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Correlational study of vocabulary mastery and cognitive learning style in vocational school

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Abstract

The research is intended to analyze whether there is a correlation between students' vocabulary mastery and cognitive learning style with their reading comprehension ability. Methodology: It was conducted in Muhammadiyah Vocational school Bandar Lampung. The sample comprises 30 students using random sampling technique. A questionnaire was used to trace students' cognitive learning strategy, and two sets of tests were used to measure students' vocabulary mastery and another to measure their reading ability. The instruments were tried out to determine the quality of validity, reliability, level of difficulty and discriminating power. The findings: It has been found that, first, there is a correlation between vocabulary mastery (X_1) and reading comprehension (Y), where rx1.y = 0.35; second, there is a correlation between students' cognitive learning style (X_2) and their reading ability (Y). where $r_{x2.y}$ = 0.95, it is very strong correlation: and finally, there is a composite correlation between X_1, X_2, and their reading ability (Y). Multiple regression is 0.997 meaning that there is a positive and significant correlation between X_1, X_2, and Y. It suggests that to improve reading ability, teachers should develop students' vocabulary mastery and cognitive learning style. Cognitive learning style and vocabulary mastery cannot be separated.

Keywords: cognitive strategy; vocabulary mastery; reading

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Students at Muhammadiyah Vocational School 2 (SMKM 2) Bandar Lampung, like in other vocational schools, are required to have English language skills including reading comprehension. They are required to have the ability to identify main idea of text, to differentiate between main idea from supporting details, to make inferences based on stated information, to identify reference, to determine the lexical and contextual meaning of a difficult word. In other words, the English teaching at the Vocational School is focused on the use of English competences pertaining to six language skills, i.e., listening speaking, reading, writing, watching, and presenting ideas in various kind of texts. These targets of six language skills are based on Common European Framework of Reference for Languages: Learning, Teaching, Assessment (CEFR) which is similar to B1 level. Unfortunately, based on an informal survey carried out before conducting the real research, it was found that majority of Muhammadiyah SMK students 7 out of 10 students (70%) were unsuccessful in identifying main idea of text, differentiating between main idea from supporting details, making inferences based on stated information, identifying reference, determining the lexical and contextual meaning of a difficult word. These problems might be related to their lack of vocabulary mastery (Asyiah, 2017; Ghonivita, et al., 2021; Ramli, et al., 2021; Safadi, et al., 2012; Shadikah, et al., 2017; Wardak, 2021; Yuan, et al., 2014; Virgana, et al., 2019; Shin, 2018; Fung, et al., 2018) and to some extent to cognitive learning style (Parra, 2016; Chetty, et al, 2019; Kolb, 2014; Wong, 2015; Sahabudin, 2013; Övez, 2016; Dinçol, 2011; Ford, 2001; Lethaby, 2018; Muro, 2007; Crosthwaite, 2018; Kayi-Aydar, 2018; Egel, 2009; and Felder, et al., 1995). The researchers believe that students' cognitive learning style, to some extent, contribute to the elevation of the students' learning outcome, including reading comprehension ability.

Many studies have been conducted in relation to vocabulary and reading comprehension (Lai, et al., 2009; Bianco, et al., 2011; Vitale, et al., 2012; Kök, 2010; Cesur, 2011; Lai, 2009; Boulware-Gooden, et al., 2007; Bernacki, et al., 2012; Abu Seileek, 2011; Savolainen, et al., 2008; Jackson, 2005; Wang, et al., 2004; Vista, 2013; Abdolrezapour, et al., 2012; Yoğurtçu, 2013; Cano, et al., 2014; García-Madruga, et al., 2014), and learning style, and have found many interesting and important ideas but there is still a problem which remain unresolved, at least in Muhammadiyah school contexts, that is, whether there is a correlation between students' vocabulary mastery and their reading comprehension ability or not, secondly, whether there is a correlation between cognitive learning style or not, and whether there is a composite correlation among students' vocabulary mastery, the use of cognitive learning strategy and reading comprehension ability. Therefore, this research was carried out to bridge the gap above. Putra, et al. 2021 found the correlation between vocabulary mastery and fluency in speaking at Universitas Tanjungpura. In addition, Tawarik et al. 2021 investigated the effects of Cognitive Academic Language Learning Approach

(CALLA) metacognitive strategy instruction on reading comprehension and reading awareness. This is the novelty of the current study.

METHOD

The research uses a correlational design meaning that it correlates the first independent variable, i.e., students' vocabulary mastery (X_1) with their reading comprehension ability Y); secondly, it correlates the second variable, i.e., students use of cognitive learning style (X_2) with their reading comprehension ability (Y); and finally, it correlates the first independent variable (X_1) and the second variable (X_2) with their reading comprehension ability (Y).

The population of the research comprises of 120 students, whereas the sample was taken using random sampling technique, to avoid subjectivity and to make sure that all students have the same chance to be selected. The number of samples was 60 students. The data source comprised those pertaining to students' vocabulary mastery, their use of cognitive learning style and their reading comprehension achievement.

The data collecting techniques were designed based on theoretical concepts relating to vocabulary, cognitive learning style and reading comprehension. The data collecting techniques consisted of three types of instruments based on the nature of each type of the data, that is, first, vocabulary test to measure students' vocabulary mastery. The total number of the test comprised 30 items, which, based on the results of item analysis, were divided into three categories: easy 14 items (46.67%), medium 9 items (30%) and difficult 7 items (23.33%). It was administered to 30 participants. It was found that the means score = 13.03; median = 12.5; standard deviation = 3.71; variance = 13.76. Second, questionnaire used to measure students' use of cognitive learning style. The questionnaire was used to measure their cognitive learning style because questionnaire can be dependable and very simple to run. The questionnaire consisted of 15 items. Before being used, the questionnaire was tried out first to make sure its quality especially pertaining to validity and reliability. The total number of items = 15; distributed to 30 participants. It was found that the means score = 11.9; median = 39.5; the total score = 79. The last instrument was reading test to measure students' reading comprehension achievement. It comprises 20 items, the total participants taking the test was 30 people.

