Looking at the Link between Thinking Styles and Academic Achievement: The Case of One State Islamic University in Palembang

Eka Sriwarsiti
Private English Instructor at PT. Global Makara Teknik, Sungai Lilin, South Sumatera, Indonesia
esriwarsiti@gmail.com

Abstract
The aims of this study were (1) to find out whether or not there was a significant correlation between each type of thinking styles and students' academic achievement, (2) to identify if thinking styles significantly contributed to students' academic achievement, and (3) to find out type of thinking styles becoming the best predictor for the academic achievement of one State Islamic University in Palembang. In this study, 460 EFL students of one State Islamic University in the academic year of 2016-2017 became the population of this study. 88 students were taken as samples by using purposive sampling method. The method used in this study was a correlational study. The data were obtained by using a ready-made questionnaire and documentation. Pearson Product Moment correlation coefficient and regression analysis of SPSS version 21.0 were used to analyze the obtained data. The results of the two analyses showed that (1) out of 13 types of thinking styles, only 9 types of thinking had positive and significant correlation to the students' academic achievement; (2) those 9 types of thinking styles contributed to the students' academic achievement with 48.8% contribution; and (3) hierarchical thinking style was the best predictor and contributed to the students' academic achievement with 29.8% contribution.

Keywords: academic achievement, EFL students, state Islamic university, thinking styles,

Introduction

Education is the reason above all progress and prosperity of human cultures and civilization. Without education, this world would be covered in an intellectual shadow. Nowadays, education operates under the context of the dynamic social milieu and its major focus is that of transmitting and inculcating the desirable knowledge, skills and other behaviors among the members of society. UNESCO (2014) has identified that variety of tensions and crisis of modern society and suggested 4 pillars to be established for strengthening the education system. These pillars are learning to know, learning to do, learning to live together and learning to be. These four pillars need to be strong in order to gain the teaching and learning language effectiveness, and to improve the quality of 21st century education. Education is also aimed at improving the process and its implication in one's life. Educational system and its effective factors must be controlled for promoting educational quality. Evaluation of the important educational aspects is a basis for valuating educational institutes (Leenaars & Laster, 2006). Evaluation of educational achievement can be defined as one of the most important educational evaluations. The continuity of evaluation of the students' educational achievement during their

academic period and the examination of its effective factors are the critical and crucial bases of educational system improvement especially in the universities. The result of educational system can be determined by observing the students' performance or academic achievement. Lawrence and Vimala (2012) state that academic achievement is a measurement of knowledge gained in formal education which is usually indicated by many things, namely; test scores, grade, grade points, average, and degrees. It can be concluded that academic achievement is the most important tool that determines students' performance as the result of learning process becoming the main criteria to compete with others.

Regarding to academic achievement, many factors influence the students' academic achievement, especially in higher education. One of those factors is the students' thinking styles. According to Noble (2006), perceptions of the students' thinking, and positive attributions and characteristics determine their academic achievement. Besides, Garcia (2010) describes that thinking style plays an important role in many aspects one's life. In addition, Navan (2015) explains that understanding and recognizing thinking and learning styles will very much help the students to reach success and to avoid them from failure. Those explanations above showed that thinking styles can be very influential for people to gain success. Understanding and recognizing the students' thinking styles are very important for teachers and lecturers. According to Zhang (2004), several research repeatedly mentioned that instructional styles of the teachers should be changed from time to time in order to cover all students' thinking styles. All in all, teachers or lecturers are the main actors handling and caring about the students' thinking styles. If the teachers or lecturers teach with inappropriate method, it will raise serious problems during teaching and learning process for the students.

The informal interview conducted to some EFL students at one State Islamic University revealed that the students were not satisfied with their own GPA. Some factors were identified causing the unsatisfactory result of their GPA. The students had lack of capability in some subjects in which the students were required to have group presentation, the activity where the students need to think critically and to organize the knowledge. There has been many studies concerning about the two variables used in this study, thinking styles and academic achievement. First, Masarmi, Fani and Ojinejad (2015) revealed that there was a significant relationship between thinking styles and academic achievement. Meanwhile, Fatemi and Heidarie (2016) mentioned that among 13 types of thinking styles, only legislative, hierarchical, anarchic, judicial, monarchic, and oligarchic type of thinking styles having significant correlation towards academic achievement. The purposes of this study were constructed in accordance with its problems. The problems of this study are: (1) was there any significant correlation between each type of thinking styles and academic achievement of undergraduate EFL students at one State Islamic University in Palembang?, (2) did thinking styles significantly influence the academic achievement of undergraduate EFL students at one State Islamic University in Palembang?, and (3) among the 13 types of thinking styles, which one was the best predictor for the academic achievement of undergraduate EFL students at one State Islamic University in Palembang?

