

Characteristics of Creative Students Versus Academic Performance

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Abstract

One of the challenges for Higher Education Institutes (HEIs) in Malaysia is to drive the education system to achieve world class innovation. Finding from the prior researches reveals that creativity is the key component of innovation process and crucial element for students to enhance their competitiveness. As such, this research is conducted to examine the characteristics of creative students in the Faculty of Management (FM), Universiti Teknologi Malaysia and the relationship with academic performance. The research is quantitative based via questionnaire and responded by 60 students from the FM. Through descriptive analysis,

Personality, Knowledge and Motivation are suggested as highly important creativity characteristics among FM students. Finding from the research also suggested, Personality and Thinking Style are significant and negatively correlated with academic performance. Meantime, ANOVA result revealed that characteristic of Motivation for Year 3 students is significant higher than Year 1 and Year 2 students. The main implication of the study is there is a need to explore the opportunity to ensure student's creativity and academic performance are develop in parallel direction.

Keywords: creativity, knowledge, thinking style, personality, motivation

1. Introduction

Nowadays, one of the challenges for Higher Education Institutes (HEIs) in Malaysia is to align the education system with the government vision of achieving the world class status in education, research and innovation. Within the scope of innovation, prior research (Anderson *et al.*, 2014) viewed creativity as the main element and first step of innovation process. Creativity is about the process of generating ideas while the innovation is refers to the conversion of ideas into action (Gurteen, 1998). Thus, creativity is the key element and initiator to start innovation process. Creativity is defined as an attribute that thinking out of the box. In addition, creativity is one of the new key learning objectives in Higher Education Institutes, (Purushothaman and Zhou, 2014). Hence, creativity should be one of the key attributes of graduates from Higher Learning Institutes.

Graduate or student's creativity is defined as the skills of the students on how they using their thinking in creative way in handling a particular subject, communicating about the ideas and solving the problems. Creativity is one of the important attribute for students in order to survive in the world of creative society. Furthermore, creativity characteristics are needed to improve their abilities in terms of thinking, planning, analysing, working, communicating, designing and learning (Pecheanu and Tudorie, 2015). Creativity is also the fundamental requirement to improve the competitive value among the students which might reflect on their academic performance (Wulandari, 2016). Academic performance refers to the student's assessment results based on quiz, test, examination, presentation. The assessment results are commonly summarized and reflect in the form of Cumulative Grade Point Average (CGPA).

There are inconsistent finding by prior researchers in regard with the relationship between student's creativity and students' academic performance. Research by Zhang (2002) suggested that the relationship between characteristics of creativity and academic performance were significantly positive correlation, while Chamorro-Premuzic and Furnham (2003) suggested that it has a negative correlation which is low correlation between characteristics of creativity with the examination grades. Hence, this study is conducted to study the characteristics of creativity versus academic performance among the students of Faculty of Management (FM) in Universiti Teknologi Malaysia (UTM). As such, three objectives are developed for this research: 1) RO1: To identify the important level of creativity characteristics perceived by FM students; 2) RO2: To identify the relationship between creativity characteristics and academic performance among FM students; 3) RO3: To identify the differences on creativity characteristics based on year of study.

2. Theoretical Background

Series of literature review (Busato *et al.*, 2000, Nasir, 2011, Sternberg, 2012) on the attributes and characteristic of student's creativity revealed that the elements of creativity characteristic could be split into four main aspects, which are knowledge, thinking styles, personality and motivation.

2.1 Knowledge

Acquired a depth and breadth knowledge is a must for an individual to boost creativity (Shalley and Gilson, 2004). Knowledge is one of the assets or values of an individual. The level of knowledge reflects the level of individual's creativity as well as how the creativity is applied on problem solving and creation of new ideas or solution. Research by Masrek and Zainol (2015) suggested knowledge is the good predictor for academic performance, including how the student performed in their examination, class participation and presentation. In addition, according to Reduan (2013), knowledgeable students might able to develop an "out of the box", greater and original idea to solve their current problems and to avoid any foreseeable potential problem.

2.2 Thinking Style

Thinking style refers to an individual's thinking process and the view of the individual on the particular subject (Eragamreddy, 2013). While creative thinking is defined as a kind of thinking that leading to a new approach, insights, perspectives and ways of understanding a particular subject (Eragamreddy, 2013). Study conducted by Reduan (2013) revealed that there is strong relationship between thinking styles and creativity of students, hence it is important to identify and enhance students creative thinking skills throughout their learning process. The ultimate aim of creative thinking enhancement is to develop students in order to cultivate novelty think style and view things globally (Reduan, 2013).

