulary size and reading comprehension is the most researched area with the results generally demonstrating a strong positive correlation ranging from 0.5 to 0.85. Studies also showed that vocabulary size alone had the potential to predict about 70% of the variance to score average or above average in reading comprehension tests (Henriksen et al., 2004; Qian, 2002; Laufer, 1997). Similarly, Stæhr (2008) reported that 72%, 39% and 52% of the variances in the reading, listening and writing scores respectively were explained by the participants' vocabulary size.

The Research Design

Underpinned in the post positivist philosophy, the study was conducted in a quantitative design. All data were quantitative measures (scores) generated through tests of reading, writing and lexical competence. Presuming that causal relationships exist between students' lexical competence, and their reading / writing proficiency, the researcher opted for causal-comparative also called *ex post facto* strategy of inquiry which is commonly applied in educational and social science studies. In this study, *Ex post facto* design is applied in order to examine whether differences on students' reading /writing ability could be attributed to a significant difference of lexical competence. Comparison was made if students who scored above-average, and below-average on the reading /writing proficiency tests could also significantly differ on measures of SVK, DVK and PVK, collectively revealing the test takers' level of lexical competence.

Sample Size and Sampling Technique

Ex post facto study design attempts to find the cause or explanation for existing differences between or among groups that have already been formed by the presence or absence of the effect also called dependent variable. It compares two or more groups of which one group has certain measurable characteristic (predictor variable) but other groups lack that characteristic; or each group has the characteristic in point but in a different amount, size or level. Hence, from eight sections of natural science students at Azezo high school, which was selected only for its proximity to the researcher's residence, two sections (existing groups) were randomly selected. As there were about 60 students in each section, the total sample size became 119. Then, the samples were classified into above-average and below-average reading / writing ability groups using the sample means of the reading /writing test scores respectively.

Instruments of Data Collection

Tests were data generating instruments for the study. Generally, four different tests were administered involving one reading test, one writing test and two vocabulary tests of different design and purpose. The type and purpose of each test is discussed as follows.

Vocabulary Levels Test (VLT)

VLT is designed to measure the participants' written receptive vocabulary knowledge, i.e., the basic conceptual meaning of words across three frequency levels and Academic Word List. It is a discrete test of vocabulary knowledge and claimed to be the nearest tool we have to a standardized test of EFL learners' vocabulary knowledge (Meara, 1996). First developed and revised by Nation (1990), VLT was also modified and validated by Schmitt et al. (2001). This test measures students' SVK at 2000, 3000, 5000, 10000 frequency levels and Academic Word List of 570 words (AWL570). With some adaptations, Schmitt et al.'s VLT was used in this study. The 10000-frequency level was canceled out as it is beyond the scope of the study population. Hence, the 2000, 3000, 5000 frequency levels and AWL were tested giving out a total of 120 sample words to be tested, with 30 words taken from each. Each correct response was awarded one point so that the maximum possible score was 120 points. The total score is assumed to elicit the test taker's SVK from a total of 3570 words that are highly useful for academic reading. The test is presented in a matching format, and test takers are required to put (□) in front of each definition under the right target word that stands for the definition as shown in the example.

	game	island	mouth	movie	song	yard
1. land with water all around it		√				
2. part of your body used for eating and talking			√			
3. piece of music					√	

The Word Associates Test (WAT)

The WAT, which was developed and revised by Read (1998), is known to be a measure of EFL learners' depth of vocabulary knowledge (DVK). It tests the strength of vocabulary knowledge, i.e., how well words are known by the test taker. In addition to the core meaning of a word that is measured with VLT, understanding the different semantic associations of a word including synonymy, polysemy and collocation is also vital so that a reader can recognize which sense of the word is a writer wanted to convey. Therefore, there should be a test informing the depth aspect of word knowledge. Of the many vocabulary test designs to measure DVK, WAT has been the most commonly preferred tool by researchers (Qian & Schedl, 2004; Qian, 2002). The test consisted of 40 adjectives, and each adjective was presented as a stimulus followed by eight plausible associates of which the first four are for semantic association (synonymy/polysemy), and the next four for syntactic association (collocation). Test takers are required to produce four correct associations to each target adjective by choosing at least one and at most three associates from either side of the category as shown below. e.g., *Sudden* (a stimulus / cue word)

<i>beautiful</i>	<i>quick</i>	<i>surprising</i>	<i>thirsty</i>	<i>change</i>	doctor	<i>noise</i>	school
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In the example, *quick* is a synonym for *sudden*, and *surprising* is an aspect of meaning (polysemy), whereas *change* and *noise* are collocations as in a *sudden change*, and *sudden noise*. Each correct association carrying one point, the maximum score for the WAT was 160.

