



Received	Reviewed	Published	Doi Number
11.07.2017	11.08.2017	27.09.2017	10.18298/ijlet.1827

Vocabulary Growth in College-Level Students' Narrative Writing

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ABSTRACT

The nature and size of vocabulary significantly determine quality in a given piece of writing. It therefore follows that an extensive vocabulary repertoire is a key factor to success in academic life. Most certainly, this explains the vast amount of scholarly attention that has been invested in this line of research. In this regard, a wide array of studies have provided evidence suggesting that human assessors of writing quality are substantially influenced by the range and sophistication of the vocabulary used by L2 learners. The studies that offered such evidence used different measurement tools to evaluate the nature and/or size of L2 learners' vocabulary. However, very few studies have attempted to chart vocabulary knowledge across different college-level proficiency levels in narrative writing productions in the Moroccan context. To contribute to this debate, the present study aims to investigate university L2 learners' vocabulary knowledge across three proficiency levels from two post-secondary institutions. More specifically, this cross-sectional study operationalized vocabulary knowledge in terms of diversity and sophistication in order to chart growth in the lexical repertoire of 90 participants. Data analysis showed that the participants displayed different levels of vocabulary knowledge. In terms of lexical diversity, second-year students' vocabulary was as diverse as third-year students but it was not as sophisticated. Nonetheless, sophistication did not differentiate first- and second-year students but it did differentiate between second- and third-year students. Additionally, diversity and sophistication were both good markers of difference between first- and second-year students. The implications of the findings will be discussed.

Key Words: ELT writing; vocabulary; lexical diversity; lexical sophistication; narrative writing

1. Introduction

Vocabulary is a key component in language development, particularly in second/foreign language acquisition. Previous research has found important correlations between vocabulary and language skills such as listening, reading and writing (Anderson, 2005). Success in academic settings is highly correlated with writing proficiency; to be a proficient writer, a learner needs to have diverse and sophisticated vocabulary. Oftentimes, students complain that their main obstacle to second/foreign language development is vocabulary (Kwon, 2009). Human evaluations of writing quality have also been reported to be influenced by the range and nature of the vocabulary used (Kyle & Crossley, 2016).

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Given the centrality of vocabulary in language acquisition in general and writing proficiency in particular, researchers have made several attempts to chart lexical developments across proficiency levels (Wang, 2014). To achieve this, they have employed numerous measures to characterize lexical richness, including measures that evaluate lexical diversity, lexical density, lexical sophistication and proportions of errors (Lindqvist, Gudmundson, & Bardel, 2012). However, to the best knowledge of the researcher, very few studies explored developments in vocabulary across different college-level proficiency levels in the Moroccan context. For this reason, the present study aims to contribute to this line of research by exploring progress in lexical richness across three groups of students. In an attempt to achieve this objective, the study set out to answer two research questions:

1. To what extent does lexical richness differentiate among different proficiency levels?
2. To what extent do lexical errors differentiate between different proficiency levels?

Out these two research questions, two hypotheses emerged:

1. H0: There are no statistically significant differences across three proficiency levels in terms of lexical richness.
2. H0: There are no statistically significant differences across three proficiency levels in terms of lexical errors.

The study is divided into five main sections. The first section reviews relevant literature on the relationship between vocabulary and language proficiency. The second section describes the methods and materials utilized to achieve the objective of the study, answer the research questions and test the hypotheses. Sections three and four present the results and discuss them by offering interpretations and comparing them with previous research. The last section concludes the study by providing a few implications based on the results.

2. Review of the literature

Based on the recognition that vocabulary plays a vital role in academic writing, particularly in L2 contexts, Wang (2014) investigates the relationship between lexical diversity and writing proficiency in the genre of email writing. Put differently, the aim was to examine whether lexical diversity measures could account for writing proficiency differences. The researcher found that neither of the two measures of lexical diversity used could differentiate between different proficiency levels. However, the failure to detect significant differences in this research may be attributed to the nature of the task. The participants were asked to write an email in application for university entrance, which restricted the scope of topic and limited the number of words they were supposed to produce to 100 words. It is only natural that the students did not utilize a wide range of vocabulary given the small number of words that the genre of email writing entailed.