2.3 Personality

Personality is refers to a set of character or traits presented by an individual. Finding from prior research suggested that the personality trait is strongly correlated with creativity (Busato *et al.*, 2000, Sternberg, 2012, Reduan, 2013, Wang *et al.*, 2017). Each individual holds an unique personality which make them different from the others (Wang *et al.*, 2017). The Big Five Model Traits or also known as Five Factor Model is the most common model used by prior researchers to measure individual's personality. The personality measures of Big Five Model Traits consist of personality of openness, conscientiousness, extraversion, agreeableness and neuroticism. This study assesses the personality in term of openness by having a unique personality and fully commitment on interested field, and also the personality of conscientiousness, which is about the willingness and strive-fullness of the students.

2.4 Motivation

Motivation refers to desire and commitment of individuals to be continually improved on a particular subject (Reduan, 2013). Study done by prior researchers suggested that motivation is one of the factors that could drive individual creativity. Motivation could be driven by intrinsic or extrinsic factors (Reduan, 2013). Intrinsic motivation is a motivation originated from the individual's nature, interest and curiosity of learning or exploring new experience or subject. In contrast, extrinsic motivation is initiated from the external source such as rewards and recognition. Finding from prior studies reveals that an effective teaching and learning process should focus on creating students' interest and curiosity of exploring new knowledge. Hence, intrinsic motivation should be the core focus for effective teaching and learning process.

2.5 Academic Performance

Cumulative Grade Point Average (CGPA) is the common measure used to evaluate students' academic performance (Shalley and Gilson, 2004). CGPA of a semester is calculated by dividing the total amount of grade points for the semester with the total amount of credit hours. Academic performance is viewed by industrials or employers as an index or criteria for new employee recruitment. There are inconsistent findings by prior researchers in regard with the relationship between student's creativity and students' academic performance. Research by Zhang (2002) suggested that the relationship between characteristics of creativity and academic performance were significantly positive correlation, while Chamorro - Premuzic and Furnham (2003) suggested that it has a negative correlation which is low correlation between characteristics of creativity with the examination grades.

2.6 Research Framework

Figure 1 shows the research framework for this study. The research framework is developed based on the concept of the characteristics of creativity as independent variable, while the academic performance as the dependent variable. 5 hypotheses are developed, which are:

H1: Knowledge is significantly correlated to the academic performance of students

H2: Thinking style is significantly correlated to the academic performance of students

H3: Personality is significantly correlated to the academic performance of students

H4: Motivation is significantly correlated to the academic performance of students

H5 (a): There is significant difference on knowledge based on year of study.

H5 (b): There is significant difference on thinking style based on year of study.

H5 (c): There is significant difference on personality based on year of study.

H5 (d): There is significant difference on motivation based on year of study

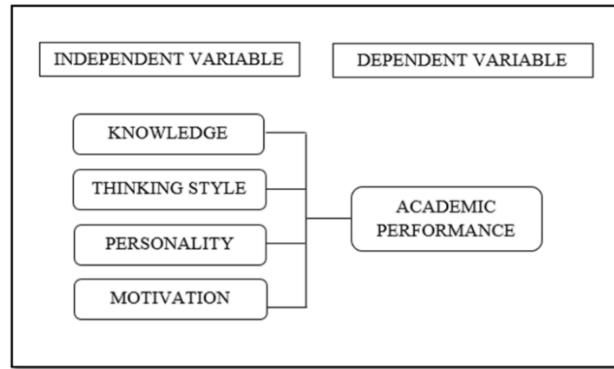


Figure 1. Research Framework

3. Method

This study used quantitative research approach via questionnaire. The questionnaire is developed to assess the characteristics of creative students and their academic performance. The questionnaire consists of 23 questions which splits into Part A until Part F as shown in the Table 1. The respondents were asked to rate each of attributes of characteristics of creativity based on the five point scale from (1) strongly disagree to (5) strongly agree.

Table 1. Sources of Questionnaire

Content of Questionnaire	Dimension	No. of items	References
A	Respondents Profile	6	Reduan (2013)
B	Knowledge	4	
C	Thinking Styles	4	
D	Personality	4	
E	Motivation	4	
F	Academic Performance	1	CGPA

The population for this study are all undergraduate students in Faculty Management. The total number of students is 978. The sample size is determined based on suggestion of Chin (1998) and Hair (2011) which suggested that the minimum sample size could be determined by multiplying the number of independent variable by 10. Since this study involved 4 independent variables, the minimum sample size for this study is 40. Taking into consideration the respond rate of previous research done in Faculty of Management (FM) which is 0.53, the targeted sample size for this study is 75 (i.e.40/0.53). To avoid demographic bias in sampling and to increase the validity of size sample, 25 respondents from each year were selected based on the simple random basis where the respondents are available to answer the survey questionnaire. Hence, the type of sampling used in this research is a stratified random sampling method. With this type of sampling technique, each element in the population has a known and equal chance of being random selected in the sample (Sekaran and Bougie, 2010).

