Identification Finance Students Learning Style through Honey and Mumford Theory in Disruptive Era

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Abstract: The purpose of this research is to explore students learning styles and to know better way of teaching that fit for different needs of undergraduate finance students in Department of Management, Universitas Negeri Medan. Honey and Mumford theory is used as the main theory to investigate factors that influence the undergraduate students learning style in the disruptive era. Moreover, the research model was built by seven independent variables base on students' background and one dependent variable that verify four-dimensional learning styles, namely, Activist, Reflector, Theorist, and Pragmatist. Furthermore, primary data were used and analyzed by descriptive statistics and multinomial logistic regression. Moreover, Bunbury Resilient Community Project U-4-72 questionnaire that adduce 80 items with verify four-dimensional learning styles was used for the research questionnaire. All undergraduate finance classes at The Department of Management, Universitas Negeri Medan were the research population and all under graduate students that taken capital market and financial management courses were taken as the research sample with a total of 148 students. The results revealed that 50.8 percent students have been identified as reflector, 29.4 percent students as pragmatist, 17.5 percent as theorist, and only 2.4 percent as activist. Moreover, students parent career has dominant affected toward students learning style with level of significance below 0.05 in the likelihood ratio test. Based on this outcome, the paper also offers discussion, recommendation and guideline for the future research.

1 INTRODUCTION

There is evidence from previous research that different students have different learning style whereas some students prefer learning through reading, others through watching examples, etc., and a linkage between learning styles and career choice (Truong, 2015). Moreover, study of Weng, et al. (2017) in multimedia material of Taekwondo proved that students learning achievement have been affected by students learning style. Furthermore, study that has been conducted by Sandman (2014) for over 1,100 undergraduate business students in one university confirmed that students have adaptive learning styles toward courses that they are taken rather than an innate learning style.

Current learning system is un avoidably without the use of technology. Cyber-physical systems have risen from current forth industrial revolution which disrupt all aspect of industries, academic, and even government (Clerck & Wit, n.d.). Furthermore, Weng, et al., (2017) confirmed in their study on multimedia materials of Taekwondo Aerobic on students' attitude that multimedia-based teaching style promotes and significantly affect students' learning attitude. Moreover, Özyurt & Özyurt (2015) conducted literature study on 69 articles which was published from 2005 until 2014 about Adaptive Educational Hypermedia (AEH) base on learning styles reported that AEH base on learning styles have relatively high achievement level of student satisfaction on learning achievement.

Even though, some research publications suggested that studying theories on student learning styles are wasting of energy, no real scientific basis and wasting of time, such as studies that were conducted by Willingham, et al., (2015); An & Carr (2017) and Kirschner (2017). However, there have been reported over 70 theories about learning styles that were developed over the past 30 years which could be considered that learning style gaining

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significant interest from researchers and educators (Truong, 2015). The scope of this research is to identified undergraduate finance students learning styles and investigate factors that influence student learning styles with four-dimension which Honey and Mumford Theory as the main conducted theory for this research, although Özyurt & Özyurt (2015) found that Honey and Mumford Theory was limited study to be found.

2 THEORICAL FRAMEWORK

Although there are more than 70 theories that has been identified which discuss student learning styles (Truong, 2015), this research used Honey and Mumford Theory as the main theory that was developed in 1992 by Honey and Mumford which based on Kolb's work but using a different approach. Furthermore, the theory introduced four-dimensional learning styles, namely, activist learning style, theorist learning style, reflector learning style, and pragmatist learning style (Bontchev, et al., 2018).

Activist learning style is typical of those who are usually prefer new things and have an open idea. Some of their activities are brainstorming, action learning, problem solving, group discussion, working in small group, puzzles, here and now tasks, role-play, and competitions (Bontchev, et al., 2018; Labib, et al., 2017).

Theorist style characterizes people who are likely to think logically and assimilate all the facts systematically into the problem (coherent theorist). Their main activities are comprise the exploration of models, applying theories, background information, statistics, stories, theoretical connections, complex task, and drawing information into systematic and logical theory (Bontchev, et al., 2018; Labib, et al., 2017).

Reflector prefer to stay at a distance and contemplate the situation from different point of view. The main activities comprise self-analysis questionnaires, collect data and analysis, personality questionnaires, time out, observing activities, cautious and thoughtful, self-direct learning, feedback from others, interviews, and paired discussions (Bontchev, et al., 2018; Labib, et al., 2017).

Pragmatist style is typical who willing to try things and want concepts that can be applied to their work. Some of their activities include seek out new ideas and take the opportunity to taste them out in the real world as soon as possible, action learning, problem-solving, and practical applications (Bontchev, et al., 2018; Labib, et al., 2017).

Moreover, Russell-Bennett, et al., (2016) provides a significant evidence that using a single universal approach as an assessment tool for students learning outcome should be avoided because erroneous approach could cause impairment in students attitude and theirs learning achievement.