Literature Review

The concept of thinking styles

Thinking styles have gained popularity since long time ago. Sternberg (1997) and Zhang (2004) were the ones proposing a thinking style theory then gave it label *the theory of mental*

self-government. The theory of mental self-government proposes the 13 thinking styles that were spread into 5 dimensions.

The dimension are spread into three functions (legislative, executive, and judicial styles), four forms (hierarchical, oligarchic, monarchic, and anarchic styles), two levels (global and local styles), two scopes (internal and external styles), and two leanings (liberal and conservative styles) of the mental self-government. Here is the description for each thinking style; 1) *Monarchic* people are those individuals who are categorized as those going towards a single goal all the time, they are also flexible, and able to analyze and think logically is low. They prefer works that focus on their individuality (Sternberg, 1994). 2) *Hierarchical* people are realistic, logical and organized in solving problems and in making decision (Sternberg & Wagner, 1991). 3) *Anarchic people,* according to Sternberg and Wagner (2006), are those people with anarchic style, they have difficulty setting priorities since they have no firm set of rules, they tend to adopt a method of random and non-compliant in a particular order to solve the problems. 4) *Oligarchic people* are those who can be claimed that have many planning but difficulty in doing the action (Sternberg, 2006; Grigorenko & Sternberg, 1995). 5) *Legislative people,* according to Fouladi and Shahidi (2016), are those individuals who tend to create, invent, design and do the things in their own way. 6) *Executive people,* according to Ahmadi, Gorjian, and Pazhakh (2014), are those having the ability of individual to enjoy creating and formulating their own rules. 7) *Judicial people,* according to Ahmadi, et al. (2014), are those people having the ability of individual to like to judge and evaluate rules, ways, ideas, and procedures. 8) *Global people* are those who prefer general, abstract reasoning, pondering in the world of ideas (Ahmadi et al., 2014). 9) *Local people* are those who have the realistic ability to tend to be involved with details and objective and specific examples. 10) *Liberal people* are those seeking through the tasks under taken by them to by pass laws that imposed upon them, whether at work or in school in order to bring the biggest possible change (Sternberg, 2006 & Bernardo et al., 2002). 11) *Conservative people*, according to Fouladi and Shahidi (2016), prefer to do things in before experienced and right ways and follow the customs. 12) *External people* are those seeking to work collaboratively (Heidari & Bahrami, 2012). 13) *Internal people* are those who perform different activities independently (Heidari & Bahrami, 2012).

The concept of academic achievement

Academic achievement is a familiar term for all educational practitioners. Academic achievement is considered as a measurement of knowledge obtained in formal education which is usually indicated in the form of test scores, grade, grade points, average and degrees (Lawrence & Vimala, 2012). It can be inferred that the academic achievement is the last outcomeon the basis of the score that the students have obtained in the quarterly examinations. The students' academic achievement plays an important role in producing the best quality graduates who one day will become great leader and man power for the country thus responsible for the country's economic and social development (Ali Norhidayah, Kamaruzaman, Ali Syukriah, Mokhtar Najah, & Salam, 2009).

Methodology

This study used correlational research with the quantitative design to investigate the correlation between the two variables, thinking styles and academic achievement. The results were then explained and interpreted. The EFL students at one State Islamic University in Palembang, who were in the sixth semester, were involved as samples of this study. The samples were taken by using purposive sampling technique. In this study, questionnaire and documentation were used as instruments to collect the data. First of all, the students' thinking styles were measured by using Thinking Style Inventory Questionnaire adopted from Sternberg and Zhang (2007). The questionnaire consists of 65 items. Each classification of thinking styles is spread into 5 items. It used likert-scale as the scoring system and students' thinking style were categorized. Second; the data for the students' GPA were obtained by using documentation. There were some procedures I conducted to answer the previously mentioned research problems. First, prerequisite analyses, normality and linearity test were conducted prior to having correlational analysis through SPSS. Second, after all the data were found normal and linear, the correlational analysis was then conducted to find out the correlation between the two variables. Third, the significant influence of thinking styles towards the academic achievement was analyzed by using enter method regression analysis. Then, the analysis was continued to stepwise regression anlysis which was used to reveal the best predictor among the 13 thinking styles towards the students' academic achievement.