Several other studies have reached similar results, indicating that lexical diversity cannot be used as a reliable marker of writing proficiency levels. An example is Jarvis (2002), who compares lexical diversity across groups of different L1 backgrounds. Based on a set of lexical diversity measures, he analyzed narrative samples written by EFL learners of a Finnish background, Swedish background

and English background. It was reported that lexical diversity significantly correlated with the number of years that the participants had been studying English. However, the situation was complex with regard to the relationship between lexical diversity and writing quality. For instance, lexical diversity tended to negatively correlate with writing quality when the essays contained the highest mean gains of lexical diversity. This relationship also tended to vary as a function of language background. Specifically, it was significant in Swedish learners' narratives, whereas no significant relationships were identified in Finnish and English learners' writing.

Departing from the premise that the vocabulary used in a piece of writing is a decisive determinant of a writer's vocabulary size, Laufer and Nation (1995) attempt to devise a new measure of lexical richness, which they call Lexical Frequency Profile. In such endeavor, the main challenge is to construct a lexical richness measure that remains stable across genres and adequately differentiate between proficiency levels. An ANOVA revealed that LFP significantly differentiated among the three groups of participants in the percentage of the first most frequent 1000 word families. A post hoc analysis showed that an upward trend could be detected in terms of most frequent words peaking in group 1, decreasing in group 2 and reaching the smallest percentage in group 3. This trend was reversed in the analysis of the second most frequent 1000 word families. With regard to this category of words, group 3 had the highest mean percentage, group 2 had a comparatively smaller mean percentage and group 3 had the lowest mean percentage. Another question that was answered in this study was the stability of within-subject performances. Again, lexical richness, represented by LFP, was found to be stable in the performances of groups 1 and 2 while more advanced learners' vocabulary profiles were relatively unstable. This was attributed to the fact that such learners achieved a higher level of language proficiency and therefore could vary their vocabulary from one occasion to another.

With a concern for claims raised by L2 learners that their main challenge in L2 writing is vocabulary, Kwon (2009) compares lexical richness in the writings of L1 and L2 learners. He reported significant differences between L1 and L2 texts in terms of lexical diversity and sophistication. In L1 learners' texts, lexical diversity was the highest, immediately followed by L2 advanced learners' texts; whereas L2 intermediate learners' texts had the smallest amount of lexical diversity. Essays written by L1 learners had the lowest percentage of the first most frequent 1000 words as an index of lexical sophistication. With regard to density, it exceeded .50 in both L1 and L2 essays, indicating that such texts contained a moderate level of content words. Kwon also found that L1 texts had a smaller number of the third most frequent 1000 words just as L2 texts had a lower percentage of the second most frequent 1000 word families. An important implication of this finding is that good writing does not necessarily mean using more sophisticated vocabulary. Put differently, a good standard of writing can still be maintained within the range of the second most frequently used 1000 words.

Acknowledging that lexical sophistication is an important component in writing proficiency, Kyle and Crossley (2016) explore the relationship between a set of newly developed indices of lexical sophistication and holistic scores of writing quality in both independent and source-based writing tasks. By source-based writing tasks, the researchers meant tasks that are integrated with other language skills such as reading or listening. The students are given a reading passage and asked to make a summary or to argue for or against a position expressed in the passage. In an independent

task, the students are required to write an essay in response to a given prompt. The study reported that sophisticated vocabulary significantly co-varied with scores of holistic assessment for the independent tasks, whereas no such relationship could be identified with regard to source-based tasks. Based on this finding, the researchers argued that independent and source-based tasks prompt the production of different linguistic features; this implies that they measure distinct constructs writing proficiency.

3. Method

3.1. Context of the study

This empirical investigation was conducted in Hassan II University, the Faculty of Letters and Humanities, Ben M'Sik. Table 1 presents the participants' demographics. As the table shows, the groups of participants being compared included an equal number of students. However, because gender did not constitute a variable in this study, no special effort was deployed to make sure male and female participants were distributed evenly across groups. 40% of the students were male and 60% were female. About 86% of all participants were aged between 20 and 29, while about 13% were aged between 30 and 39.