4. Results

The total number of responded questionnaires is 60 which contributed to the respond rate is 80%. All questionnaires are screened and there is no issue of missing value across all the 60 returned questionnaires.

4.1 Normality Test and Reliability Test

Normality test in term of Skewness and Kurtosis are conducted on all dependent and independent variable. Skewness and Kurtosis for all variable are within the range of -1.0 to +1.0 suggested that data collected for all variables are normally distributed (Hair, 2007). A reliability coefficient (Cronbach Alpha) of minimum 0.70 is used as the acceptance level for statistical reliability (Hair, 2007). Cronbach Alpha for all variables are analysed and the result shown Cronbach Alpha for all variable are above 0.70. Hence, data collected is statistically significant and can be proceed for the further analysis.

4.2 Addressing Research Objectives (RO) of This Study

4.2.1 RO1: To Identify the Important Level of Creativity Characteristics Preceived by FM Students

The mean score for each independent variables are calculated via SPSS descriptive analysis to address RO1. The result of analysis is summarized in Table 2. As refer to Table 2, characteristics of Personality scored at the highest mean of 3.9792, while the Thinking Style is rated at the lowest level with mean of 3.2708. The rest of creativity characteristics are rated by the respondents between the ranges of 3.9542 to 3.682.

Table 2. Summary of Descriptive Analysis

No	Characteristics of Creativity	Mean	Level
1	Personality	3.9792	High (Important)
2	Knowledge	3.9682	High (Important)
3	Motivation	3.9542	High (Important)
4	Thinking Style	3.2708	Moderate (Neutral)

Finding from descriptive analysis suggested that all creativity attributes (Knowledge, Thinking Style, Personality, Motivation) are important for creativity performance. The ranking orders of importance level of characteristics of creativity are as follows, Personality, Knowledge, Motivation, Thinking Style. The finding from this study is in line with the research done by Sternberg (2006) which suggested that the elements of creativity which as a basic development of creativity for an individual are including knowledge, thinking style, personality and motivation.

4.2.2 RO2: To Identify the Relationship Between Creativity Characteristics and Academic Performance Among FM Students

Data collected is analysed via Pearson Correlation to assess the relationship between each of the creativity characteristics and academic performance. The null hypothesis for RO2 is “there is a significant relationship between each characteristics of creativity and academic performance at significant level of 0.05”.

Table 3. Summary of the Pearson Correlation between Creativity and Academic Performance

Hypothesis	Characteristics of Creativity		Significant	Decision	Coefficient (r)	
H1	Knowledge	Overall	0.70		Not significant	0.05
		Attributes	All >0.05		Not significant	-0.02 to 0.17
		Male	All >0.05		Not significant	-0.11 to 0.29
		Female	All >0.05		Not significant	-0.03 to 0.14
H2	Thinking Style	Overall	0.60		Not significant	-0.06
		Attributes	All >0.05		Not significant	-0.14 to 0.15
		Male	Overall Attributes	0.04	Significant	-0.74
			Attribute C2 (Independent-Legislatives)	0.01	Significant	-0.82
		Female	All >0.05		Not significant	-0.06 to 0.21
H3	Personality	Overall	0.17		Not significant	-0.17
		Attributes	Attribute D1 (Uniqueness)	0.04	Significant	-0.27
		Male	All >0.05		Not significant	-0.08 to 0.31
		Female	All >0.05		Not significant	-0.04 to 0.05
H4	Motivation	Overall	0.85		Not significant	-0.02
		Attributes	All >0.05		Not significant	-0.03 to 0.01
		Male	All >0.05		Not significant	-0.05 to 0.00
		Female	All >0.05		Not significant	-0.01 to 0.03

As refer to Table 3, there is no significant relationship between creativity characteristics “Knowledge” and “Motivation” toward academic performance; hence H1 and H4 are not supported. However, a noticeable finding on H1 and H4 are both Knowledge and Motivation are negatively correlated with academic performance. In addition, Pearson correlation analysis result also suggested that there is no significant relationship between the overall mean of “Thinking Style” toward academic performance (H2). However, further analysis suggested that there is significant, strong and negative correlation between Thinking Style and Academic performance for male population (with correlation coefficient of -0.74), especially for attribute Independent-Legislatives (with correlation coefficient of -0.82). Yet, enhancement on Thinking Style among male population does not guarantee a good academic performance because both variables are negatively correlated. The finding is not in line with the previous study done by Zhang, (2002). This is perhaps due to the subject taken by the

students in FM (such as the subject of law, accounting and others management subjects) tend to focus on memorizing, stick to the formula which actually do not cultivate the students' creativity directly.