Findings

Out of 103 active EFL students in the sixth semester of one State Islamic University, only 88 students took part in this study, and the rest did not attend when this study was taken place. The 65 items of Thinking Style Inventory (TSI) Questionnaire from Sternberg, Wagner and Zhang (2007) were used to investigate the participants' thinking styles. From the questionnaire, it was found out that the 13 types of thinking styles were all perceived by the students with different portions. The details are as follows.

Table 1. Distribution of Students' Thinking Styles

No	Thinking styles	Frequency	Percentage
1	Legislative Style	13	13.943%
2	Executive Style	6	12.454%
3	Judicial Style	5	12.795%
4	Hierarchical Style	5	12.784%
5	Monarchic Style	9	12.818%
6	Oligarchic Style	7	12.488%
7	Anarchic Style	7	13.058%
8	Global Style	7	12.693%
9	Local Style	5	13.136%
10	Liberal Style	17	13.988%
11	Conservative Style	3	12.579%

12	Internal Style	2	12.215%
13	External Style	9	13.318%
	Total	**95**	**168,27%**

The data from documentation showed that for each category, 19 students had very good academic achievement or *cumlaude*, 63 students had good academic achievement, 5 students had average academic achievement, 1 student had poor and none of them had very poor academic achievement. The distribution for each category is presented below.

Table 2. Distribution of Students' Academic Achievement

No	Score Range	Category	Total	Percentage
1	3.51 – 4.00	Very Good/ Cum laude	19	21.59%
2	3.01 – 3.50	Good	63	71.59%
3	2.51 – 3.00	Average	5	7.35%
4	2.01 – 2.50	Poor	1	1.13%
5	0.00 – 2.00	Very Poor/ Fail	-	-
		Total	88	100%

Normality and linearity test

Normality test and linearity test were conducted before data analysis through SPSS 21.0 version for windows. The data are interpreted normal if $p > 0.05$ it means the data are normal. If $p < 0.05$, it means the data are not normal. Kolmogorov-Simonov was used to see the normality. The results of normality test shown in Table 13 indicated that the data from each variable were all normal and appropriate for data analysis with coefficients. Table 3 below described the results of normality test for all 13 thinking styles.

Table 3. The Result of Normality Test for Each Thinking Style

Normality of Thinking Styles	Asymp. Sig. (2-tailed)
Legislative	0.156
Executive	0.101
Judicial	0.071
Hierarchical	0.152
Monarchic	0.78
Oligarchic	0.278
Anarchic	0.104
Global	0.131
Local	0.63
Liberal	0.69
Conservative	0.52
Internal	0.091
External	0.328

For linearity test, deviation of linearity was obtained. If probability is more than 0.05 (p>0.05), the two variables are linear. The results showed that the deviation from linearity between each type of thinking styles and academic achievement were found linear. Table 4 below showed the results of linearity test.

Table 4. The Result of Linearity Test for Each Thinking Style

Linearity of thinking styles	Sig.
Legislative	0,943
Executive	0,903
Judicial	0,253
Hierarchical	0.516
Monarchic	0,716
Oligarchic	0,759
Anarchic	0.197
Global	0,157
Local	0,587
Liberal	0,128
Conservative	0,919
Internal	0,594
External	0,999

Correlation between thinking styles and academic achievement

From the 13 types of thinking styles, there were only 9 types of thinking styles having significant correlation. The details are shown in the Table 5 below.

Table 5. The Correlation Between Each Type of Thinking Styles And Academic Achievement

		Academic Achievement
Legislative Styles	Pearson Correlation	.405**
	Sig (2-tailed)	.000
	N	88
Executive Styles	Pearson Correlation	.254**
	Sig (2-tailed)	.017
	N	88
Judicial Styles	Pearson Correlation	.280**
	Sig (2-tailed)	.008
	N	88
Hierarchical Styles	Pearson Correlation	.546**
	Sig (2-tailed)	.000
	N	88
Monarchic Styles	Pearson Correlation	.301**
	Sig (2-tailed)	.004
	N	88
Oligarchic Styles	Pearson Correlation	.399**

	Sig (2-tailed)	.000
	N	88
Anarchic Styles	Pearson Correlation	.505**
	Sig (2-tailed)	.000
	N	88
Global Styles	Pearson Correlation	.140
	Sig (2-tailed)	.192
	N	88
Local Styles	Pearson Correlation	.206
	Sig (2-tailed)	.054
	N	88
Liberal Styles	Pearson Correlation	.165
	Sig (2-tailed)	.124
	N	88
Conservative Styles	Pearson Correlation	.108
	Sig (2-tailed)	.316
	N	88
Internal Styles	Pearson Correlation	.298**
	Sig (2-tailed)	.005
	N	88
External Styles	Pearson Correlation	.353**
	Sig (2-tailed)	.001
	N	88

The influence of thinking styles on students' academic achievement

Since there was a significant correlation between legislative, executive, hierarchical, judicial, monarchic, oligarchic, anarchic, internal, and external style with academic achievement, it was important to find out the influence of the nine thinking styles having significant correlation to the students' academic achievement. Therefore, enter regression analysis was used to find out if the nine thinking styles significantly influenced the students' academic achievement.