Table 1: *Participants' demographics*

Proficiency level	Categories	Subcategories	Sum
First-year students (n=30)	Gender	Male	18
		Female	12
	Age	18-27	24
		28-37	6
Second-year students (n=30)	Gender	Male	9
		Female	21
	Age	18-27	22
		28-37	8
Third-year students (n=30)	Gender	Male	9
		Female	21
	Age	18-27	24
		28-37	6

N=90

3.2 Research design

As befits the objective of the current research, a cross-sectional developmental research design was used. In this type of design, a dependent variable is measured for individuals belonging to different age groups and they are compared to see if differences exist between them. As noted earlier, the dependent variable in this cross-sectional study was lexical richness, which includes lexical diversity and lexical sophistication. A cross-sectional design has advantages and disadvantages. Gravetter and Forzano (2012) argue that "one obvious advantage of the cross-sectional design is that a researcher can observe how behavior changes as people age without waiting for a group of participants to grow older" (p. 298). Another advantage is that the researcher does not have to maintain long-term cooperation with the participants, which has been known to be demanding in terms of time and effort.

However, one important disadvantage is that the researcher can't say how the participants developed from one given point in time to another and thus the results should be treated with caution.

3.3 Data collection

The data were collected by means of a writing test, which included two sections: demographics and writing prompt. In the demographics section, the students were required to provide information about their gender and age. To construct the writing test, several considerations were taken into account. First, research-based evidence suggests that task complexity has an effect on students' writing performance (Foster & Skehan, 1996). In producing an essay, for instance, several writing areas compete so that attention to one area affects the quality of the other areas. If students pay more attention to the complexity of their syntactic constructions, the accuracy and lexis of their writing samples were found to be negatively affected (Housen, Kuiken, & Vedder, 2012). To help students overcome the effect of such trade-off hypothesis, the researcher built a structured writing test. Previous research suggests that structured tasks have a positive impact on students writing quality (Rahimpour, Mehrang, & Hosseini, 2011). Based on this evidence, the students were provided with cues such as the target audience, the purpose of writing and a few details about the plot of events. In this way, they produced 30 narrative essays on a time when they judged a person by appearance but subsequent events proved them wrong. The data were collected towards the last two weeks of May, 2017.

3.4 Data analysis

Growth in EFL students' writing has been measured by several indices. In the present study, lexical diversity and lexical sophistication were analyzed in terms of D-index (Malvern et al, 2004) and Lexical Frequency Profile (Laufer & Nation, 1995). Usually, researchers measure lexical diversity by Type-token ratios. In Type-Token Ratios (TTR), tokens represent the total number of words in a text and types stand for the number of different items in a text. However, criticism has been leveled at type-token ratios as text length has a negative impact on them. Instead of TTR, the present study used D-index, which models the best TTR curve in texts with different text lengths, hence overcoming the shortcoming of TTR being affected by varying text lengths. Moreover, Lexical Frequency Profile measured lexical sophistication in the current research. Laufer and Nation (1995) divided academic vocabulary into different word frequencies. The first 1000 words family encompasses the most frequently occurring words and indicates a lower language proficiency level. The second 1000 words family includes vocabulary used in academic settings. Students' vocabulary lying at the second word list and above constitutes an advanced level of vocabulary mastery. Words not in any of the two 1000 words families belong to rarely occurring vocabulary that also indicates an advanced level of language proficiency. Descriptive and inferential statistics were used for data analysis. Specifically, measures of central tendency and dispersion, namely means and standard deviations, were used. To compare the three groups of participants, an analysis of variance (ANOVA) was computed.

4. Results

4.1 Lexical richness across proficiency levels

According to descriptive statistics, differences were identified among the three proficiency levels in terms of lexical diversity. It should be recalled that lexical diversity was measured by D-value whose distribution across the three groups is summarized in table 2. An upward trend can be noted as a function of proficiency level, with first-year students' writing samples gaining the lowest score on lexical diversity ($D=47$). The second score gains in lexical diversity were obtained by second-year students while third-year students had the highest D-value. Examining differences among students' belonging to the same group, standard deviations ranged from .29 to .45, suggesting that there were small within-group variations.

