

The Effect of Vocabulary and Phonological Awareness on Students' Reading Comprehension

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Abstract

This research aimed to investigate the effect of vocabulary and phonological awareness on students' reading comprehension. This research was mainly quantitative in nature. The population of this research was the tenth-grade of vocational school students. The total sample is 94 students assigned using a random sampling technique. Vocabulary, phonology and reading comprehension tests were the instruments to collect the data. After collecting the data, the regression analysis was used to determine the correlation and predict the influence between the independent and dependent variables. In this case, to find out how students' mastery of vocabulary and phonological awareness influences their reading comprehension. In the regression analysis using the SPSS program, the data were entered into variable boxes. Vocabulary and phonological awareness scores were entered into the independent variable box while reading comprehension scores were entered into the dependent variable box. The findings revealed that the regression value of vocabulary and phonological awareness on reading comprehension was significant. Furthermore, vocabulary and phonological awareness contributed 67.6% of the effect on students' reading comprehension. In addition, the finding of each variable showed that the significant value of phonological awareness was higher than vocabulary. This result showed that phonological awareness was 64.5%, while the effect of vocabulary was 31.2% on reading comprehension based on the Pearson Product Moment correlation.

Keywords: Effect, Phonological Awareness, Vocabulary, Reading Comprehension

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1. Introduction

Reading plays a vital role in language learning since it becomes a meaningful communication tool through written form. By reading, people can gain more knowledge and information from numerous sources such as books, magazines, newspapers, the internet, etc. Reading is considered one of the most critical abilities in learning and teaching English for students and their teachers (Wolff, 2000). The ability to read is required to improve students' success during study at school or after completing it. Thus, students with good reading ability are able to understand academic books easier than those with poorer reading ability. Sullivan and Brown (2013) state that children between the ages of 10 and 16 who read for pleasure achieve better progress in vocabulary and spelling and math compared with those who infrequently read. A study by Grabe and Stoller (1997) mentions some benefits of reading, such as improving comprehension skills, enhancing background knowledge, building vocabulary and grammar knowledge, and improving production skills. These imply that reading actual books or electronic sources surely positively affects the readers in terms of knowledge and skills. The more people read, the more they gain the benefits.

Reading comprehension as the point of reading activity turns out to be the main concern in teaching English whether as a second or foreign language. Durkin (1993) asserts that comprehension is the essence of reading and the active process of constructing meaning from text. Therefore, the communication of the message of the written language works efficiently when the essence of the text is comprehensible. Reading is a complex process that it needs students' focus to gain the information and to interpret the message from the text. It is not only how learners read word by word, but also how they engage their background knowledge, mastery of vocabulary and grammar, and linguistic competence to aid them in understanding what they read. However, to improve learners' reading comprehension, it is necessary to read various text topics to build the reading habit. Besides, it is also important to enlarge students' vocabulary knowledge and the acquaintance of word sounds which are considered to have a contribution in the development of reading comprehension.

Vocabulary as a part of language learning is believed to be one of the fundamental aspects of mastery of language skills. By knowing words, learners are able to use the language to express their idea through writing and speaking or to understand the written or spoken texts in reading and listening. A number of studies have revealed a close relationship between vocabulary knowledge and reading comprehension. Hence, both form a mutual relationship, which means vocabulary knowledge helps learners understand the written text, and reading develops vocabulary size (Maher Salah, 2008). In fact, learners' ability to decode and read fluently seems meaningless if they do not recognize the word meanings in the text they read. Laufer (1989) suggests that in order to get a guaranteed comprehension, readers should know at least 95 percent of the words in a passage. It is also supported by Hirsh (2003) that learners need to know 90 percent of the words in the text to understand the main idea and to predict

the meaning of such unfamiliar words. These findings indicate that vocabulary knowledge determines learners' quality in comprehending a reading text.

Meanwhile, some studies have revealed that phonological awareness (PA) is likely to contribute to predicting reading development. Heroman and Jones (2004) define PA as competence to recognize the oral language, such as syllables, onsets, rimes, and phoneme, separate from their meaning. Phonological awareness mainly affects learners' ability to read loudly, manipulate the sound segments of words, and detect phonemes (Pufpaff, 2009). For instance, the word "hat" has three phonemes, and "make" also has three phonemes. Hence, the point of phonological competence is about the sound of the word, not the letters (Nations & Hulme, C, 1997). Proficient readers use a combination of skills and strategies when they read in order to understand the text. PA is considered as the building block of the reading process, and it is most effective when learners master phonemic awareness skills at the early ages. A study suggests that children at the kindergarten level who acquire literary skill of PA typically experience the most success when learning to read (NRC, 1999). The assessment of PA for preschool children provides the knowledge to recognize words when they learn to read. Therefore, building children's PA is proposed to be effective to improve reading skill in the future. Phonological awareness helps early readers to link the relationship between sounds and letters, and learning letter-to-sound correspondence to recognize more words in written text (Gillet, et al, 2004). Also, Share (2011) claims that the lack of phonological awareness is detected as the significant reason of reading difficulties. Readers with good phonological awareness achieve a better reading comprehension since they are easier to recognize the letters and letters combination represented from printed form to a spoken word in reading activities (Kilpatrick, 2016)