Furthermore, Hill, et al., (2014) ran research on student education background toward their learning styles and concluded that students educational background has significant strong affected on students learning styles. Moreover, Sarabi-Asiabar, et al., (2014) revealed that students learning styles has been affected by student gender.

Hence, in this sense, the study seeks to answers to the following questions:

1. What are the most dominant undergraduate finance students learning styles base on Honey and Mumford Theory?
2. What factors of student background that significantly affected student learning styles which are base on Honey and Mumford Theory?

3 RESEARCH METHOD

All of finance students were the study population and students that taken two courses of finance class, namely, financial management and capital market were taken as sample study that comprised 148 students. Moreover, the research location was at Department of Management, Universitas Negeri Medan, which was conducted from 1st of August 2018 until 15th of October 2018 through intense observation and distribute questionnaires for each student. Furthermore, Bunbury Resilient Community Project U-4-72 questionnaire that adduce 80 items was modified and used as the study questionnaire to examine the four-dimensions of student learning styles.

This study which examines the most dominant undergraduate finance students learning styles base on Honey and Mumford Theory was conducted through descriptive statistics. While, student background factors toward student learning styles was conducted through multinomial logistic regression, whereas students learning styles are signed in Y in four categorical nominal type of data and presented in $ln\left(\frac{P_n}{P_i}\right) = z_n$, student living environment is signed with X_1 in nominal, total family members is signed with X_2 in ratio, father career is represented with X_3 in nominal, mother career is represented with X_4 in nominal, student acquired of vocational education is represented with X_5, student acquired non-formal education is signed with X_6, student habit is signed with X_7 in nominal,

and student organizational activity is signed with X_8 in nominal. Therefore, the study model of multinomial logistic regression is shown as follow:

$$ln\left(\frac{P_1}{P_0}\right) = z_1 = c_1 + \gamma_{11}X_1 + \gamma_{12}X_2 + \gamma_{13}X_3 + \gamma_{14}X_4 + \gamma_{15}X_5 + \gamma_{16}X_6 + \gamma_{17}X_7$$

$$ln\left(\frac{P_2}{P_0}\right) = z_2 = c_2 + \gamma_{21}X_1 + \gamma_{22}X_2 + \gamma_{23}X_3 + \gamma_{24}X_4 + \gamma_{25}X_5 + \gamma_{26}X_6 + \gamma_{27}X_7$$

$$ln\left(\frac{P_3}{P_0}\right) = z_3 = c_3 + \gamma_{31}X_1 + \gamma_{32}X_2 + \gamma_{33}X_3 + \gamma_{34}X_4 + \gamma_{35}X_5 + \gamma_{36}X_6 + \gamma_{37}X_7$$

$$p_0 = \frac{1}{1+e^{Z_1}+e^{Z_2}+e^{Z_3}}$$

$$p_1 = \frac{e^{Z_1}}{1+e^{Z_1}+e^{Z_2}+e^{Z_3}}$$

$$p_2 = \frac{e^{Z_2}}{1+e^{Z_1}+e^{Z_2}+e^{Z_3}}$$

$$p_3 = \frac{e^{Z_3}}{1+e^{Z_1}+e^{Z_2}+e^{Z_3}}$$

4 ANALYSIS

148 students were analyzed in total within the scope of this study. With the reference to the first research question, the most dominant undergraduate finance students learning styles base on Honey and Mumford Theory was revealed. A summary of this finding is presented in Table 1. Case Processing Summary which was calculated by SPSS 18 application.

Table 1: Case Processing Summary

Case Processing Summary			
		N	Marginal Percentage
Student Learning Styles	Activist	3	2.4%
	Reflector	64	50.8%
	Theorist	22	17.5%
	Pragmatist	37	29.4%
Valid		126	100.0%
Missing		22	
Total		148	
Subpopulation		3 3[a]	

a. The dependent variable has only one value observed in 20 (60.6%) subpopulations.

The table above showed that student with reflector learning style has the highest percentages with an amount of 50.8 percent rather than other learning styles. Moreover, pragmatist learning style has placed in the second highest of percentage with an amount of 29.4 percent and has followed by theorist learning style with sum of only 2.4 percent.

Furthermore, based on the second research question, factors of student background that significantly affected student learning styles which are based on Honey and Mumford Theory was disclose. A summary of finding is appeared in Table 2. Likelihood Ratio Tests, Table 3. Model Fitting Information which was calculated by SPSS 18 application.