Table 2: *Lexical diversity across proficiency levels*

Proficiency level	Mean	Standard deviation
First-year	47	.33
Second-year	53	.45
Third-year	61	.29

Lexical richness was also measured by Lexical Frequency Profile (LFP) whose results are presented in table 3. Unlike lexical diversity, LFP did not develop across proficiency levels in a linear, upward manner. While first-year students wrote essays with an LFP value of 65, second-year students' essays included relatively fewer words belonging to the first most frequently used word family (61). However, third-year students' writings had the highest LFP value (71). Again, first-year students (5.67) scored higher than second-year students (5.13) at the level of the second most frequently used word category. In third-year essays, LFP index notably increased to reach 6.09. However, LFP index increased linearly as a function of proficiency level starting at .34 through .63 to settle at .73. The largest differences among students of the same proficiency group occurred in the first 1000 words family, followed by the second most frequently occurring word family. Differences appeared to be diminishing in terms of LFP index among students of the same group as witnessed the standard deviations in the third most frequently used word category.

Table 3: *Word frequency families across proficiency levels*

Word frequency families	First-year		Second-year		Third-year	
	Mean	Std. D	Mean	Std. D	Mean	Std. D
1000	65	1.31	61	2.12	71	3.12
2000	5.67	2.14	5.13	1.41	6.09	1.32
3000	.34	1.42	.63	.89	.73	2.11

Additionally, an analysis of variance was utilized to confirm the trends reported in the descriptive statistics. Table 4 summarizes the results of an ANOVA, including F-values and their corresponding p-values. With regard to lexical diversity, a statistically significant difference was found among the three groups of participants ($F(2, 88) = 7.63, p < .001$). However, on closer examination, it turned out

that first-year students' writings were significantly different from third-year students in terms of lexical diversity, whereas no such difference was found between first- and second-year students or second- and third-year students. As for LFP index, a significant difference was found among the three groups at the level of the first 1000 words family ($F(2, 88) = 47.23, p < .01$). Again, this difference was found only between first- and second-year students. The students' essays also significantly differed at the level of the second 2000 words family ($F(2, 88) = 12.41, p < .01$). The difference was located between first- and third-year students as well as second- and third-year students, while the difference between first- and second-year students was not statistically significant. No statistically significant differences were found among the students in the 3000 word-family.

Table 4: ANOVA of lexical richness

Measures	F	Sig.
D	7.63	.001
1000	47.23	.01
2000	12.41	.01
3000	14.32	.19

4.2 Lexical errors

Table 5 provides the results pertaining to lexical errors across proficiency levels. For the purposes of the present study, the lexical errors under study were verbs, adjectives and nouns. To control for effects of essay length, the counts were adjusted to 100 words samples.

Table 5: Lexical errors in across proficiency levels

	First-year		Second-year		Third-year	
	Mean	Percent	Mean	Percent	Mean	Percent
Verbs*	4.5	12%	5.5	18%	3.7	8%
Adjectives*	3.5	7%	3.1	14%	2.91	5%
Nouns *	1.23	3%	1.01	4%	.91	4%

*=Adjusted to 100 words

As the table shows, errors in the use verbs increased in the second year by $M = 1$, whereas they decreased in the third year by 1.8. The students in the third year made the lowest number of errors in adjectives ($M = 2.91$) in contrast to second-year students (3.1) and third-year students who made the highest number of errors in adjectives (3.5). Moreover, a downward trend in nouns was found starting from first-year students with the highest number of errors in nouns ($M = 1.23$), through second-year students ($M = 1.01$) to third-year students with the smallest number of errors ($M = .91$)

An ANOVA was carried out to examine whether the differences reported by descriptive statistics were significant. The ANOVA was computed irrespective of error type to gain an overall estimate of lexical errors in each proficiency level. Generally, a significant difference was found in terms of lexical errors across the three groups of participants ($F(2, 88) = 21.66, p < .01$). On closer inspection, a significant difference was found between first- and second-year students ($t = 47.21, p < .01$). Another significant difference was found between first- and second-year students ($t = 41.91, p < .01$), whereas the difference between second- and third-year students was not significant.