RESULTS

The data were taken from the vocabulary and reading tests as well as questionnaire of cognitive learning style. The objective of the analysis was to get the information of the research object based on the data and variables of the

research subject. The results of the tests were interpreted in the distribution table of frequency where it consisted of vocabulary knowledge (X_1) scores, cognitive learning style (X_2) scores and reading comprehension (Y) scores. All the data were analyzed statistically using SPSS (statistical program for social science) in order to make sure the results of the relationship among all variables.

All the description of the data can be seen in Table 1 below.

Table 1
The Group of Respondents

Column 1 Data	Column 2 Data	Column 3 X_1	Column 4 X_2	Column 5 Y
	N	30	30	30
Statistic	M	18	4	14
	M	7	3	6
	Mean	13.03	1	10.43
	Std.	3.71	231.13	2.29
	Variance	13.76	53425.2	5.24
Std.	Mean	24	4	10

(Source: Results of Data Anaalysis)

Table 1 shows that the data were identified as vocabulary mastery (X_1); the use of cognitive learning style (X_2); and Reading Comprehension ability (Y), with the following description.

1. Students' Vocabulary Mastery (X_1)

The test consisted of 30 items; each was scored 1. The scores ranged from 7 to 20. It means that the minimum score is 7 and the maximum score is 20. Vocabulary variable (X_1) which consists of 30 respondents has an average (mean) =13.03; median=12.5; standard deviation = 3.71; variance = 13.76 and the total score = 39. Furthermore, the whole data can be seen in Table 2, the table of the frequency distribution by Sturges, as follow:

Table 2

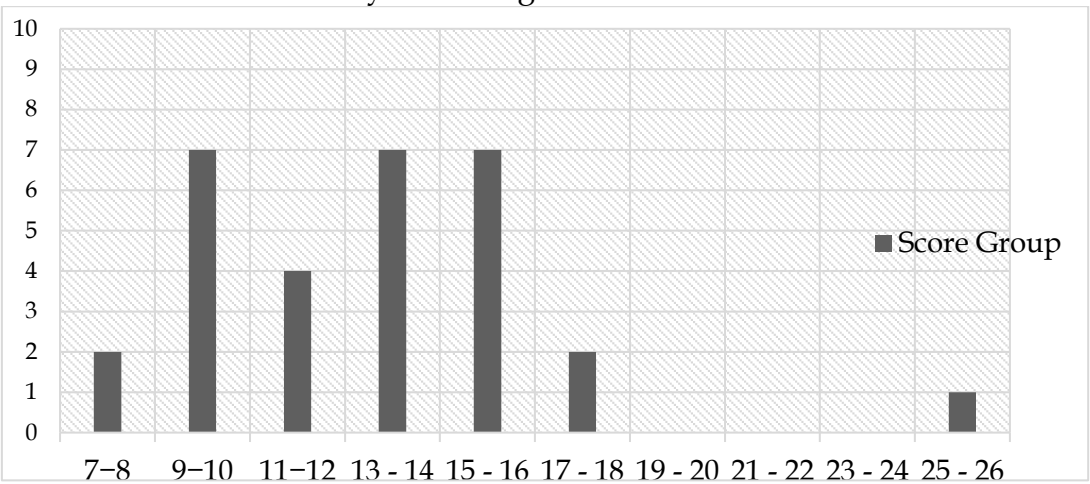
Frequency Distribution of Students' vocabulary knowledge

No	Column 1 Score Group	Column 2 Frequency (f)	Column 3 Relative Frequency (%)	Column 4 Cumulative Frequency (%)
1	7–8	2	6.67	6.67
2	9 - 10	7	23.3	30.00
3	11 - 12	4	13.3	43.3
4	13 - 14	7	23.3	66.6
5	15 - 16	7	23.3	90.00
6	17 - 18	2	6.67	96.67
7	19 - 20	0	0.00	96.67
8	21 - 22	0	0.00	96.67
9	23 - 24	0	0.00	96.67
10	25 - 26	1	3.33	100.00
	Total	**30**	**100**	**100**

(Source: The Results of the Data Analysis)

Table 2 shows that students' vocabulary mastery is not very good. It is quite understandable because the students at vocational schools are mostly not interested in English, including in learning vocabulary. This is in line with what has been found in the previous research (Ghonivita, et al., 2021; Ramli, et al., 2021; Safadi, et al., 2012; and Shadikah, et al., 2017).

Further the following frequency histogram (Graph 1) illustrates the distribution of the students' vocabulary knowledge:



Graph 1
Histogram of students' vocabulary knowledge

Graph 1 above shows the distribution of the students' vocabulary knowledge, which is not so good. This might be related to students' motivation

to learn English. Most of students at vocational schools are not so interested in English. But this dimension is not covered in this research.

2. Cognitive Style Variable (X_2)

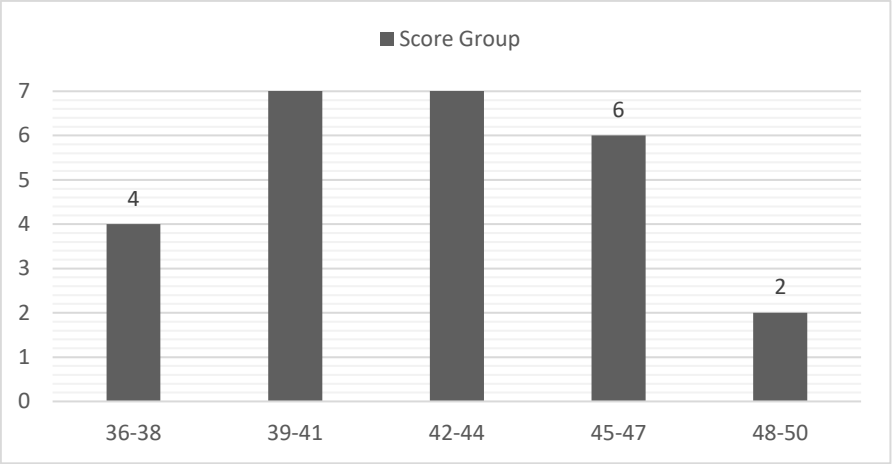
The questionnaire consists of 15 items to assess which students are domain wholist-analytic and which ones are verbal imagery. Dividing items into two parts and the students who answered mostly would be dominant in the one of the cognitive-style dimensions. Cognitive learning style variable (X_2) which consist of 30 respondents has an arrange (mean) = 11.9; median = 39.5; standard deviation = 2.31; variance = 53425.2; and the total score = 79. The whole data are shown in Table 3, the table of the frequency of distribution by Sturges, as follow:

Table 3
Frequency Distribution of Cognitive Learning Style

No.	Column 1	Column2	Column 3	Column 4
	Score Group	**Frequency (f)**	**Relative Frequency (%)**	**Cumulative Frequency (%)**
1	36-38	4	13.33	13.33
2	39-41	10	33.33	46.67
3	42-44	8	26.67	73.34
4	45-47	6	20.00	93.34
5	48-50	2	6.67	100.00
	Total	**30**	**100**	**100**

(Source: The results of data an alysis)

Table 3 shows the frequency distribution of cognitive learning style. This finding is similar to what was found in the previous research (Parra, 2016; Chetty, et al, 2019; Kolb, 2014; Wong, 2015; Sahabudin, 2013; Övez, 2016; Dinçol, 2011; Ford, 2001; Lethaby, 2018; Muro, 2007; Crosthwaite, 2018; Kayi-Aydar, 2018; Egel, 2009; Felder, et al., 1995). The difference between the previous research from the current study is that the current research was focused on the cognitive learning styles in relation to the students' reading comprehension ability.



Graph 2
Histogram of Cognitive style

Similar to what is shown in Table 3, Graph 2 illustrates students' cognitive learning style in relation to their reading comprehension ability.

2. Reading Comprehension Variable (Y)

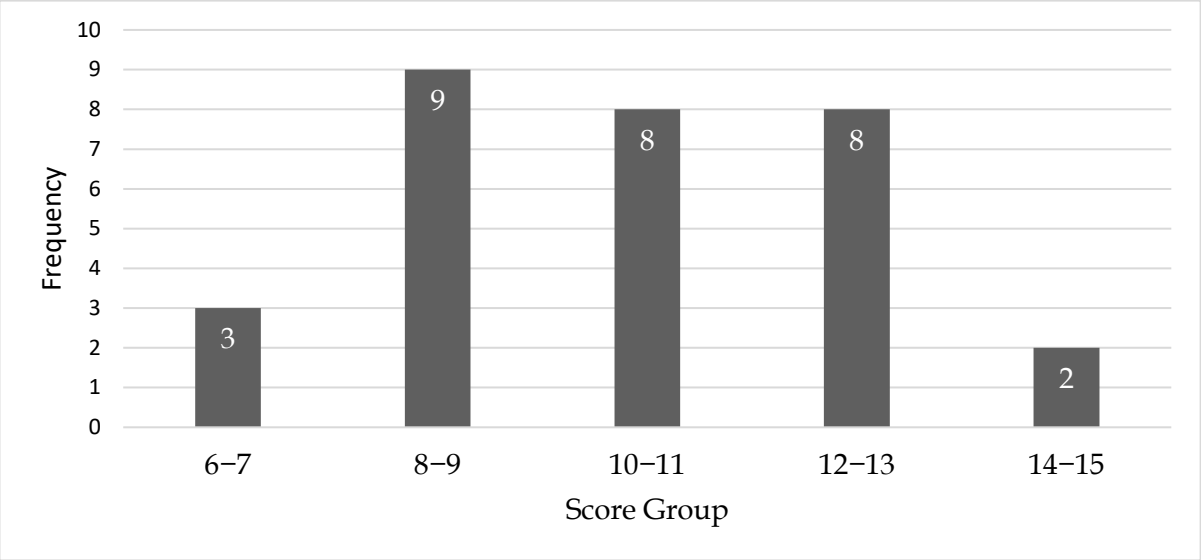
Test of reading comprehension consists of 20 items. Actually, the ideal scores range from 0-20 but in reality, the scores range from 6 to 14. It means that the minimum score of reading comprehension is 6 and the maximum score is 14. Reading comprehension variable (Y) which was administered to 30 respondents has an average score =10.3; median = 10; standard deviation = 2.29; variance = 5.24 and the total score = 304. in other words, the whole data can be seen in Table 4, the table of the frequency distribution by Sturges as cited by Scott (2009), as follow:

Table 4
Frequency of Reading Comprehension

No.	Coloumn 1	Coloumn 2	Coloumn 3	Coloumn 4
	Score Group	**Frequency (f)**	**Relative Frequency (%)**	**Cumulative Frequency (%)**
1	6-7	3	10.00	10.00
2	8-9	9	30.00	40.00
3	10-11	8	26.67	66.67
4	12-13	8	26.67	93.34
5	14-15	2	6.67	100.00
	Total	**30**	**100**	**100**

(Source: Results of data analysis)

Further the following frequency histogram describes the distribution of the reading comprehension score:



Graph 3 Histogram of Reading Comprehension

Graph 3 illustrates the histogram of students' reading comprehension ability. The students' reading comprehension ability is similar to their vocabulary mastery, showing not very good ability, which might be related to their interests in English.

In this research, single linear regression analysis and multiple linear regression analysis were used to test all the hypotheses where the first hypothesis is that, there is a correlation between vocabulary knowledge (X_1) and students' reading comprehension (Y). The second hypothesis is that, there is correlation between cognitive learning style (X_2) with their reading comprehension (Y), and the third hypothesis is that, there is correlation between both vocabulary knowledge (X_1) and cognitive learning style (X_2) with students' reading comprehension (Y).