A Number of relevant studies have been conducted revealing to support the contribution of vocabulary and phonological awareness on reading comprehension. Leila Anjomsho (2014) from Islamic Azad University, Shiraz, Iran conducted research to investigate the effect of vocabulary knowledge on reading comprehension of Iranian EFL learners in Kerman Azad University. The sample was 81 Iranian EFL undergraduate students of English who were given questionnaire as the instrument of collecting data. The result of Pearson Correlation analysis found out that there was a significant positive relationship between vocabulary knowledge and reading comprehension. This result implies that students' vocabulary knowledge gives a broader sense of the development of reading comprehension text and also enhance the reading ability. Djuarsa (2017) also did research to investigate the relationship between vocabulary knowledge and reading comprehension ability of senior high school students. The Nation Vocabulary test level 3000 and reading test were administered to collect the data from 60 students who were the sample of study. The analysis of Pearson's product moment correlation found that the value of probability (sig) 0.000 was

smaller than the significance value 0.05. The finding proved that there was a significant correlation between students' vocabulary size and their reading comprehension performance.

Furthermore, Miao Li, Liying Cheng, and John R. Kirby From faculty of education Queen's University Canada (2021) presented a result of a study showing a correlation between English Phonological Awareness and Reading Comprehension. Reading comprehension had significant effects on English PA in 48 grade 2 and 47 grade 4 Chinese English immersion students. A similar pattern also was found for the effect of English PA on Reading Comprehension. However, evidence pertaining to a connection between cross-linguistic transfers from Chinese PA (L1) to reading comprehension (L2) was weak.

The descriptions above prove that vocabulary knowledge and phonological awareness have major contribution to develop students' reading comprehension. Therefore, the researcher is eager to investigate the effect of vocabulary knowledge and phonological awareness on reading comprehension. This study was carried out under a different circumstance from the previous ones since the authors used two independent variables (vocabulary knowledge and phonological awareness) to predict a dependent variable (reading comprehension). The result of this study will figure out how significant the role of vocabulary knowledge and phonological awareness to help students become the good readers. Based on the background elaboration and the finding of the previous studies, the researcher formulated the research questions as follows;

1. Do the vocabulary knowledge and phonological awareness carry out positive effects on the development of reading comprehension?
2. How significant is the effect of vocabulary knowledge and phonological awareness on reading comprehension?

2. Method

This research employed a quantitative method and the data were presented in numerical form using regression analysis. Regression is an analysis that enables to predict one variable from another variable by using the regression equation among the variables when they are correlated significantly (Purba, 2011). The 10th grade of SMK students was the population in this study. The total number of samples was 94 students. The sample was chosen using a random sampling technique. There were two variables in this study, vocabulary (X1) and phonological awareness (X2) as the independent variables, and reading comprehension (Y) as the dependent variable. The writer used proficiency tests consisting of vocabulary test, phonology test, and reading test as the instruments for collecting data. The vocabulary test and phonology test were given earlier than the reading test. The total items for the tests were 50 for vocabulary and phonology tests, and 45 items for reading comprehension test. Time allocated to administer vocabulary and phonological tests was 60 minutes, and 90 minutes for the reading test. After administering the tests, the results were scored and tabulated. Then,

multiple regression analysis was used to find out whether vocabulary knowledge and phonological awareness provided positive effect on students' reading comprehension. To find the regression value, the writer used the regression program in the SPSS 16.0 version to get more accurate result. Besides, the normality of data distribution, no collinearity, and no autocorrelations of the data were also checked as the requirements of significant regression value based on BLUE (Best Linier Unbiased Estimator).

3. Finding and Discussion

3.1 Findings

The findings of this study were intended to answer the objectives of this research as formulated in the background. Hence, the results were discussed in details containing of Regression Analysis, The Significance of Regression, The Effect of Vocabulary Knowledge and Phonological Awareness on Reading Comprehension, and The Requirement of Good Regression.