Table 6. Regression Analysis of Thinking Styles and Academic Achievement

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,696[a]	,484	,424	,192

a. Predictors: (Constant), external, monarchic, anarchic, executive, internal, judicial, hierarchical, oligarchic, legislative

b. Dependent Variable: GPA

The result showed that R square (R^2) of the nine thinking styles was (.484). It means that the nine thinking styles (legislative, executive, judicial, hierarchical, oligarchic, monarchic, anarchic, internal and external thinking styles) contributed to the students' academic achievement with 48.4% contribution.

The best predictor of students' thinking styles

The stepwise regression analysis was used to gain better understanding about contribution among legislative, executive, judicial, hierarchical, oligarchic, monarchic, anarchic, internal and external thinking styles to the students' academic achievement. The result showed that hierarchical thinking style became the best predictor among other types of thinking styles with 29.8% contribution.

Table 7. The Thinking Style being the Best Predictor among all Types

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
			Model Summary[d]	
1	,546[a]	,298	,290	,213
2	,629[b]	,396	,381	,199
3	,662[c]	,438	,418	,193

a. Predictors: (Constant), hierarchical

b. Predictors: (Constant), hierarchical, anarchic

c. Predictors: (Constant), hierarchical, anarchic, monarchic

Discussion

Some interpretations were drawn on the basis of the findings mentioned in the previous section. First, among the 13 types of thinking styles, there were only 9 types of thinking styles which had significant correlation to the students' academic achievement, namely legislative, executive, judicial, hierarchical, oligarchic, monarchic, anarchic, internal, and external thinking style. Secondly, since the result showed that there was a significant correlation between the variables, the regression analysis was then conducted. After the analysis was conducted, it was found out that those nine types of thinking styles as a whole (legislative, executive, judicial, hierarchical, oligarchic, monarchic, anarchic, internal, and external) gave 48.4% contribution to the students' academic achievement. At last, hierarchical style was statistically proven to be the best predictor among all thinking styles having significant correlation by giving 29.8% contribution to the students' academic achievement. Meanwhile, the other 18.6% were affected by the other 8 types of thinking styles.

There are many factors causing the results to occur. One of the factors is that the EFL students at one State Islamic University in Palembang were aware of their thinking-styles performance. They tried to be social person, to have high motivation, to believe on their ability, to be a risk-taker, to have positive behaviors, to obey rules, to be creative, to be able to solve problem in their academic, and to work in a team or personally. Those activities involve thinking styles. Navan (2015) states that understanding various thinking styles helps people to adjust their thoughts with different thinking styles and simultaneously succeed in communications. Furthermore, Garcia (2010) argues that thinking styles play role in many important aspects of

wellbeing and life success. It means that each academic activity involves the students' thinking styles.

The result of this present study is in line with the study conducted by Fatemi and Heidarie (2016). They found that there was significant correlation between thinking styles and academic achievement. Meanwhile, when it measures each style, not all of styles had correlation with academic achievement. The results also showed that there was a significant relationship between the variables of legislative, executive, oligarchic, monarchic, anarchic, hierarchic, judiciary thinking styles and academic achievement. It was due to each thinking style has different contribution to the students' academic achievement. The seven styles above, in particular, had suitable activities that support the academic achievement. Meanwhile, the contribution of the rest of thinking styles was not suited in academic performance.

In addition, Navan and Shahitmadarie (2015) found the significant relationship between the dimension of function thinking style (legislative, executive, and judicial) and academic achievement. They suggest that people who have different characteristics, which are manifested in their abilities, talents, preferences and eventually their thinking styles. The people are led to the rights pathways in their career and education by taking into account these differences. Different individual thinking styles should be identified earlier. It is supported by Ojinejad, Masarmi, and Fani (2015) who explain that people with legislative style like doing things with their own ways, executive thinking style such people tend to follow the rules and procedures in the execution of their tasks, and people with Judicial thinking style like role in the evaluation and judgment about things. As a result, many students can take advantage of their maximum potential and obtain high grades in their courses. In conclusion, there were nine types (legislative, executive, judicial, hierarchical, oligarchic, monarchic, anarchic, internal, and external) of students' thinking styles which were proven to have significant and positive correlation and to give contribution to the students' academic achievement. The findings of the study may have some pedagogical implications for foreign language teachers, next researchers, and students.