1. The test of Linearity and Normality

a. Linearity Test

Before stating the conclusion of the research, the significance of regression coefficient was tested. Analysis of variance was used to test the significance of multiple linearity regression where it contains two hypotheses as follows:

$H_0 = (b_0 = b_1 = b_2 = 0)$

Means that vocabulary knowledge (X_1) and cognitive style (X_2) do not influence on students' reading comprehension ability (Y)

$H_1 = b_1 \neq 0$
Means that vocabulary knowledge (X_1) and cognitive style (X_2) influence on students' reading comprehension ability (Y)

b. Anova F test
The result of the calculation of the coefficient of the multiple regression is in the following:

Table 5
The Varian Analysis of Multiple Linearity Regression

Column 1	Column 2	Column 3	Column 4	Column 5
Variance Sources	**Df**	**Sum Square**	**Man Square**	**F**
Regression	1	3080.53	3080.53	521.24
Galat	28	145.47	5.91	
Total	29	3226		

(Source: Results of data analysis)

With $F_{table} = F_{(0.05;1.28)} = 4.20$

Table 5 shows that F_{table} is 4.20 with $F_{observed} = 521.24$. Since the score of $F_{observed} = 521.24$ is higher than F_{table} 4.20, then H_0 is rejected or the model above is very significance.

c. T test

Hypotheses:
H_0: $\beta = 0$; The coefficient of regression is not significance
Hi: $\beta \neq 0$; The coefficient of regression is significance

Statistic Test:

Table 6
The Recapitulation of the Coefficient of multiple linear regression individually

Column 1	Column 2	Column 3	Column 4	Column 5
Variable	**Coefficient**	**Sd**	**T_{table}**	**Note**
(constant)	0.997	0.387	1.97	Significance
X_1	0.93	1.300	1.97	Significance
X_2	0.362	17.24	1.97	Significance

(Source: The results of the data analysis)

Based on Table 6, vocabulary mastery (X_1) and cognitive style (X_2) influence on the students' reading comprehension (Y). The coefficient correlation ® does not give the complete interpretation because it states whether the relationship is strong or not. It is then continued to the coefficient determination to obtain more complete interpretation. Murwani states that the coefficient and determination are the square of the coefficient correlation where the formula is in the following:

$$R^2 = \frac{JK\,(reg)}{\Sigma y^2}$$

$$KD = R^2 \times 100\%$$

Table 7
Multiple correlation and determination X_1, X_2, and Y

Column 1	Column 2	Column 3
Variable	**R**	**Coefficient Determination**
Vocabulary mastery (X_1), cognitive style (X_2) and reading comprehension (Y)	0.997	0.995

(Source: The results of data analysis)

Based on the calculation above, the coefficient of product moment is 0.995, where $F_{observed}$ = 306.30 is higher than F_{table} 3.35, meaning that H_0 is rejected or there is a significant relationship between vocabulary mastery (X_1) and cognitive style (X_2) altogether with the students' reading comprehension (Y). The value of coefficient 0.997 shows that the significance level of the variables is very strong. The influence of vocabulary knowledge (X_1) and cognitive style (X_2) on the students' reading comprehension (Y) is 99.5% where it is interpreted as very significant.

b. Normality Test

It is one of the requirements to analyze the regression of the test. In this research, Kolmogorov Sminornov sample test was used to test the normality of the data as a result of calculating the data using SPSS version 15.0. The recapitulation of the result of the normality test is illustrated in the following table.

Table 8
The result of Normality Test of the Data

Column 1	Column 2	Column 3	Column 4	Column 5
Variable	**N**	**Zo**	**Z (-value)**	**Note**
X_2	30	0.505	0.960	Normal
Y	30	0.860	0.450	Normal

(Source: The results of data analysis)

Table 8 shows that the distribution of the variable vocabulary mastery (X_1) and cognitive style (X_2) toward reading comprehension (Y) is normal. It causes the score of -p sig is higher than significance level of 0.05.

2. The Correlation between Vocabulary Mastery (X_1) and Students' Reading Comprehension (Y)

The hypothesis (H_i) stated that there was a correlation between vocabulary mastery (X_1) and students reading comprehension (Y). Single linear regression is used to analyze the correlation of all variables, can be stated in the following form:

$Yi = b_0 + b_1 X_1$
Yi = Reading Comprehension
b_0 = Coefficient of the Direction of Regression
b_1 = single Coefficient Correlation
X_1= Vocabulary Mastery

The significance test of coefficient correlation can be seen in Table 9.

Table 9
Coefficient Correlation and Determination X_1 and Y

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Variable	**R**	**Coefficient Determination**	**t observed**	**t table**	**Note**
Vocabulary mastery (X_1) and Reading Comprehension	0.35	12.3%	1.97	1.70	H_0 is rejected (there is correlation between the variables)

(Source: The results of data analysis)

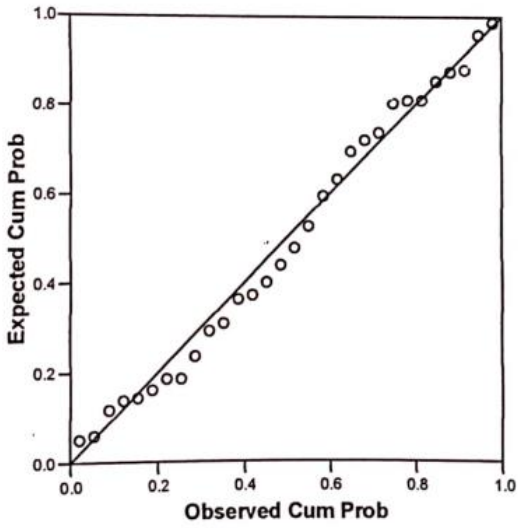


Figure 1
Normal P-P Plot of Regression Standardized Residual

Figure 1 illustrates that the coefficient correlation of product moment is 0.35 with $t_{observed}$ = 1.97. The score of $t_{observed}$ is higher than t_{table} = 1.70. It means that there is a significant correlation between vocabulary mastery (X_1) and reading comprehension (Y). The score of coefficient correlation is 0.35 points that the level of correlation of both variables are very strong. The influence of vocabulary mastery (X_1) on students' reading comprehension (Y) is 12.3% where the influence is considered not too strong but it is significant.

