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The Infusion of Creativity Among Science Students' Learner at Lestari Kemajuan Education

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Abstract

Creativity is the main element for all countries and organizations to maintain their sustainability. To achieve high-income nation in year 2020, Malaysia government admit that creativity is one of the main element that have to be focus on. The objective of this study is to find out more information about creativity in Lestari Kemajuan Education (LKEDU) centre, and suggest how to improve the competitive advantage of the company base on the information. The study was conducted quantitatively with descriptive method among LKEDU students. There was 92 respondent involved in the answering the questionnaire. A pilot test was conducted and the reliability of the instrument was α=0.808 which is bigger than 0.700. The data collected was analyzed using Statistical Package for Social Science software. The study indicated that the average mean of creativity levels of students fall in middle. There were no significant relationship between the levels of creativity and gender, and socio-economic background of students. There was a weak relationship between the levels of creativity and average science result. Findings show that there are no significant difference between the levels of creativity and gender, and socioe-conomic background of students, and low significant difference between the levels of creativity and average science result in school of students. Overall, the study shows the creativity of students in LKEDU and ways of recommendations to improve it.

Key-word: - Creativity, Science, Education centre

1.0 INTRODUCTION

In the United States, the National Academy of Engineering reported on "Educating the Engineer of 2020" that creativitiy is one of the crucial element to maintain their share in high technology jobs, gearing towards economy growth (Boult, 2009). In Europe, the Manifesto of European Year of Innovation and Creativity in 2009 concluded that creativity is the best element for the European to be forefront of the world (Cachia, Ferrari, Ala-Mut,a & Punie, 2010). These two countries both agreed that education play an important role in cultivating creativity among young generations.

The Malaysia Prime Minister mentioned in his major speech to top scientist and policy makers that Malaysia must hold to the principles of creativity as it is vital for Malaysia to become a high-income nation by the year 2020. He claimed that Malaysia had successfully move beyond an economy based on agriculture, and to build on manufacturing services too. The next challenge is to move forward via creativity in order to increase productivity and more effective use of knowledge for greater economic and social development. Capabilities and creativity of citizen are the main ingredients of achieving this vision (Daud, 2012). Among Malaysian students who perform poor in Trends in International Mathematic and Science Study (TIMMS), Malaysia ranks at 39 out of 44 countries listed in Programme for International Students Assessment (PISA) in 2012. The World Bank economist Frederico Gil Sander claimed that the poor performance of Malaysia students were much alarming, and this will affect the country's pool of skilled talented as well as it becomes one of the main obstacle for Malaysia to become a high-income nation.

In order to fulfill the vision, and achieve the country's target to be one of the top five countries in PISA Performance in 2025, as highlighted in the Preliminary Report Malaysia Education Blueprint 2013-2025 in the year 2013, Lestari Kemajuan Education (LKEDU) underlined the goals by providing tution services among learners of primary and secondary schools. Functions as a Non-Government Organization (NGO), LKEDU idea is to overcome the bottleneck situation. LKEDU Management belief that by inculcating creativity element among students may bring a significant impact and develop the styles of learning and to increase students result in education.

2.0 BACKGROUND OF THE STUDY

Creativity is defined as the production of new and useful ideas concerning products, services, processes and procedures by individuals or small groups of persons working together. The concept of creativity and its purpose and place in education has arisen all around the world, from the view of education, creative learning is any learning which involves understanding and new awareness, which allows the learner to go beyond notional acquisition, and focuses on thinking skills (Cachia et al., 2010). Many researcher have examined the role of creativity in education, and they belief creativity can be learned (Im, Hokanson, & Johnson, 2015).

Simona Mihai- Yiannaki mentioned that global economy is trying to recover from Second World War which are the period of worst economic crisis. There are many challenges and opportunities at this moment. Creativity is important in business to maintain their competitive advantages and maintain the growth of the business (Mihai-Yiannaki & Savvides, 2012).

According to Farsat Ali Shaban (Shaban, Salih, & Al-Zaidi, 2016), he and his team summarised that there are four main elements in creativity. Which are i) Originality ii) Flexibility of thoughts iii) Fluency of ideas and iv) Problem sensitivity. Originality refer to the quality to create unique or something news. Flexibility refer to the ability of one individual to change the method or propose some different idea toward a problem. Fluency of ideas refer to the ability to examined or evaluate the ideas generated by different tools, are the ideas formulate opportunities, or feasible or not. Last, problem sensitivity refer to the ability to identify the problem, and aware about the necessary for change or using different methods.