1. Correlation between Vocabulary Knowledge, Phonological Awareness, and Reading Comprehension

Correlation is the relationship between each independent variable; vocabulary knowledge and phonological awareness, and the dependent variable; reading comprehension. The correlations were significant if the change in one variable is followed by the change in another variable.

Table 1. Correlation

		Reading	Vocabulary	Phonology
Pearson Correlation	Reading	1.000	.721	.812
	Vocabulary	.721	1.000	.790
	phonology	.812	.790	1.000
Sig. (1-tailed)	Reading	.	.000	.000
	vocabulary	.000	.	.000
	phonology	.000	.000	.
N	Reading	94	94	94
	Vocabulary	94	94	94
	Phonology	94	94	94

The table above shows the coefficient correlation and significant correlation values of vocabulary knowledge and phonological awareness on reading comprehension. Significant

correlation value indicates whether or not there is significant correlation of the variables. To find out the significant correlation between independent variable and dependent variable, the standard of significant correlation value has to be checked. The standard of significant correlation value is 0.05. If the value is lower than 0.05, the correlation is significant.

From the result, it could be seen that the correlation coefficient between vocabulary and reading comprehension was 0,721 and the correlation coefficient between phonological awareness and reading comprehension was 0.812. Significant correlation values of vocabulary knowledge and phonological awareness were the same: **0.000**. Hence, it indicated that the correlation between vocabulary knowledge and phonological awareness and reading comprehension was significant since the significance value **0.000** is lower than **0.05**.

2. The Effect of Vocabulary and Phonology on Reading Comprehension

Through the regression analysis, it was found that the relationship of all independent variables toward the dependent variable existed.

Table 2. Model Summary^b

MModel	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.822^a	.676	.669	9.2628	1.835

a. Predictors: (Constant), phonology, vocabulary

b. Dependent Variable: reading

Referring to the result of the Table above, it was found that the correlation R between the independent variables (vocabulary and phonological awareness), and the dependent variable (reading comprehension) was 0.822 and the contribution of both independent variables on dependent variable was 0.676. Thus, it could be concluded that vocabulary knowledge and phonological awareness contributed 67.6% influence on students' reading comprehension.

Besides analyzing the contribution of both independent variables toward the dependent variable, it was also necessary checking the regression value in order to prove whether or not the independent variables have significant effect on the dependent variable.

Table 3. Significance of Regression Value ANOVA^b

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	16137.912	2	8068.956	94.045	.000^a
	Residual	7721.937	90	85.799		
	Total	23859.849	92			

a. Predictors: (Constant), phonology, vocabulary

b. Dependent Variable: reading

The significance of the regression value was tested using ANOVA in SPSS. The regression value was significant if the value was less than alpha; **0.05**. Based on the analysis, it was found that the significance value was **0.000**. Clearly, it proved that the regression value was significant; the vocabulary knowledge and phonological awareness positively affect the reading comprehension.

Additionally, the effect of each independent variable on the dependent variable could be checked in coefficient table below:

Table 4. The Effect of Each Independent Variable (Coefficients)^a

Model		Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
		B	Std. Error	Beta	t	ig.	Tolerance	VIF
1	Constant)	7.165	6.379		2.691	.008		
	Vocabulary	182	.084	.312	2.168	.033	.376	2.657
	Phonology	844	.128	.645	6.597	.000	.376	2.657

a. Dependent Variable: reading

The bold numbers in the column of Standardized Coefficient Beta showed the effect of each independent variable. Thus, phonological awareness (.645) had a greater effect than vocabulary (.312). From the result above, it could be asserted that the effect of phonological awareness was bigger than vocabulary toward reading comprehension.

3. The Requirements of Significance Regression Value

According to BLUE (The Best Linier Unbiased Estimator), the value of regression analysis is accurate and significant if it fulfils some requirements such as the data are normally distributed, the regression value is linear, no autocorrelation, and no collinearity. Thus, it was essential to check and analyze all requirements for the sake of obtaining good regression values.

Table 5. Testing the Normality of Data Distribution

One-Sample Kolmogorov-Smirnov Test				
		Vocabulary	phonology	Reading comprehension
N		94	94	94
Normal Parameters ^a	Mean	60.89	74.26	56.597
	Std. Deviation	18.780	12.298	16.1042
Most Extreme Differences	Absolute	.082	.090	.120
	Positive	.082	.076	.109
	Negative	-.080	-.090	-.120
Kolmogorov-Smirnov Z		.792	.871	1.155
Asymp. Sig. (2-tailed)		.558	.434	.139

The normality of data distribution was analyzed using One-Sample Kolmogorov-Smirnov Test. The data were normally distributed if the value was above 0.05. Thus, from the data in the table 5, the three variables were generally distributed since the values of z are 0.792, 0.871, 1.155 and the significances were 0.558, 0.434, and 0.139. All of the results were above the critical value of 0.05. It indicated that the data were distributed normally.