Vocabprofiler (VP) Software

Vocabprofiler is corpus analyzer software useful to elicit the written PVK of learners through the actual use of words in a free writing task. In this study, Cobb's (2000) online version known as Web-VP classic four-way analyzer was employed. The software generates the Lexical Frequency Profile (LFP) of essays by calculating both the number and proportion of words writers used from 1st 1000 (1K), 2nd 1000 (2K) frequency levels and AWL in composing their essays. The tool also generates the number of word family, word type and token per frequency levels as well as for the whole essay. In this study, however, the researcher produced the number of word families for 1K & beyond 1K (B1K) levels which offers a clue about the participants' level of productive vocabulary use vis-à-vis quality of essays. All essays composed up to the minimum requirements of the writing test were typed into word document, and submitted to the software to obtain the PVK.

Test of Reading Ability

The reading proficiency test was the third instrument used in the study, and it was meant to measure the participants' ability of comprehending academic reading materials of equivalent lexical texture and content to the reading passages of their textbook. As there were no standard language tests in the country, the researcher used TOEFL practice test with some adaptations. Initially, the TOEFL reading exam had ten multiple choice items, but two of the items testing vocabulary knowledge were cancelled because the objective of the test was to measure students' in-depth understanding of academic texts. So, seven more comprehension questions were designed by the researcher. Three English teachers with MA degree who were teaching at the target grade level evaluated the difficulty level and construct validity of the test with respect to the reading tasks of the textbook. So, the final reading test had 15 multiple choice items, and marked out of 15 points.

Test of Writing Ability

The participants' writing ability was also assessed using free writing task on a familiar topic. The major purpose of the writing test was to see how well students can communicate their ideas in written English on a topic related to their life experience. Explanation on the writing task as well as on how to write argumentative essay was offered briefly with students' L1 by the researcher and the subject teacher. In the test, students were required to compose an essay of five paragraphs with 200-250 words. They were asked to choose their favorite teaching method between teacher dominated lecture method, and active learning method (a method with students' active participation) that they enjoy very much and learn better. This test took about an hour for some students who were actually capable of writing. Of 119 test takers, only 53 (44.5%) were able to produce essays that were capable of being scored and analyzed. That means, the majority of the participants, 66 (55.5%), were not able to compose the essay; either they did not attempt to write at all or their attempt elicited no evidence for writing ability in English. So, it was not possible to generate data on the writing performance, and PVK for the whole sample size. The print versions of 53 essays were scored out of 10 points by two raters using holistic scoring criteria, and the inter-rater reliability was found to be 0.74.

Methods of Data Analysis

Quantitative analysis method (descriptive & inferential statistics) was applied using SPSS, version 20. The reading /writing test scores, the interval data, were transformed to categorical data using the sample mean of each score ($M = 4.6$; $M = 5.1$ respectively) as cutoff points. Therefore, two groups were created for each of the written skills test. That is, participants who scored above average on each test were classified as "above-average" reading /writing ability groups, and participants who scored below average named as "below-average" reading / writing ability groups. Then, one-way multivariate analysis of variance (MANOVA) was employed to test each of the null hypothesis: a) There is no statistically significant difference between above-average and below-average reading ability groups on the linear combination of SVK and DVK measures of lexical competence. b) There is no statistically significant difference between above-average and below-average writing ability groups on the linear combination of SVK, DVK and PVK measures of lexical competence.

Analysis and Interpretation of Results

RQ #1. Is there a significant difference between above-average and below-average reading ability groups with respect to the DVK and SVK measures of lexical competence?