To undestand creativity, we must have a measurement tools to measure the creativity. Ziska Fields and Christo A.Bisschoff (Fields & Bisschoff, 2013) develop an instrument to measuare level creativity bases on 12 elements. Only 7 elements are selected for this study as highlighted in Table 1:

Table 1: Statistical Analysis Of Data For Each Objectives

No	Items	Description
1	Challenging the Status Quo	An individual's willingness and motivation to challenge assumptions, to take initiative, to look at the big picture, being creative in an environment that tears down personal barriers to creative thinking and being motivated to be creative in his/her own interest areas.
2	Separation	Ability to separate processes, resources, objects and dimensions in an effort to be creative
3	Cognition	Ability to discover links and relationships by looking at different and a variety of information sources, as well as the ability to cope with complexities when a problem needs to be solved.
4	Associate And Communicate	Ability to generate new ideas by looking actively for associations among concepts, the use of brainstorming to make associations, to propose new ideas regularly and the ability to persuade others that creative ideas generated are valuable.
5	Awareness	Ability to recognise gaps and contradictions in existing knowledge, to see different aspects of a problem and the ability to not get stuck on a set of rules to solve a problem.
6	Similarity	Ability to look for similarities in problems, solutions, patterns and concepts.
7	Sensitivity	Sensitivity of a person to various aspects of a problem.

For many decades, science education help to discover the value of creativiy (Dehaan & Studies, 2009). According to Cheng, creativity can also be generated through scientific knowledge in various forms of expression (Cheng, 2011). While Yee research show there are no significant relationship between academic achievement and level sof creativity (Heong, Othman, Yunos, Kiong, Hassan, Mohaffyza, & Mohamad, 2011).

Dudek (Runco, 2004) agree that socioeconomic status contributed to creative thinking during an individual's developmental years, with higher socioeconomic status being beneficial to creativity. Robert H.Bradley and Robert F.Corwn (Bradley & Corwyn, 2002) mentioned the relationship between Socioeconomic status between creativity in their research " Socioeconomic Status And Child Development". They mentioned for over 70 years of finding, numerous studied have documented that lower socioeconomic status are associated with lower creativity. While Yee (Heong et al., 2011) and team study show different result. Surprisingly, students from low socio economic status are better in some element in creativity as compared to students from higher socio economic status.

Settles (Settles, Cortina, Buchanan, & Miner, 2016) findings show that women appear to have higher creativity than men in a female-dominated environment. Nejad research show that creativity is stronger in female students as compared to males (Nejad, Jenaabadi, Ghafarshuja, & Heydaribisafar, 2015). Based on the result of PISA 2012 ("PISA 2012 Results in Focus," 2012), Malaysia female students are average perform better than male students. While Yee (Heong et al., 2011) study concluded that females or males have the same levels of creativity is their study.

3.0 RESEARCH METHODOLOGY

The primary aim of this study is to (1) determine the levels of creativity among LKEDU students, (2) determine the relationship between the levels of creativity between gender, average science result and socio-economic status of students' parent in LKEDU, and to (3) determine any significant difference between the levels of creativity of students between gender, average science result of students and socio-economic status of student's parents in LKEDU. The study conducted via a cross-sectional survey among LKEDU Science students. A set of questionnaire adapted from Ziska Fields and Christo A. Bisschoff (Fields & Bisschoff, 2013) was utilized in data collection techniques. The questions consisted of 38 items based on the seven creativity elements with five Lidert Scale (Likert, 1932). Prior to the actual research, a pilot test was conducted to determine the reliability of the instrument and to achieve the desired objective of the study. The reliability of the instruments was .808. Data collection techniques were self-administered from the respondents. Common in most research, the characteristics of the population can use descriptive method to describe through the distribution of frequencies and percentages.

Population is a group of people who have similar characteristics (Brewer, 2009). Population should be identified appropriately based on the research. In this study, the target population is fifteen year olds students who take science subject tuition in LKEDU. A total number of 120 students is the population of the study, and only 92 students were taken as the sample size due to Krejcie and Morgan (1970) table for sample size for population. Instrument for statistical analysis of data is presented in Table 2:

Table 2: Instrument for Data Collection Techniques

No.	Research Questions	Statistical Techniques
1	What is the levels of creativity of students in LKEDU?	SPSS, Mean
2	What is the relationship between the levels of creativity between gender, average science result and socio-economic status of students' parent in LKEDU?	Spearman's Rho
3	Is there any significant difference between the levels of creativity of students between gender, average science result of students and socio-economic status of student's parents in LKEDU?	ANOVA

4.0 FINDINGS

In this study, data were analyzed using SPSS software. Descriptive statistics were used as analytical tools. Findings of the study are presented in the table format, as to answer the research questions. Findings of the study from 92 respondents indicated that none of the creativity element are in the levels of Strong. Only three elements are rated Middle Strong which is challenging the status quo, awareness and sensitivity. Others elements of separation, cognition, associate and communicate and similarity are rated as Middle levels of creativity. The preceding ideas of levels of creativity in among students is presented in Table 3:

Table 3: The Levels Of Creativity In Among Students

Section	Element	Mean score	Levels of creativity
1	Challenging the status quo	3.47	Middle strong
2	Separation	3.28	Middle
3	Cognition	3.20	Middle
4	Associate and Communicate	3.31	Middle
5	Awareness	3.48	Middle strong
6	Similarity	3.26	Middle
7	Sensitivity	3.51	Middle strong

Table 4 indicated that the total average creativity levels of female is higher than male. Female is perform much better in the element of challenging the status quo, while male is perform much better in sensitivity. Other elements are almost average for both male and female.