Table 6. No Autocorrelation (Model Summary^b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.822 ^a	.676	.669	9.2628	1.835

a. Predictors: Phonological Awareness ; Vocabulary Knowledge

b. Dependent variable: Reading comprehension

The result above proves that there was no autocorrelation among the variables. It was shown in the Durbin-Watson table that the number was 1.835. On the Durbin-Watson standard, the autocorrelation value was between 1.50 and 2.35. It meant that there was an autocorrelation if the value was lower than 1.50, or higher than 2.35.

Table 7. Colinearity Standard

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
		B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1	(Constant)	7.165	6.379		-2.691	.008		
	vocabulary	182	.084	.312	.168	.033	.376	2.657
	phonology	844	.128	.645	.597	.000	.376	2.657

From the Table above, it could be asserted that the collinearity values of both independent variables (vocabulary and phonology) were the same, 2.657. However, this result showed no collinearity between the independent variables since the VIF value was lower than 5.

Once the regression value is significant, the regression must be linear. The regression linearity must be tested to know whether or not the independent variables influence the dependent variable. Linear means the better the variable X is, the better the variable Y is. In this analysis, the linearity was shown in the diagram in which the line was straight upward.

Figure 1. The linearity between Vocabulary and Reading Comprehension

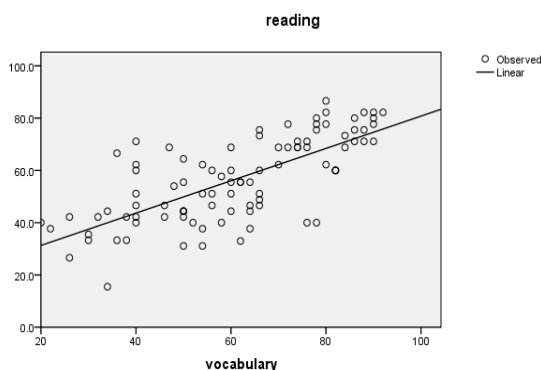
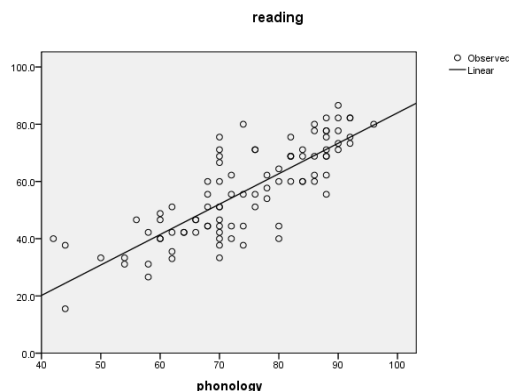


Figure 2. The Linearity between Phonological Awareness and Reading Comprehension



Both figures showed that the relationship between independent and dependent variables was linear because the lines were straight upward. Therefore, it proved that vocabulary knowledge or phonological awareness positively affected reading comprehension.

3.2 Discussion

This study was conducted to investigate the effect of vocabulary knowledge and phonological awareness on reading comprehension. After collecting the data, the authors used multiple regression analysis to investigate whether or not vocabulary knowledge and phonological awareness positively affected reading comprehension.

The analysis of students' scores in proficiency tests (vocabulary, phonology, and reading comprehension) confirmed that the correlation value between independent variables (the vocabulary knowledge (X1) and phonological awareness (X2)) and dependent variable (reading comprehension (Y)) was significant. Besides, the regression analysis using SPSS 16.0 used to find out all independent variables influencing the dependent variable also showed significant value. This result finally proved that the hypothesis of this research (Ha) was accepted. Thus, vocabulary knowledge and phonological awareness have an effect magnitude of 67.6 percent toward reading comprehension. Moreover, the significant regression values between independent variables on the dependent variables support the previous studies that asserted a positive effect between vocabulary knowledge and phonological awareness on reading comprehension.

