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CREATIVITY AMONGST FINAL YEAR STUDENTS OF POLYTECHNIC DIPLOMA

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ABSTRACT

Creativity is one of the important skills for students in order to facilitate them to complete their assignments or problems which given by the lecturers. Creativity plays an important role in ensuring that the country can produce human capital with first class mentality. Creative skills have been introduced by the Ministry of Education, whether in schools or in institutions of higher learning. Therefore, this study was conducted in order to determine the level of Diploma polytechnic, Ministry of Education final year students' creativity. Respondents consisted of 90 final year students who pursuing Diploma in Mechanical Engineering at one of the Polytechnic in Melaka. The instrument used in this study was questionnaire. Data and information were processed and analyzed using Statistical Package for Social Sciences (SPSS) Version 16.0 and reported in terms of frequency, percentage and mean. The study found that the respondents understand about the definition of creativity, however, they have shown less creativity. Thus, the findings of this study are expected to encourage the teaching staff at the Department of Mechanical Engineering, to suggest events or using effective methods that would enhance the creativity of their students.

Keywords*: Creativity, polytechnic, mechanical engineering diploma, SPSS, kreatif*

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KREATIVITI DALAM KALANGAN PELAJAR TAHUN AKHIR DIPLOMA DI POLITEKNIK

ABSTRAK

Kreativiti adalah salah satu kemahiran penting bagi pelajar untuk memudahkan mereka menyelesaikan tugasan atau masalah yang diberikan oleh pensyarah. Kreativiti memainkan peranan penting dalam memastikan negara dapat menghasilkan modal insan dengan mentaliti kelas pertama. Kemahiran kreatif telah diperkenalkan oleh Kementerian Pendidikan, sama ada di sekolah atau di institusi pengajian tinggi. Oleh itu, kajian ini dijalankan untuk menentukan tahap kreativiti pelajar tahun akhir, program diploma di Politeknik, Kementerian Pelajaran Malaysia. Responden terdiri daripada 90 pelajar tahun akhir yang mengikuti Diploma Kejuruteraan Mekanikal di salah sebuah Politeknik di Melaka. Instrumen yang digunakan dalam kajian ini adalah soal selidik. Data dan maklumat telah diproses dan dianalisis dengan menggunakan Statistical Package for Social Sciences (SPSS) Versi 16.0 dan dilaporkan dari segi kekerapan, peratusan dan min. Kajian mendapati bahawa responden memahami definisi kreativiti, namun, mereka telah menunjukkan kurang kreativiti. Oleh itu, penemuan kajian ini diharapkan dapat menggalakkan kakitangan pengajar di Jabatan Kejuruteraan Mekanikal, untuk mencadangkan program atau menggunakan kaedah yang berkesan yang akan meningkatkan kreativiti pelajar mereka.

Kata kunci: *Kreativiti, politeknik, Diploma Kejuruteraan Mekanikal, SPSS, kreatif*

INTRODUCTION

Malaysia is currently moving forward to achieve the status of developed nation by the year 2020. One of the challenges Malaysia has to face is to create the scientific community, progressive, innovative and dynamic companies that can compete in the international arena (Suriani, 2006). To address these challenges, the country needs creative and competent citizens who practice the culture of science and technology. It is clear that creativity is an important phenomenon in the current era. In this context, Zarifah (2012) stated that, indeed vision 2020 and the national education blueprint were designed to produce creative and innovative people where we were not supposed to only become a consumer of technology but must contribute to the creation of new technology. To make this a reality, the education sector must train students to think creatively. Fostering creative thinking in the educational system is considered a very important matter and should be

emphasized as it can produce students who are creative. The establishment of creative students would enable the formation of a creative community and at the same time build a creative country.

PROBLEM BACKGROUND

The terms of creativity and innovative from time to time have become something that are often discussed by the educators. The reason is, in order to produce human capital with the first class mentality, the people must have the ability to think creatively, and innovatively. Thinking in a creative way would bring a great impact in one's life. According to Fryer (in Zarifah (2012) creativity could also paved the way for individuals to face the changes that occur in social, economy and technology. However, such attitude which could lead to creativity can only occur if only an individual willing to make the necessary changes. Thus, the development of creative thinking can transform the individual to be more successful in the future.

According to the National Higher Education Strategic Plan (December 8, 2012), Malaysia was ranked 60 and belongs in the category of medium, based on the Innovation Capability Index 2001. While other Asian countries were ranked like Japan (11), South Korea (20), Singapore (30) and Thailand (54). This clearly shows that workers in Malaysia can still be considered as less creative compared to other Asian countries.