Table 1. Descriptive Statistics of SVK & DVK scores between Reading Ability Groups

Dependent Variables	Reading Ability Groups	M	SD	Min.	Max.	n
SVK	Above-average	62	21	15	105	41
	Below-average	41	15	9	82	51
DVK	Above-average	96	8	75	112	41
	Below-average	75	8	54	91	51

The table displays that the groups differ in sample size as the above-average reading ability group with 41 participants was ten participants smaller than below-average reading ability group of 51 participants. That means, not only the sample students generally performed very low on the reading proficiency test, but also more than half of them (55.4%) scored below the sample mean ($M = 4.6$). The groups also seemed to have performed better on the DVK test than they did on the SVK test, and above-average readers scored higher than below-average readers on each test of lexical competence. One-way MANOVA was conducted to see if these mean differences between groups were significant or not at $\alpha = .05$. Assumptions for MANOVA were thoroughly checked and satisfied.

Table 2. One-way MANOVA between Reading Ability Groups on DVK & SVK Scores

Effect	Value	df	F	p	η^2
Reading Ability Groups	Wilk's $\lambda = .37$	2, 89	75.6	.000	.63

As the MANOVA result showed, there was statistically significant group difference on the linear combination of DVK and SVK test scores, Wilks' $\lambda = .37$, $F(2, 89) = 75.6$, $p = 0.001$, $\eta^2 = .63$, explaining that 63% the difference was attributed to the participants' group membership. Above-average readers scored significantly higher than below-average readers on the combination of SVK and DVK tests of lexical knowledge. Hence, the null hypothesis (H_0) was rejected at 95% confidence. It follows that EFL learners who displayed above-average reading ability on academic texts significantly differ from their corresponding partners in terms of the level of lexical competence. With this significant group difference on the linear combination of DVK and SVK scores, separate ANOVA was conducted, each ANOVA being evaluated at Bonferroni adjusted alpha level ($\alpha = .025$), to examine if groups could also differ significantly on each dimension of lexical competence measure separately.

Table 3. ANOVA between Reading Ability Groups on DVK & SVK Scores

Reading Ability Groups	Dependent Variables	df	F	p	η^2
Above vs. Below-average	DVK	1, 90	147.3	.000	.62
	SVK	1, 90	31.1	.000	.26

The ANOVA tests also revealed statistically significant differences between groups on each dimension of VK. The groups differed significantly on SVK score, $F(1, 90) = 31$, $p = .001$, $\eta^2 = .26$, revealing that about 26% of the difference was accounted for by the participants' group membership. In other words, above-average readers ($M = 62$, $SD = 21$) scored significantly greater than below average readers ($M = 41$, $SD = 15$) on the size dimension of lexical competence. Similarly, there was also significant group difference on the depth dimension, $F(1, 90) = 147$, $p = .001$, $\eta^2 = .62$, exhibiting 62% of the difference was explained by group membership. That is, above-average readers ($M = 96$, $SD = 8$) scored significantly higher than below-average readers ($M = 75$, $SD = 8$) on DVK that also accounted for much of the group variation compared to SVK.

RQ #2. Is there a significant difference between above-average and below-average writing ability groups with respect to the SVK, DVK and PVK measures of lexical competence?

Table 4. Descriptive statistics on PVK, SVK & DVK scores between Writing Groups

Writing Ability Groups		M	SD	Min.	Max.	1K (%)	B1K (%)	n
PVK	Above-average	79	17	48	112	92.1	7.9	21
	Below-average	51	13	31	73	92.6	7.4	23
SVK	Above-average	72	16	45	105			21
	Below-average	48	14	28	84			23
DVK	Above-average	95	17	61	128			21
	Below-average	81	13	57	98			23

- 1K= 1st 1000 high frequency words
- B1K= Beyond 1st 1000 high frequency words

The writing ability groups were roughly equal in sample size, and generally met the minimum sample size requirement (>20) for MANOVA. Above-average writers tended to have scored higher than below-average writers on all dimensions of lexical competence tests. However, with regard to PVK, more than 90% of the words used in the essays of both writing ability groups was drawn from the 1st 1000 most frequent vocabulary band. This shows that the PVK of the sample population was generally limited to the basic high frequency vocabulary of the language despite differences in the quality of their writing performance. It was also interesting that below-average writing group had smaller scores than above-average writing group on both the minimum and the maximum values across all types of tests. Considering these differences between groups, it was important to test for significant group difference using one-way MANOVA. MANOVA assumptions were tested, and they were all satisfied permitting test of significance at $\alpha = .05$.