According to the calculation above, the hypothesis is accepted. Thus, there is a positive correlation between vocabulary mastery (X_1) toward students' reading comprehension (Y). In other word, the higher the students' vocabulary mastery is, the higher their reading comprehension will be. Furthermore, regression analysis is used to analyze how dependent variable (Y) is predicted by independent variable (X_1). The regression formula is Y = a + bX, where after calculating the data, it is obtained the regression formula Y = 1.58 + 1.21 X. The following Table 10 is the method to test the model above:

Table 10
Single linearity Regression Model of the Significance of Anava Test

Column 1	Column 2	Column 3	Column 4	Column 5
Variance source	**Df**	Sum of Square	Mean Square	**F**
Regression	**1**	3080.53	3080.53	**521.24**
Remains	**28**	145.47	5.91	
Total	**29**	3226		

(Source: The results of data anal3080.53ysis)
$F_{table} = F_{(0,05;1;28)} = 4.20$

Table 10 shows that $F_{table} = 4.20$ with $F_{observed} = 521.24$. Since the score of calculation = 521.24 is higher than $F_{table} = 4.20$, it means that H_0 is rejected or the model above is very significant with the significance level = 5%.

c. T Test
Hypotheses:
H_0: $\beta = 0$ (The coefficient of regression is not significance)
Hi: $\beta \neq 0$ (The coefficient of regression is significance)

To test the hypothesis, the following Table 11 shows the statistic test used:

Table 11
Test of Coefficient Significance of Single Linearity Regression

Column 1	Column 2	Column 3	Column 4
Coefficient Regression	**Coefficient Value**	**Sb**	**$t_{observed}$**
A	1.58	1.37	1.153
B	0.21		

(Source: The results of data analysis)

Table 11 shows that the alternative hypothesis, that is, the coefficient regression is significant.

3. The Correlation between Cognitive Style (X_2) and the students' reading comprehension (Y)

The second hypothesis (H_2) stated that there was a positive correlation between cognitive style (X_2) with students' reading comprehension (Y). Single linear regression was used to analyze the data where the correlation of all variables can be stated in the following model:

$Yi = b_0 + b_1 X_2$
Where
Yi = Reading Comprehension
b_0 = Coefficient of the Direction of Regression
b_1 = single Coefficient Correlation
X_2= Cognitive style

The significance test of the coefficient correlation can be seen in the following Table 12:

Table 12
Coefficient Correlation and Determination X2 and Y

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Variable	r	Coefficient Determination	$t_{observed}$	t_{table}	Note
Cognitive Style (X_2) and Reading Comprehension	1	100%	5.3	1.70	H_0 is accepted (there is no relationship between the variables)

(Source: The results of data analysis)

Table 12 shows that the coefficient correlation of product moment = 1 with $t_{observed}$ = 5.3, the score of $t_{observed}$ = 5.3 which is higher than t_{table} 1.70. So, there is a significant correlation between cognitive style (X_2) and reading comprehension (Y). The score of the coefficient correlation is 1, it shows that the level of correlation of both variables are very strong. The influence of cognitive learning style (X_2) on reading comprehension (Y) is 100% where the influence is considered very high and significant. Based on the calculation above, the alternative hypothesis is accepted.

Normal P-P Plot of Regression Standardized Residual

The results of the test of normal P-P plot of regression standardized residual can be seen in Figure 3 below.

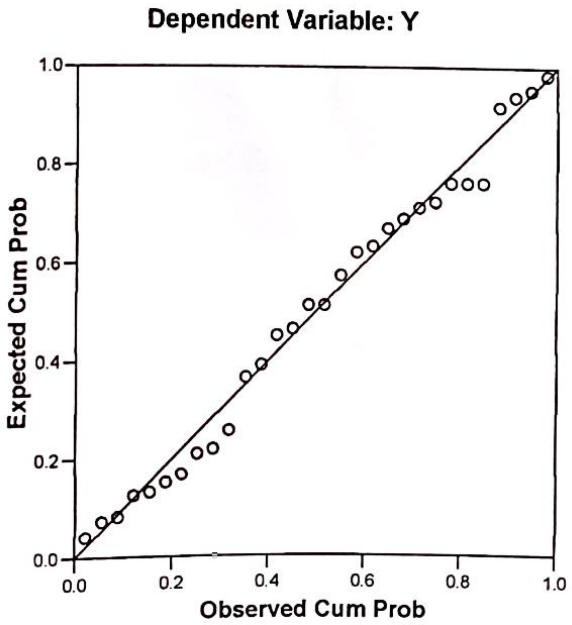


Figure 3
Normal distribution of one side Hypotheses test

Figure 3 shows that the correlation of both variables is very significantly strong. There is a positive correlation between cognitive learning style with students' reading comprehension (Y). In other word, the students' cognitive learning style or their way of thinking influence on their reading comprehension. Furthermore, regression analysis is used to identify how dependent variable (Y) is predicted by independent variable (X_2). The regression formula is Y = a +b X where Y = 5.32 + 0.36 X_2. To test the model, Table 13 shows the the methods to test the model above:

a. Anova F Test

Table 13
Single Linear Regression Model of the Significance of Anava Test

Column 1	Column 2	Column 3	Column 4	Column 5
Variance Sources	Df	Sum Square	Mean Square	F
Regression	1	3080.53	3080.53	23.76
Galat	28	145.47	129.63	
Total	29	3226		

$F_{table} = F_{(0,05;1;28)}$

(Source: The results of data analysis)

Table 13 indicates that F_{table} is 4.2 with $F_{observerd}$ 23.76. The score of $F_{observerd}$ 23.76 is higher than F_{table} 4.2. It means that H_0 is rejected or the cognitive style is significant. The significance level of cognitive style is 100%.

b. T test

Hypotheses:
H_0: $\beta = 0$ (The coefficient of regression is not significance)
Hi: $\beta \neq 0$ (The coefficient of regression is significance)

To test the hypothesis, Table 14 shows the results of statistical calculation:

Table 14
Test of Coefficient Significance of Single Linearity Regression

Column 1	Column 2	Column 3	Column 4
Coefficient Regression	Coefficient Value	Sb	$t_{observed}$
A	5.32	4.96	26.3
B	0.36		

(Source: The results of data analysis)

Table 14 indicates that test of coefficient reression of a single linearity regression is significant.