Table 4: Gender and creativity analysis

Section	Element	Female		Male	
		Mean	Levels	Mean	Levels
1	Challenging the status quo	3.59	Middle strong	3.37	Middle
2	Separation	3.25	Middle	3.31	Middle
3	Cognition	3.28	Middle	3.13	Middle
4	Associate and Communicate	3.34	Middle	3.29	Middle
5	Awareness	3.42	Middle strong	3.54	Middle strong
6	Similarity	3.27	Middle	3.24	Middle
7	Sensitivity	3.39	Middle	3.62	Middle strong
	Average	3.36	Middle	3.35	Middle

Table 5 indicated that only have one student score F in Science subject, but with highest creativity. While we can observe those students score A and B having higher mean of creativity as compared to C, D and E. Students with the score of A, B and F are in the Middle Strong levels of creativity, while students with the score of B, C and E are fell in the Middle levels of creativity. Overall, it can be concluded that students score better result in science subject in school, will having better levels of creativity.

Table 5: Average result for Science subject in school and creativity analysis

Average result for Science subject in school	Mean of creativity	N (Student)	Level of creativity
F	3.68	1	Middle strong
E	3.27	5	Middle
D	3.26	14	Middle
C	3.25	24	Middle
B	3.44	34	Middle strong
A	3.43	14	Middle strong
Average	3.36	92	Middle

Table 6 indicated the levels of creativity randomly with the household income of parents. It is obviously seen that there is no relationship between these two variables.

Table 6: Household income of parent per month and creativity analysis

Household income of parent per month	Mean of creativity	N (Student)	Level of creativity
<2000	3.38	7	Middle
2000-4999	3.31	29	Middle
5000-9999	3.34	32	Middle
10000-14999	3.47	17	Middle strong
>15000	3.35	7	Middle
Average	3.36	92	Middle

Table 7 indicated that by using Spearman's rho correlation test, it was found that there were very low positive relationship between levels of creativity and gender, and socio economic status of parent. The results are similar with findings form Yee research (Heong et. al, 2011). There are small relationship between the levels of creativity and average science result in school. These finding are in coherence with results of few researches conducted (Dehaan & Studies, 2009).

Table 7: The significant relationship between creativity levels of students and gender, average science result in school, socio economic status

	Gender	Average result for Science subject in school	Socio economic Status of parent
Levels of Creativity	0.004	0.232	0.107

Table 8 indicated that there was no significant difference between genders on the levels of creativity. It can be safely concluded that all technical education students whether females or males have the same levels of thinking skills. Besides, there was also no significant difference among socio-economic status and levels of creativity. These two results are similar to Yee (Heong et al., 2011). The research done by Kainuwa and team show different findings (Kainuwa & Yusuf, 2013). Their research revealed that socio-economic status is part of a larger constellation of psychological and sociological variables influencing children's creativity. Table 8 illustrated that there was significant difference in average science result in school on the level of creativity.

Table 8: The Significant Difference Between Creativity Level Of Students And Gender, Average Science Result In School, Socio Economic Status

	Gender	Average result for Science subject in school	Socio economic Status of parent
Level of Creativity	0.076	0.049	0.306

5.0 CONCLUSION

Science studies have provided low impact to levels of creativity, based on findings of the study. In order to improve the levels of creativity among students, focus needs to be done to introduce to some elements of creativity skills in LKEDU. The impact of Science to levels of creativity will enhance students levels of thinking via techniques and pedagogy approach of brainstorming, Cognitive of Research Trust (CoRT), and Six Thinking Habits. Exist a low basic positive relationship between the levels of creativity with average Science Result in schools, gender, and socio-economic status in LKEDU. There are no significant differences in levels of creativity between gender among students; neither among their socio-economic status. Therefore, in order to improve the creativity levels of students, we should focus in the four elements fall in Middle levels of creativity. First, to improve the element Separation, the teaching session should introduce the ideas of Six Thinking Hats that help students to see thing by separating to a different angle and mind set, and help to solve problem effectively (Bono, 1985). Second, in order to enhance Cognition element, Zeidan, Johnson, Diamond, David, & Goolkasian (2010) belief that meditation will help to improve cognition. Third, Associate and Communicate element, a presentation skill and public speaking skill will be useful to improve these elements.

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