Table 5. One-way MANOVA between writing Ability Groups

Effect	Value	df	F	p	η^2
Writing Ability Groups	Wilk's $\lambda = .45$	3, 41	16	.000	.55

The MANOVA test, Wilk's $\lambda = .45$, $F(3, 40) = 16$, $p = .001$, $\eta^2 = .55$, showed a statistically significant difference between the writing-ability groups on the linear combination of the three dimensions of lexical competence measures, revealing that 55% of score difference was accounted for by subjects' membership to above-average or below-average writing ability group. Hence, the null hypothesis (H_0) was rejected at 95% confidence indicating that students of good-writing ability in English possessed significantly high level of lexical competence than their counter parts. Follow up ANOVA tests were requested to justify whether group difference on each dimension was also significant or not. Hence, separate ANOVA was requested for each test score, each ANOVA being evaluated at Bonferroni adjusted alpha level ($\alpha = .017$), and the following result was gained.

Table 6. ANOVA between Writing Ability Groups on SVK, DVK & PVK

Writing Ability Groups	Dependent Variables	df	F	p	η^2
	SVK	1, 42	30	.000	.42
Above vs. Below-average	DVK	1, 42	10	.003	.20
	PVK	1, 42	38	.000	.47

The ANOVA results generally revealed that groups significantly differ from each other on each dimension. The difference on SVK, $F(1, 42) = 30$, $p = .001$, $\eta^2 = .42$, was statistically significant showing that about 42% of score variance was due to group membership. That means, above-average writing ability group ($M = 72$, $SD = 16$) scored significantly higher than below-average writing group ($M = 48$, $SD = 14$). Similarly, the difference on DVK was also statistically significant, $F(1, 42) = 10$, $p = .001$, $\eta^2 = .20$, which accounted for about 20% of the difference. Above-average writers ($M = 95$, $SD = 17$) scored significantly higher than below-average writers ($M = 81$, $SD = 13$) on the depth dimension of lexical competence. However, the difference on PVK was not only statistically significant, $F(1, 42) = 38$, $p = .001$, $\eta^2 = .47$, but also explained the large proportion of group variance (47%). That means, above-average writers ($M = 79$, $SD = 17$) produced significantly larger number of word family than below-average writers ($M = 51$, $SD = 13$). Therefore, it was observed that the size dimensions of lexical competence (both receptive and productive) seemed to explain students' writing ability better than the depth dimension did.

Discussion

The study generally revealed useful insights into the cause-effect relationship between EFL learners' lexical competence, and their reading and writing ability. The findings showed that the participants' scores on lexical competence tests significantly differed in accordance with their reading, and writing performances. With regard to reading, participants who scored above-average on the reading test also scored significantly higher on the linear combination of size and depth dimensions as well as separately than participants with below-average reading scores did. Given that the study was designed in a retrospective causal-comparative approach, it can be inversely interpreted as that the linear combination of SVK and DVK scores was highly likely to have caused most of the difference of reading performance (63%) between above-average, and below-average reading ability groups. The result aligns with previous studies (Zhang & Yang, 2016; Stæhr, 2008; Qian, 2002) in which the size and depth dimensions explained more than 50% of the variance in reading scores. Moreover, DVK appeared to explain much of the difference between reading ability groups than SVK did. In other words, above-average readers showed broader and deeper lexical knowledge than below-average readers. Previous studies also revealed that the power of DVK is larger than SVK in predicting EFL learners' reading performance (Zhang & Yang, 2016; Mehrpour et al, 2011; Qian, 2002). Needless to say, the quality of lexical knowledge (how well words are known) outweighs the quantity (how many words are known) in terms of contributing to the reading comprehension of EFL learners. This may result from the psychometric nature of the two tests. Test of SVK elicits the test-takers' basic or conceptual meaning of words that is necessary but not sufficient for comprehending reading materials, whereas test of DVK stimulates the deeper knowledge of words displayed by test-takers ability of forming semantic associations (analysing synonymy and /or polysemy), and syntactic associations (synthesizing acceptable collocations with the target words) both of which are fundamental in processing the meaning of

textual information ultimately leading to retain better reading product, comprehension.