3. The Relationship between Vocabulary Mastery (X_1) and Cognitive Style (X_2) toward Students' Reading Comprehension (Y)

In this research, coefficient correlation of product moment and the analysis of multiple linear regression were used to test the hypotheses of the correlation between vocabulary mastery (X_1) and cognitive style (X_2) toward students' reading comprehension.

a. Coefficient of Multiple Linearity Regression

To determine the relationship between vocabulary mastery (X_1) and cognitive style (X_2) with students' reading comprehension (Y), multiple linear regression was used to analyze the variables. The model of the multiple linearity regression of all variables is in the following:

$Yi = b_0 + b_1 X_1 + b_2 X_2$
Stated:

Y_i = Reading Comprehension
b_0 = Coefficient of the Direction of Regression
b_1 b_2 = multiple regression Coefficient
X_1 = Vocabulary Mastery
X_2 = Cognitive Style

Then the data is analyzed manually where the results of the calculation can be seen in the following Table 15:

Table 15
The Recapitulation of Multiple Linearity Regression

Column 1	Column 2	Column 3
Variable	Coefficient	Std Error
(constant)	0.997	2.57
X_1	0.93	0.13
X_2	0.362	0.02

(Source: The results of data analysis)

From the calculation above, the multiple regression is obtained that $Y_i = 0.997 + 0.93\ X1 + 0.362\ X_2$. Table 15 shows the recapitulation of multiple linearity regression, indicating that there is a significant correlation among students' vocabulary mastery and cognitive learning style with their reading comprehension ability.

b. The rank of partial Coefficient Correlation

Table 16 below shows that the highest of partial coefficient correlation is cognitive learning style (X_2) with r_{yx2}, = 0.95, it means the correlation is stronger than that of X_1. The second partial of coefficient is vocabulary mastery (X_1) with r_{yx2} = 0.35

Table 16
The rank of partial coefficient correlation

Column 1	Column 2	Column 3
The partial correlation	Partial Coefficient	Rank
Y and X_1	ryx_1= 0.35	Second
Y and X_2	ryx_2= 0.95	First

(Source: The results of data analysis)

DISCUSSION

Based on the findings of the current research, the following interpretation can be made. First, vocabulary mastery significantly correlates with the students' reading comprehension ability. This finding supports the theories stating that an integral part of reading comprehension is the mastery of vocabulary. Reading comprehension ability cannot be achieved without sufficient mastery of vocabulary (Lai, et al., 2009; Bianco, et al., 2011; Vitale, et al., 2012; Kök, 2010; Cesur, 2011; Lai, 2009; Boulware-Gooden, et al., 2007; Bernacki, et al., 2012; Abu Seileek, 2011; Savolainen, et al., 2008; Jackson, 2005; Wang, et al., 2004; Vista, 2013; Abdolrezapour, et al., 2012; Yoğurtçu, 2013; Cano, et al., 2014; García-Madruga, et al., 2014). As a consequence, teachers of English, especially in vocational schools, whose students' interest in learning English is relatively low given that English such schools does not belong to their major of discipline, should try to do their best to help their students improve their vocabulary mastery using varios interesting and challenging techniques.

Previous researchers have found that vocabulary acquisition can be reached by learners' interaction with the texts on any kind of daily life. They found that vocabulary acquisition is not necessarily isolated from other contexts. Vocabulary enhancement can be done by means of using smartphones while they are interacting with other peers. Leaners, once get sufficient vocabulary, can become effective readers, efficient writers, effective speakers and of course effective and efficient listeners, who can comprehend the ideas conveyed in the messages received in any form of communication (Fisher and Frey, 2014; Wardak, 2021). In other words, vocabulary mastery can be done and should be done by means of any kind of activities and interaction. The most important thing is that teachers should be ready to make use of students' world to enhance their vocabulary mastery, so that learning vocabulary is not boring.

Besides, students' use of cognitive learning style plays an important role in accelerating students' reading comprehension ability. Even this study shows that the students' use of cognitive learning style overwhelms the role of vocabulary mastery in enhancing their reading comprehension ability. This may be related to the fact that cognitive learning style is much more encompassing than merely vocabulary mastery. This is a new finding because researchers usually focused their attention on the effect of vocabulary on reading only, without comparing it with the effects of cognitive learning style on students' reading ability. In short, teachers of English should put more emphasis on students' cognitive learning style while they are teaching their students to improve their reading ability. By putting more focus on students' cognitive learning style, the students may make use of their learning style to attend not only vocabulary in isolation from context but also vocabulary in different contexts. Therefore, their comprehension ability improves more significantly. That is why, the finding of this research is that students' cognitive learning style contributes more on the improvement of

students. This finding supports the that of the previous research (Parra, 2016; Chetty, et al, 2019; Kolb, 2014; Wong, 2015; Sahabudin, 2013; Övez, 2016; Dinçol, 2011; Ford, 2001; Lethaby, 2018; Muro, 2007; Crosthwaite, 2018; Kayi-Aydar, 2018; Egel, 2009). The difference between the current research with the previous ones is that the previous study is focused on the effects of cognitive learning style with the results of learning on general, but the current is more focused on more specific objective, i.e., the effect of cognitive learning style on students reading comprehension ability. What is more important is that vocabulary mastery and cognitive learning style can go hand in hand in developing and enhancing students' reading comprehension achievement. Therefore, they cannot be separated from one another. Teachers of English should put more emphasis on these two unattained components of English reading classes.

CONCLUSIONS AND SUGGESTIONS

Based on the results of the data analyhsis, the following conclusions are drawn:

First, there is a correlation between vocabulary mastery (X_1) and students' reading comprehension (Y). The result of coefficient correlation of X_1 to Y (r_{X1y}) is 0.35. It means that they have good correlation. The contribution of X_1 to Y is 12.3% or it has enough correlation. Second, there is a correlation between cognitive learning style (X_2) and students' reading comprehension (Y). The coefficient correlation between X_2 to Y (r_{X2y}) is 0.95 or it has very strong correlation between the two variables. Finally, using multiple regressions to predict the correlation between vocabulary mastery (X_1) variable and cognitive style (X_2) variable with students' reading comprehension (Y) variable, the result of the test shows that the multiple coefficient correlation (R) is 0.997. In other words, there is a positive and significant correlation between vocabulary mastery (X_1) and cognitive style (X_2) with students' reading comprehension (Y) variables. The influence of (X_1) and (X_2) variables on Y variable is 99.4% - very significant. Moreover, the partial coefficient correlation is tested to determine which independent variable most influential on the dependent variable. Based on the result, it was found that the cognitive style (X_2) with r_{yx2} = 0.95 contributes more than vocabulary mastery with r_{yx2} = 0.35. This might be related to the way students learn to get theidea conveyed in the text mostly determined by the use their cognitive learning style.