Zarifah (2012) quoted a speech by Datuk Seri Najib Tun Razak in 2011 who stated that, in order to provide students with quality and capability to achieve continuous excellence for the country, "Malaysia Innovative 2010" is the slogan which states that "the key to success for the developed country is innovation and creativity, and for that Malaysia needs people who are able to think innovatively and creatively". Hence, in order to bring the innovation into the mainstream, and across all levels of society, this effort should be begin at the early stage, starting with the education system.

In the context of the education system, Suriani (2006) argued that technical and engineering education is very important in the development of a country, especially if you want to become an industrial country that is based on the advancement in science and technology. Therefore, human resources especially in the technical field are essential elements which are needed to realize this vision. This is in line with the curriculum in technical schools which includes the areas of technical knowledge, science and mathematics.

Recently, a number of parties including the government have given serious attention to students who have technical skill (Azhar et al., 2004). This shows that those students with technical skill are seen as human resources who are with a huge potential to produce work that is creative and innovative. In line with the government's objective in the Ninth-Malaysia Plan (RMK-9) that is to produce excellent human capital, the students have a responsibility to help the

government in realizing its aspiration by being citizens who are able to use their thinking and creativity appropriately. These are also had to be used effectively, for the sake of their own self, and country's development.

Accordingly, public and private institutions organise numerous activities to produce graduates who are able to be creative. Polytechnic for example, organised final year projects' exhibition, innovation products' competitions and so on. Such programs, are meant to encourage students to undertake their final year project in creative manner. High expectations are given to the technical students as they are part of human resources to generate the future development of the country.

In order to produce creative minded individuals, they must be educated and nurtured since their early aged. This is supported by Azhar et al. (2004) which states that creative thinking requires consistent training and practice over time. When it has become a habit to oneself, then ideas will be much easier to be generated and are creative. This shows that creative thinking can be trained and nurtured since childhood in order to produce individuals who are creative. Educational institutions such as schools, polytechnics, and universities need to emphasise the element of creativity in the students learning activities, and environment. Undoubtedly each student has their own advantages where not all students were gifted to be creative, however, it can be nurtured and educators should play an important role in encouraging creativity and innovative amongst students. Education is considered as the heart of the one self, society and the country development (Yusof, 1994).

Thus, this study was undertaken to perceive the level of creativity among final year students at the Polytechnic who undergo Diploma in Mechanical Engineering, and also their level of knowledge on creativity definition.

RESEARCH METHODOLOGY

Research Design and Sampling

This study is using quantitative survey where questionnaire were used as data collection instruments. The descriptive study will give an idea or information about a situation at a particular time, as well as to help making plans for the future. The population of this study was among the final year students of Diploma in Mechanical Engineering (General) and Diploma in Mechatronics Engineering at one of the Ministry of Education Polytechnic in Malacca. According to Majid (1994), population can be defined as a set of characteristics which indicate certain observations or measurements to a group of people or objects. The sample is a research strategy where researchers can obtain information about the population from some individuals who are part of population. In this study, the researchers refer to Krejcie and Morgan (1970) the sample size determination table to determine the appropriate sample size for this study. The total number of

population from the Department of Mechanical Engineering at the Polytechnic A (students of Diploma in Mechanical Engineering (General) and Diploma Mechatronics) were 115 students. Thus, based on the research by Krejcie and Morgan (1970), the total sample for this study was 90 people.

Research Instrument

Questionnaires were used to obtain information related to the level of students' knowledge on creativity definition, and their level of creativity. The questionnaire is divided into 3 sections:

(i) Part A consists of 6 items including questions concerning the background of the respondents such as gender, age, race, courses enrolled, and highest level of education.

(ii) Part B consists of 5 items that measure the aspects of knowledge on the definition of creativity. Feedback obtained by respondent through Five Points Likert Scale Types responses which are Strongly Agree (AS), Agree (S), Uncertain (TP), Disagree (TS), and Strongly Disagree (ATS). Respondents were required to answer by circling the score on the space provided.

(iii) Part C involves five questions which need to be answered by the respondents to determine their level of creativity and the questions submitted were based on items that have been developed by Torrance and Guildford (1974) in Norhazwani (2011).