Table 2: Likelihood Ratio Tests

Likelihood Ratio Tests				
Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	f	Sig.
Intercept	126.830	11.306		.010
X3	125.733	10.210		.017
X4	123.908	8.384		.039

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

Table 3: Model Fitting Information

Model Fitting Information				
Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	130.318			
Final	115.523	14.794	6	.022

The Table 2 showed that only father career (X3) and mother career has significant level below 0.05, which mean that based on statistical testing both variables have been proven with confidence interval of more than 95 percent. Moreover, Table 3. showed that the model which was built by both variables is significantly measured below 0.05, which means that father career (X3) and mother career (X4) could become predictors toward undergraduate finance students learning styles at Department of Management, Universitas Negeri Medan.

Furthermore, the parameter predictors could be seen in Table 4 and Table 5 that are shown below:

Table. 4: Parameter estimates

Learning styles 1[a]		B	Std. Error	Wald
Activist	Intercept	-1.070	1.101	.945
	X3	-.651	.835	.608
	X4	-.129	.334	.150
Reflector	Intercept	1.024	.370	7.675
	X3	.249	.104	5.746
	X4	-.363	.131	7.651
Pragmatist	Intercept	.625	.395	2.504
	X3	.184	.110	2.803
	X4	-.319	.141	5.161

a. The reference category is: Theorist.

Table 5: Parameter estimates

df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
			Lower Bound	Upper Bound
1	.331			
1	.436	.521	.101	2.681
1	.699	.879	.457	1.691
1	.006			
1	.017	1.283	1.046	1.573
1	.006	.695	.538	.900
1	.114			
1	.094	1.202	.969	1.490
1	.023	.727	.552	.957

According to Table 4 above, the construction model of multinomial logistics that identified significant below level of 0.05 which could be seen on reflector relatively toward theorist, and pragmatist relatively toward theorist learning style is written as follow:

$$ln\left(\frac{P_{Reflector}}{P_{Theorist}}\right) = z_2 = 1.024 + 0.249X_3 - 0.363X_4$$

$$ln\left(\frac{P_{Pragmatist}}{P_{Theorist}}\right) = z_2 = -0.319X_4$$

Table 6: Parameter estimates

Student Learning Styles [a]		B	Std. Error	Wald
Activist	Intercept	-1.695	1.079	2.468
	X3	-.835	.834	1.003
	X4	.190	.335	.322
Reflector	Intercept	.399	.294	1.843
	X3	.065	.070	.870
	X4	-.044	.114	.149
Theorist	Intercept	-.625	.395	2.504
	X3	-.184	.110	2.803
	X4	.319	.141	5.161

a. The reference category is: Pragmatist.

Table 7: Parameter estimates

df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
			Lower Bound	Upper Bound
1	.116			
1	.317	.434	.085	2.224
1	.570	1.209	.627	2.331
1	.175			
1	.351	1.068	.931	1.225
1	.699	.957	.765	1.197
1	.114			
1	.094	.832	.671	1.032
1	.023	1.376	1.045	1.813

According to Table 7 above, the construction model of multinomial logistics that identified significant below level of 0.05 which could be seen only on theorist relatively toward pragmatist learning style is written as follow:

$$ln\left(\frac{P_{Theorist}}{P_{Pragmatist}}\right) = z_2 = 0.319$$

5 RESULTS

Reflector learning styles has been identified as the highest learning styles among the finance students with amount of 50.8 percent. Which means that 50.8 percent of finance students have learning style characteristic stay at a distance and contemplate the situation from different point of view. Therefore, more than 50 percent of learning outcome could be leverage if lectors or instructors considers activities such as comprise self-analysis questionnaires, collect data and analysis, personality questionnaires, time out, observing activities, cautious and thoughtful, self-direct learning, feedback from others, interviews, and paired discussions (Bontchev, et al., 2018; Labib, et al., 2017).

Moreover, students parent career has been proven as influential factors toward the development of students learning styles. Furthermore, the model of factors that significantly proven below 0.05 only $ln\left(\frac{P_{Reflector}}{P_{Theorist}}\right) = z_2 = 1.024 + 0.249X_3 - 0.363X_4$, Which means that if X3 equal zero and X4 equal zero, a group of students that has reflector learning style has greater chances 2.78 times than a group of students that has theorist learning style.

6 CONCLUSIONS

By gaining more awareness toward students learning styles, lectures could leverage the outcomes of their student's achievement and it offers them learning design that tailored to the students needs. This study has proven that more than 50 percent of the undergraduate finance students at the Department of Management, Universitas Negeri Medan has

reflective learning styles in the era of disruptive – industrial revolution 4.0. Finance lectures and tutors should design learning material mostly base on reflective student characteristic. Furthermore, grouping of students in class activities is also essential base on their style of learning. Moreover, parent involvement in developing student learning styles has been proven.

Hence, there are wide opportunity for future researcher to gain more insight on learning style. Moreover, study on learning style are mostly base on student at school, which mean that theory of learning style could have more opportunity to analyze on other part of academics such as how a learning style develop on small and medium enterprises or how learning style develop for a group of pensions.

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