Result from Pearson Correlation test on creativity characteristic "Personality" (H3) and academic performance suggested that both variables are negatively correlated, however the correlation is not significant from the aspects of overall, male and female. In addition, the attributes of Personality "Uniqueness" is significant, weak and negative correlation with academic performance with coefficient of -0.27. The finding is in agreement and supported by the previous study, (Chamorro-Premuzic and Furnham, 2003, Bauer and Liang, 2003, Conard, 2006, O'Connor and Paunonen, 2007) which revealed that openness personality has a significant, negative and low correlation with the academic performance of students.

4.2.3 RO3: To Identify the Differences on Creativity Characteristics Based on Year of Study

RO3 is analysed via ANOVA to assess the differences on each characteristics of creativity based on year of study. The hypotheses to test are H5(a), H5(b), H5(c) and H5(d) which stated that there is a significant differences on each characteristics of creativity (i.e Knowledge, Thinking Style, Personality, Motivation) based on year of study. Table 4 shows the result of ANOVA via SPSS. As refers to *Table 4*, significant levels for all creativity characteristics are above 0.05 except characteristic of "Motivation", which is 0.041. Hence, the analysis result from this study failed to support H5(a), H5(b) and H5(c). However, hypothesis 5 (H5) is supported (There is a significant difference on motivation based year of study which is Year 1, Year 2 and Year 3).

The mean of creativity characteristic "Motivation" rated by Year 1, Year 2 and Year 3 students are summarized in *Table 5*. Mean score summary of *Table 7.0* suggested that the Year 3 students scored the highest mean of 4.2188 as compared to the Year 2 (3.8707) and Year 1 (3.8333) students. It is remarkable to observe that motivation level for Year 1 and Year 2 students are relatively lower than Year 3 students. Finding from RO 3 suggested that creativity characteristics knowledge, thinking style and personality are not significantly grown or changed in relative with year of study, perhaps these are the characteristics that formed in the earlier stage of education (i.e. prior to undergraduate courses). However, the learning experience in university does enhance the motivation characteristic of the students via the enhancement of knowledge and experiences gained from the learning process.

Table 4. ANOVA Result

		Sum of Squares	df	Mean Square	F	Sig.
KNOWLEDGE	Between Groups	.256	2	.128	.490	.615
	Within Groups	14.905	57	.261		
	Total	15.161	59			
THINKING STYLE	Between Groups	.168	2	.084	.210	.811
	Within Groups	22.744	57	.399		
	Total	22.911	59			
PERSONALITY	Between Groups	1.805	2	.902	3.006	.057
	Within Groups	17.107	57	.300		
	Total	18.911	59			
MOTIVATION	Between Groups	1.541	2	.771	3.373	.041
	Within Groups	13.020	57	.228		
	Total	14.561	59			

Table 5. Summary of Descriptive

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min.	Max.
						Lower Bound	Upper Bound		
MOTIVATION	Year 1	15	3.8333	.58757	.15171	3.5079	4.1587	3.00	5.00
	Year 2	29	3.8707	.42584	.07908	3.7087	4.0327	3.00	5.00
	Year 3	16	4.2188	.45529	.11382	3.9761	4.4614	3.50	5.00
	Total	60	3.9542	.49679	.06414	3.8258	4.0825	3.00	5.00

5. Discussion and Recommendation

In summary, the research finding suggests that within the scope of Faculty of Management, all creativity characteristics (Knowledge, Personality, Motivation and Thinking style) are perceived by the students as important for creativity performance. In addition, finding from the research also reveals that Thinking Style for male students and one of the attribute for “Personality” (i.e. “Uniqueness”) are significantly and negatively correlated with academic performance. Meantime, “Motivation” is the only creativity characteristic that shows significant difference base on demographic in term of year of study.

On top of this, the main implication of this study is, within the scope of FM, the teaching approaches that focused on academic performance enhancement do not assure the growth on students’ creativity. Instead, finding from the study reveals that both academic performance and students’ creativity are moving toward different direction. Hence, there is a need to revisit the current teaching and learning process and approach in FM to ensure student’s creativity and academic performance are moving forward in the same direction in parallel.

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