Based on the results above, it can be inferred that vocabulary mastery and cognitive learning style have important roles in reading comprehension. They cannot be separated from one another because they influence each other. Although in the current study it was found that the cognitive learning style has more significant correlation, vocabulary mastery has its own role to comprehend

the text. In other word, vocabulary mastery and cognitive learning style go hand in hand to help the students to comprehend the ideas conveyed in the texts.

SUGGESTIONS

This research is beneficial for English teachers to make sure that vocabulary mastery and cognitive learning styles have significant correlation toward students' reading comprehension.

Vocabulary mastery influences the students' reading comprehension because the students have to understand the meaning of words or the main idea of the reading text. Mastering vocabulary make the students more confident to read or comprehend the text. Besides, they will have good ability to correlate the meaning of words to other words or they have no difficulty to answer any questions according to the text given.

Then, English teachers should encourage and practice their vocabulary mastery by giving daily vocabulary to help them know and internalize the meaning of words. The students need guidance to acquire the vocabulary mastery. When they read and find out the difficulty words, the teacher will guide them to remind what they have known before.

Cognitive style is also important to comprehend the text. However, the students have lack of vocabulary mastery and lack of cognitive learning style to understand the meaning of words contextually. Often, the students who have good cognitive learning style without mastering vocabulary, can comprehend the text contextually. The cognitive lesarning style influences their reading comprehension. Then spontaneously, they comprehend the text well without any difficulties.

REFERENCES

Abdolrezapour, P., & Tavakoli, M. (2012). The relationship between emotional intelligence and EFL learners' achievement in reading comprehension. *Innovation in Language Learning and Teaching, 6*(1), 1–13. doi:10.1080/17501229.2010.550686

Abu Seileek, A. F. (2011). Hypermedia annotation presentation: The effect of location and type on the EFL learners' achievement in reading comprehension and vocabulary acquisition. *Computers & Education, 57*(1), 1281–1291. doi:10.1016/j.compedu.2011.01.011

Asyiah, D.N. 2017. The vocabulary teaching and vocabulary learning: perception, strategies, and influences on students' vocabulary mastery. *Jurnal Bahasa Lingua Scientia*, 9(2), 293-318.

Bernacki, M. L., Byrnes, J. P., & Cromley, J. G. (2012). The effects of achievement goals and self-regulated learning behaviors on reading comprehension in technology-enhanced learning environments. *Contemporary Educational Psychology, 37*(2), 148–161. doi:10.1016/j.cedpsych.2011.12.001

Bianco, M., Pellenq, C., Lambert, E., Bressoux, P., Lima, L., & Doyen, A.-L. (2011). Impact of early code-skill and oral-comprehension training on reading achievement in first grade. *Journal of Research in Reading, 35*(4), 427–455. doi:10.1111/j.1467-9817.2010.01479.x

Boulware-Gooden, R., Carreker, S., Thornhill, A., & Joshi, R. M. (2007). Instruction of metacognitive strategies enhances reading comprehension and vocabulary achievement of third-grade students. *The Reading Teacher, 61*(1), 70–77. doi:10.1598/rt.61.1.7

Cano, F., García, Á., Berbén, A. B. G., & Justicia, F. (2014). Science Learning: A path analysis of its links with reading comprehension, question-asking in class and science achievement. *International Journal of Science Education, 36*(10), 1710–1732. doi:10.1080/09500693.2013.876678

Cesur, M. O. (2011). Can language learning strategies predict Turkish university prep class students' achievement in reading comprehension? *Procedia - Social and Behavioral Sciences, 15,* 1920–1924. doi:10.1016/j.sbspro.2011.04.028

Chetty, N.D.S., Handayani, L., Sahabudin, N.A., Ali, Z., Hamzah, N., Nur Shamsiah Abdul Rahman, N.S.A., Kasim, S. (2019). Learning styles and teaching styles determine students' academic performances. *International Journal of Evaluation and Research in Education (IJERE) Vol. 8*(3), 610-615.

Crosthwaite, P. R. (2018). Teaching and learning styles in South-East Asian cultures. *The TESOL Encyclopedia of English Language Teaching, 1–6.* doi:10.1002/9781118784235.eelt0681

Dinçol, S. Temel, S., Oskay, Ö. Ö., Erdougan, Ü. I. & Yilmaz, A. (2011). The effect of matching learning styles with teaching styles on success, *Procedia-Social Behav. Sci., vol. 15,* pp. 854-858, 2011.

Egel, I. P. (2009). English language learning and teaching styles in two Turkish primary schools. Social Behavior and Personality: *An International Journal, 37*(8), 1117–1128. doi:10.2224/sbp.2009.37.8.1117

Felder, R. M., & Henriques, E. R. (1995). Learning and teaching styles in foreign and second language education. *Foreign Language Annals, 28*(1), 21–31. doi:10.1111/j.1944-9720.1995.tb00767.x

Fisher, D. and Frey, N. (2014). Content area vocabulary learning. *The Reading Teacher, 67*(8), 594-599.

Ford, N. & Chen, S.Y. (2001). Matching/mismatching revisited: An empirical study of learning and teaching styles. *J. Educ. Technol., vol. 32(1),* pp. 5-22.

Fung, W., Chung, K. K., & Cheng, R. W. (2018). Gender differences in social mastery motivation and its relationships to vocabulary knowledge, behavioral self-regulation, and socioemotional skills. *Early Education and Development, 1*(14).

García-Madruga, J. A., Vila, J. O., Gómez-Veiga, I., Duque, G., & Elosúa, M. R. (2014). Executive processes, reading comprehension and academic achievement in 3th grade primary students. *Learning and Individual Differences, 35,* 41–48. doi:10.1016/j.lindif.2014.07.013

Ghonivita, Y., Pahamzah, J., Syafrizal, Wijayanti, M.A. (2021). Improving students' listening skill and vocabulary mastery through contextual teaching and learning (CTL) by using online learning for senior high school. *International Journal of English Language and Linguistics Research, 9(4)*, 45-55.