With regard to lexical competence and writing proficiency, the study also showed significant difference between above-average and below-average writing ability groups on the linear combination of size, depth and productive measures of lexical competence, explaining that 55% of the variance was accounted for by the subjects' membership to either above-average or below-average writing ability groups. Above-average writing group displayed better lexical competence across the three dimensions of VK than did below-average writing ability group, which manifested the potential of causal relationship between the subjects' lexical competence and their writing performance. That is, better level of lexical competence suggests somehow good writing ability, and low lexical competence poor writing ability. Although the participants' PVK was generally limited to the 1st 1000 high frequency vocabulary, it was able to explain much of the variance between essays of above-average and below-average writing groups, substantiating the idea of causal relationship between PVK and writing performance. The result also suggests that learners' PVK difference even at a basic high frequency vocabulary could produce significant variation on EFL learners' writing performance. Students with relatively more productive knowledge of words even at 1st 1000 high frequency level could easily access words in translating the cognitive resources into the target language allowing them to compose longer essays with quicker writing fluency. In a correlational study, Limin and Qian (2012) also obtained strong relationship ($r = .9$) on the vocabulary sub-section of TOEFL, and quality of compositions revealing the direct link between learners' vocabulary knowledge and their writing performance. Two other studies also showed that vocabulary knowledge accounted for a substantial amount of variance, explaining 52% and 84% of the difference on the participants' writing performance (Stæhr, 2008; Astika, 1993).

Whether novice or expert writers be, in reality, all of them can be inundated with multiple challenges to deal with simultaneously during the writing process. However, learners with poor lexical resources face an extra hurdle in articulating ideas into words, sentences and larger texts that could sometimes disqualify them from the writing task. Writers who are unable to withstand the complexities of the writing process often terminate the process, 60% of participants of this study the case in point, or produce limited compositions dominated by multiple lexical problems involving spelling errors, frequent use of L1 words, inappropriate word choice, repetition of limited range of words over and over again, etc. It is reported that small vocabulary size is one of the basic factors inhibiting ESL learners' writing performance (Nation, 2001). Wilkins (1972) also argues that "While without grammar very little can be conveyed, without vocabulary nothing can be conveyed" (p.111).

Conclusion

The study appeared to support a hunch of causal relationship between measures of lexical competence and the reading /writing ability of EFL learners. The combination of two or more valid and reliable tests of lexical competence can display the direct effect of learners' lexical competence on their reading and writing performances, and the effect seemed to be stronger on the reading performance than on writing. Results showed that students who scored above-average on the reading proficiency test also scored significantly higher than below-average readers did on the size and depth dimensions of lexical competence tests, DVK producing more of the variance than SVK. That means, the stronger the depth of VK, the better is the participants' reading performance or vice versa. Similarly, SVK, DVK and PVK measures also showed a considerable difference on the participants' writing performance, PVK accounting for most of the difference. Even if the samples' PVK was generally limited to the 1st 1000 high fre-

quency vocabulary, above-average writers were able to have accessed larger amount of word family than below-average writers, which might have eased the task of generating and translating the mental resources into linguistic units during the writing process.

Implications: Based on the findings of the study, the following implications were drawn. EFL learners' lexical knowledge is one of the major variables producing a significant difference on their reading and writing performances. Although the participants' reading and writing proficiency was generally low as reflected by the small mean scores, still above-average readers displayed high level of lexical competence than below-average readers. Similarly, above-average writers showed high level of lexical competence compared to their counter parts. The implication is that even narrow differences of linguistic performance among EFL learners can be attributed to a significant difference in lexical competence. Therefore, TEFL programmes in Ethiopia need to emphasize on developing students' lexical competence through promoting the quantity (vocabulary size), and quality (vocabulary depth) of vocabulary teaching so that their reading and writing abilities can be boosted.

Limitations: In this study, two major limitations were recognized so that readers need to be cautious. First, one reading and one writing test was used to measure the reading /writing proficiency of the samples. This might have harmed the reliability of scores as some of the samples might have had some personal problems during the day of the test so that they might have performed under their potential capacity. Second, only some able learners were able to work on the writing test so that it was impossible to generate writing scores for the majority of the participants, and this could have affected the generalizability of the finding on the writing aspect of the study to the target study population.

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