In addition, the results showed that scores on the vocabulary test were lower than on the phonological awareness test. This finding also was reflected in the regression value of each independent variable toward the dependent variable. The coefficients value indicated that the effect of vocabulary on reading was 0.312 or 31.2%. Meanwhile, the coefficient value of phonological awareness on reading comprehension was 0.645 or 64.5%. Although the finding shows that phonological awareness has a bigger effect than vocabulary knowledge, the authors believe that both factors play a vital role in enhancing reading comprehension.

Moreover, the authors considered that the scores of the phonological test, which were higher than the vocabulary test, were influenced by some factors. Basically, vocabulary and phonology have different difficulty levels that make the ability to master both aspects differently. Phonology is the study of sounds which are the first aspect obtained when acquiring or learning a language. Thus, it can be said that the knowledge of sounds is developed unconsciously in the early stage of language acquisition. Once children grow older, the knowledge will be learned consciously and intensively in schools. Knowing the sounds of words will assist the recognition in the printed forms. In other research results, it was found that students' difficulty in early reading comes from their difficulty in recognizing letters and arranging letters into syllables and syllables into words (Zijlstra et al., 2020).

Students with good phonological awareness have more opportunities to be good readers than students with poor phonological awareness (Kilpatrick, 2016).

On the other hand, knowledge of words, especially the written text, is commonly learned at around five years old when children enter school. Firstly, they are recognized with letters, then the words, and finally, understanding the meaning of the words. Indonesian students, particularly those whose L1 is Indonesia, will find it difficult to learn English mainly due to the differences between Indonesian and English. In this case, the difference between spoken and written form is quite apparent. It takes a higher cognitive level and a more extended period of time to memorize, use, and understand the meaning of words according to their context. Therefore, it requires learners' motivation, interest, and patience to expand their vocabulary knowledge. Cooper (1984) mentions that lexical knowledge is an essential factor for effective reading. Unfortunately, based on the interview and observation that the authors did of the samples randomly, it was found that many of the students considered English a challenging subject so they did not have adequate motivation and interest to learn the language. The students admitted that they merely knew English at school and did not do extra exercise to enrich their vocabulary size. Consequently, their knowledge of words is far of good. Moreover, the uses of dictionaries or translator devices became important when vocabulary and reading tasks were given. Some students said that they always used dictionary and translator device when doing vocabulary and reading exercises. Thus, it can be implied that the lack of vocabulary knowledge decreases the ability to understand reading text. As a result, the reading comprehension level is relatively low although the ability to recognize sounds of letters or words shows a better achievement. Besides, having limited vocabulary also makes the students hesitant to read for it hinders them to understand the content of the reading text.

Regardless of the cases above, the authors strongly believed that both vocabulary knowledge and phonological awareness contributed positive effects to reading comprehension. Although in the previous studies other researchers took samples from students in the early school years, this phonological test was still appropriately applied for high school to college students to predict their reading comprehension. The findings emphasized that there was a positive effect between phonological awareness and reading comprehension; the better the awareness of sounds of letters or words, the better the ability to recognize and understand words in printed form. Besides, vocabulary also gave a direct and significant effect on reading comprehension. The larger vocabulary students have, the better understanding students gain when reading a text. Thus, their reading comprehension develops to a higher level.

4. Conclusion

The findings of this study confirm that good vocabulary knowledge and phonological awareness positively affect the development of reading comprehension. So, the conclusions of this study are as follows; firstly, for vocabulary knowledge has the positive effect on reading comprehension, it is necessary to increase students' vocabulary knowledge to improve reading comprehension. Teachers are demanded to design more engaging and interesting teaching activities to motivate students to learn vocabulary and do more reading exercises. Consequently, it is expected that students' interest and motivation grow higher to learn. However, since dealing with the limited time and too many things to teach in the classroom, teachers have to think about possibilities to assign students to do tasks or various activities such as giving numerous reading materials, watching movies and listening to music. Vocabulary and reading assignments or tests are also necessary to be done by the teachers to examine student's progress.

Secondly, since phonological awareness has positive effects on reading comprehension, teachers need to design teaching activities that possibly increase students' understanding of sounds of letters or words. Hence, the implication is supposed to be useful to improve reading skills and listening, speaking, and writing. The awareness of word sounds is expected to help students recognizing the printed words easier. Finally, the finding of this research provides information about the contribution of vocabulary knowledge and phonological awareness to reading comprehension.

Moreover, this study can be used as a reference for other future research. The result of this research confirmed that vocabulary knowledge and phonological awareness contribute 67.6% effect on reading comprehension. Besides investigating reading comprehension, other researchers probably need to use another dependent variable, e.g. listening, speaking, or writing to figure out if the vocabulary and phonological awareness also contribute to developing other English skills.

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