Jackson, N. E. (2005). Are university students' component reading skills related to their text comprehension and academic achievement? *Learning and Individual Differences, 15*(2), 113–139. doi:10.1016/j.lindif.2004.11.001

Kayi-Aydar, H. (2018). Teaching and learning styles in Middle-Eastern cultures. *The TESOL Encyclopedia of English Language Teaching, 1–5.* doi:10.1002/9781118784235.eelt0800

Kök, İ. (2010). The relationship between students' reading comprehension achievement and their attitudes towards learning English and their abilities to use reading strategies with regard to hemispheric dominance. *Procedia - Social and Behavioral Sciences, 3,* 144–151. doi:10.1016/j.sbspro.2010.07.026

Kolb, D.A. (2014). "*Experiential learning: Experience as the source of learning and development.*" FT press.

Lai, M. K., McNaughton, S., Amituanai-Toloa, M., Turner, R., & Hsiao, S. (2009). Sustained Acceleration of Achievement in Reading Comprehension:

The New Zealand Experience. *Reading Research Quarterly, 44*(1), 30–56. doi:10.1598/rrq.44.1.2

Lai, M. K., McNaughton, S., Timperley, H., & Hsiao, S. (2009). Sustaining continued acceleration in reading comprehension achievement following an intervention. *Educational Assessment, Evaluation and Accountability, 21(1),* 81–100. doi:10.1007/s11092-009-9071-5

Lethaby, C., & Mayne, R. (2018). A critical examination of perceptual learning styles in English language teaching. *International Review of Applied Linguistics in Language Teaching, 0(0).* doi:10.1515/iral-2017-0067

Muro, P.D., & Terry, M. (2007). A matter of style: Applying Kolb's learning style model to college mathematics teaching practices, *J. Coll. Read. Learn., vol. 38(1),* pp. 53-60.

Övez, F.T.D. & Uyangör, S.M. (2016). The effect of the match between the learning and teaching styles of secondary school mathematics teachers on students' achievement, *J. Educ. Pract., vol. 7(29)*, pp. 125-132.

Parra, B.J. (2016). Learning strategies and styles as a basis for building personal learning environments. *International Journal of Educational Technology in Higher Education (2016)*, *13: 4*, pp. 1-11. 4 DOI 10.1186/s41239-016-0008-z

Putra, D. H., Ikhsanudin, I. & Bunau, E. (2021). Correlation between vocabulary mastery and fluency in speaking at Universitas Tanjungpura. *Premise: Journal of English Education and Applied Linguistics Journal, Vol 10,* No 1. https://doi.org/10.24127/pj.v10i1.3348

Ramli, A., & Rivaldin. (2021). Fostering Students' Vocabulary Mastery Through K.I.M (Keyword, Information, And Memory Clue) Strategy at an Indonesian Junior Highschool Context. *ELT Worldwide: Journal of English Language Teaching, 8(2),* 365-370.

Safadi, E., & Rababah, G. (2012). The effect of scaffolding instruction on reading comprehension skills *International Journal of Language Studies (IJLS), 6(2),* 1-38.

Sahabudin, N.A. & Ali, M.B. (2013). Personalized learning and learning style among upper secondary school students, " *Procedia-social and behavioral sciences., vol. 103,* pp. 710-716.

Savolainen, H., Ahonen, T., Aro, M., Tolvanen, A., & Holopainen, L. (2008). *Reading comprehension, word reading and spelling as predictors of school achievement and choice of secondary education. Learning and Instruction, 18(2), 201–210.* https//doi.org/10.1016/j.learninstruc.2007.09.017

Shadikah, A.A., Fauziati, E. & Supriyadi, S. (2017). The effect of vocabulary learning strategies on vocabulary mastery based on gender differences. *Proceeding of 2nd International Conference of Arts Language and Culture.* Sebelas Maret University Surakarta, 57126, Indonesia.

Shin, J. (2018). Minority youth's mastery of academic vocabulary and its implications for their educational achievements: the case of "multicultural adolescents" in South Korea. *Multicultural Education Review, 10(1),* 35–51. doi:10.1080/2005615x.2018.1423539

Tawarik, O., Ikhsanudin, I., Wajdi, M., & Latip-Yusoph, S. (2021). Effect of CALLA metacognitive strategy instruction on reading comprehension and reading awareness. *Journal of Applied Studies in Language, 5*(2). 309-319. http://ojs2.pnb.ac.id/index.php/JASL

Virgana, V., & Lapasau, M. (2019). The Influence of vocabulary mastery and reading comprehension towards performance of students in mathematics. *IOP Conf. Series: Journal of Physics: Conf. Series 1360 (2019) 012001*, 1-7.

Vista, A. (2013). The role of reading comprehension in maths achievement growth: Investigating the magnitude and mechanism of the mediating effect on maths achievement in Australian classrooms. *International Journal of Educational Research, 62,* 21–35. doi:10.1016/j.ijer.2013.06.009

Vitale, M. R., & Romance, N. R. (2012). Using in-depth science instruction to accelerate student achievement in science and reading comprehension in grades 1 – 2. *International Journal of Science and Mathematics Education, 10*(2), 457–472. doi:10.1007/s10763-011-9326-8

Wang, J. H.-Y., & Guthrie, J. T. (2004). Modeling the effects of intrinsic motivation, extrinsic motivation, amount of reading, and past reading achievement on text comprehension between U.S. and Chinese students. *Reading Research Quarterly, 39*(2), 162–186. doi:10.1598/rrq.39.2.2

Wardak, M. (2021). Mobile assisted language learning (mall): teacher uses of smartphone applications (apps) to support undergraduate students' English as a foreign language (EFL) vocabulary development. *International Journal of English Language Teaching 9(1),* 33-58.

Wong, W.L.H. (2015). "*A study of language learning style and teaching style preferences of Hong Kong community college students and teachers in English for Academic Purposes (EAP) Contexts.*"

Yoğurtçu, K. (2013). The Impact of Self-efficacy Perception on Reading Comprehension on Academic Achievement. *Procedia - Social and Behavioral Sciences, 70,* 375–386. doi:10.1016/j.sbspro.2013.01.075

Yuan, T., & Bingbing, L. (2014). A research on vocabulary teaching strategies and students' mastery. *Liberal Arts in Russia, 2(4),* 399-401.

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