5. Discussion

It is worth reiterating that the current research aimed to explore differences in lexical richness across university proficiency levels. Lexical richness was measured by the D-value for lexical diversity and LFP for lexical sophistication. The results showed an overall increase in lexical richness in the students' writings as they grew more proficient over time. More specifically, lexical diversity distinguished between the writings of first- and third-year students, whereas it failed to do so with regard to differences between first- and second-year essays or second- and third-year essays. LFP produced a more complicated situation as it differentiated among students differently. In the first 1000 most frequently used word-family, first-year students significantly differed from second-year students. By contrast, first-year students' essays were different from third-year students in the 2000 most frequently used word-family. Comparatively, the differences among the students' essays in terms of lexical sophistication in the 3000 word-family were not significant. With regard to lexical errors, there was an overall downtrend in the number of errors across the three groups being investigated.

Unlike other studies which supported the reliability of lexical diversity (D-value), the present study reported fluctuations across the three proficiency levels under investigation. Crossley, et al. (2010), for instance, indicated that, "Perhaps the most robust finding of this study is that an index of lexical diversity, D, explains almost 34% of the variance in human judgments of written lexical proficiency" (p.13). This shows that lexical diversity affects human assessors' perceptions of writing quality and therefore could differentiate between different proficiency levels. In the present study, however, lexical diversity marked the difference between distant proficiency levels but did not do so with essays of students at close proficiency levels. From a related perspective, it can be argued that lexical diversity is not a fast-developing feature of the students' language development. That is, the students require time and practice so that they can progress to higher levels where they can produce essays characterized by diversity.

Contrary to previous research (Laufer & Nation, 1995), lexical sophistication did not uncover significant differences among the students' writings in the present study. Laufer and Nation reported that LFP, "provides similar stable results for two pieces of writing by the same person, and discriminates between learners of different proficiency levels" (p. 319). It appears that lexical sophistication develops in a non-linear manner, which explains the differences across word-family frequencies and proficiency levels. LFP fluctuated in the first 1000 and 2000 words families, dropping in the second-year and rising in the third. However, the D-value steadied when students started to employ words belonging to the 3000 words family. A viable interpretation for such fluctuation could be that the boundary between the first to second levels of language proficiency in terms of lexical sophistication was unclear. Sometimes, the students chose to use sophisticated vocabulary while on other occasions they did not. Nonetheless, the fluctuations disappeared in the 3000 words family because it seems that second-year and third-year students began to steadily enlarge their repertoire of sophisticated academic vocabulary.

6. Conclusion and implications

To sum up, the present empirical investigation explored developments of lexical richness in the writings of college-level students across three proficiency levels. Overall, lexical diversity showed fluctuations, differentiating between distant levels of language development while failing to do so at close-by levels. The lexical sophistication in the students' essays, on the other hand, differed across both word frequency families and proficiency levels. Unlike, lexical diversity, lexical sophistication appeared to be sensitive to differences between the three groups of participants. That is, it sometimes differentiated between close-by levels and in other times between distant levels. The best predictor of proficiency level was number of errors, which steadily decreased from the first year to the third.

Based on the results, a few implications need to be underscored. From a research perspective, measurement of vocabulary development can more effectively be carried out using a variety of indices. When only one measure is employed, the researcher may fail to capture important developments. In a similar vein, in assessing students' writings, teachers need to examine developments at multiple levels of lexical richness to do justice to their students' performance. In terms of pedagogy, intensive efforts need to be deployed with a view to developing students' lexical repertoire at the levels of lexical diversity and lexical sophistication. That is, teachers are called upon to diversify writing activities that help improve students' vocabulary in terms of range and sophistication. This can only happen if they make concerted efforts to sensitize their students to the importance of vocabulary in decisions about writing quality. Furthermore, the indices used to measure lexical richness partly failed to differentiate between students of close-by language development stages. This implies that efforts need to be stepped up in the second year in order to speed up the students' lexical development and maximize students' learning benefits.

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