Conclusion and Recommendations

From the findings and interpretations mentioned in the previous chapter, some conclusions could be drawn. First of all, all the nine types of thinking styles (legislative, executive, judicial, hierarchical, oligarchic, monarchic, anarchic, internal, and external thinking style) of the students had significant and positive correlation to their academic achievement. Second, it can be concluded that the nine types (legislative, executive, judicial, hierarchical, oligarchic, monarchic, anarchic, internal, external) of thinking styles gave significant influence on the students' academic achievement. It was shown that students' thinking styles gave 48.4% contribution to their academic achievement. Third, it was also indicated that one type of the nine thinking styles became the best predictor which had essential contribution in determining the success of students' academic achievement, which was hierarchical thinking style with 29.8% contribution.

This study also presents some implications for further implementation. For the students, this study is expected to provide some valuable information in the development of language teaching and learning process in elevating students' academic achievement. To be successful in learning, students need to be conscious with their ability as a power to reach the purposes of learning. For the lecturers, this study is expected to be helpful for them who still need to comprehend their students' thinking styles, and to encourage the students to be aware of their

own thinking styles as one of the factors affecting their success or failure in their study. For other researchers, this study is also expected to be a relevant reference for their future research especially concerning about thinking styles and academic achievement.

References

Ahmadi, S., Gorjian, B., & Pazhakh, A. R. (2014). The effect of thinking styles on EFL learners' language learning strategies in reading comprehension. *International Journal of Language Learning and Applied Linguistics World (IJLLALW), 6*(4), 74-88.

Fatemi, M., & Heidari, A. (2016). Relationship between thinking styles and academic achievement of the students. *International Journal of Humanities and Cultural Studies, 2*(4), 1353-1361. Retrieved from https://www.ijhcs.com/index.php/ijhcs/article/viewFile/706/635

Fouladi, N., & Shahidi, E. (2016). Creativity, thinking style and mental disorders. *Journal of Fundamental and Applied Sciences, 8*(2), 1726-1736. Retrieved from www.jfas.info/index.php/jfas/article/view/853

Garcia, E. P. (2010). *The relationship between thinking styles and resilience (Masters' thesis)*. Oklahoma State University, Oklahoma, England. Retrieved from https://shareok.org/handle/11244/10460

Heidarie, F. (2012). The relationship between thinking styles and metacognitive awareness among Iranian EFL learners. *International Journal of Linguistics, 4*(3), 721-733. Retrieved from www.macrothink.org › Home › Vol 4, No 3 (2012) › Heidari

Lawrence, L., & Vimala, A. (2012). School environment and academic achievement of standard ix students.*Journal of Educational and Instructional Studies in the Worlds, 2*(3), 210-215. Retrieved from https://files.eric.ed.gov/fulltext/ED542331.pdf

Leenars, L., & Lester, D. (2006). Perfectionism, depression, and academic performance. *Psychology Rep, 9*(1), 41-42. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/17305218

Masarmi, S. N., Fani. H., & Ojinejad, A. (2015*).Jurnal UMP Social Sciences and Technology Management, 3*(3), 195-200.

Navan, S. F. S., & Shahitmadarie, M. (2015). The relationship between functions of thinking styles and academic achievement motivation among students of Payame Noor University, Iran. *Indian Journal of Fundamental and Applied Life Sciences, 5*(3), 1699-1708.

Noble, J. P., Roberts, W. L., & Sawyer, R. L. (2006). Student achievement, behavior, and other factors affecting ACT scores. *ACT Research Report Series, 1*(1), 1-15.

Sternberg, R. J. (1997). *Thinking styles.* NY: Cambridge University Press.

Sternberg, R. J. (1998). Styles of thinking and learning. *Canadian Journal of School Psychology, 13*(2), 15-40. Retrieved from journals.sagepub.com/doi/abs/10.1177/082957359801300204

Sternberg, R. J., & Wagner, R. K. (2006). Thinking styles inventory, *Unpublished Test.* Yale: Yale University.

Zhang, L. F. (2004). Thinking styles: University students' preferred teaching styles and their conceptions of effective teachers. *Journal of Psychology: Interdisciplinary and Applied, 138*(3), 233-252.