ANALYSIS AND DATA FINDINGS

In this study, 90 sets of questionnaires were distributed to respondents who were the final year students of Diploma in Mechanical Engineering (General) and Diploma in Mechatronics at the Polytechnic A. For Part A and B data are analyzed using Statistical Package for Social Sciences (SPSS) and are presented in the form of frequency and percentage. To analyze the findings, the researchers summarize the Five Points Likert scale type to three points only, Agree (S), Uncertain (TP) and Disagree (TS). Percentages for Agree are based on the percentage Agree and Strongly Agree. While percentages for Uncertain is not combined with any other percentage. However, the percentage of Disagree is based on the percentages of Strongly Disagree and Disagree. The data rating scale is shown in Table 1:

Table 1: Five Points Scale to Three Points Scale

Scale	Five Points Likert Scale	Three Points Likert Scale
1	Strongly Disagree	Disagree
2	Disagree	
3	Uncertain	Uncertain
4	Agree	Agree
5	Strongly Agree	

While in the Part C the scoring approach is based on a scheme that has been set by Torrance and Guildford (1974) in Norhazwani (2011). It is classified according to four basic criteria which are originality, fluency, flexibility, and elaboration. The maximum score for each question in this section is 4 marks. There are five questions posed, and the respondents who have a very high level of creativity will manage to get the maximum score of 20 points. Table 2 shows how the creativity level amongst the students involved being ranked:

Table 2: Creativity Level Ranking

Marks	Level
0 – 5	Very Uncreative
6 – 10	Uncreative
11 – 15	Creative
16 – 20	Very Creative

Thus, the following sections will report the findings based on the analysis that has been undertaken.

Part A

Based on the data analysis, the number of male respondents were 84 persons (93.3%) and the female respondents were 6 persons (6.7%). While in terms of age distribution, the number of students who studying Diploma Mechanical Engineering at the Polytechnic A with aged between 21 and 23 years old were 79 persons (87.8%). Followed by students who aged between 18 and 20 years were 9 persons (10%). As for the students who their age between 24 and 26 years were 2 persons (2.2%). According to the ethnic distribution, the number of Malay respondents were 84 persons (93.3%) and the Indian respondents were 5 persons (5.6%). While the number of Chinese respondents was only 1 (1.1%). Data also showed that the number of respondents from the Diploma in Mechanical Engineering (General) were 60 persons (66.7%) and those who from the Diploma Mechatronics were 30 persons (33.3%).

Since the Polytechnic student recruitment involving from those who have different academic backgrounds, the data analysis indicated that the number of respondents with SPM were 51 persons (56.7%), and those who have Polytechnic Certificate were 37 persons (41.1%). While the number of respondents with STPM have the lowest frequency which were 2 persons (2.2%) only. Analysis of the CGPA also shows the number of respondents who have a CGPA between 3.00 to 3.49 have the highest frequency of a total of 50 persons (55.6%). While the number of respondents who have a CGPA between 2.50 to 2.99 and 3.50 to 4.00 respectively obtained frequency of 37 persons (41.1%) and 3 persons (3.3%).

Part B

Here are the results from the data analysis of students' knowledge on the creativity definition. Analysis shows that for item number 4, a total of 88 persons (98.2%) of respondents agreed that creativity is a mental process that allows individuals to create or generate ideas or new products or recombined idea or product in original way or new to him, useful and worth in the social context. One respondent (1.1%) given Not Sure response, and followed by one respondent (1.1%) who responded Not Agree. This item obtained the highest mean value which is 4.48. The whole items which associated with the first research question, received the highest percentage of Agree responses (91.82 percent). The responses which refer to Not Sure is 6.66 percent and while responses to Not Agree is only 1.54 %. The average for the mean value of the first research question relates is 4:37. The entire data is display in Table 3:

Table 3: Data Analysis for the Knowledge of Creativity Definition

No. Item	Statement	Disagree		Uncertain		Agree		Mean
		f	%	*f*	%	*f*	%	
1.	Creative means having the ability to create, produce, and develop idea which are new and original.	2	2.2	6	6.7	84	91.1	4.39
2.	Creativity is doing a thing in a different way from normal to obtain better output or problem solving.	2	2.2	3	3.3	85	94.4	4.37

3.	Thinking process, studying, and producing theory and formula which known as Scientific Creativity.	-	-	11	12.2	79	87.7	4.32
4.	Creativity is a mental process that allow an individual to invent or producing new idea or product or re-combined idea or output in original way or new and useful in the social context.	1	1.1	1	1.1	88	98.2	4.48
5.	An individual who able to solve a problem is considered as creative.	2	2.2	9	10.0	79	87.7	4.29
Average			**1.54**		**6.66**		**91.82**	**4.37**

Part C

As previously stated, Section C involves five questions which used to assess the level of students' creativity that based on four aspects, namely originality (items 1 and 2), the ability to generate new ideas, fluency (item 3) the ability to generate a lot of ideas, flexibility (item 4) the ability to generate a variety of ideas, and interpretations (item 5), the ability to elaborate a creative idea. The results of the scoring obtained were based on the answers provided, each respondent was categorized according to the creativity level that are Very Creative, Creative, Not Creative, and Very Not Creative as shown in Table 4:

Table 4: Frequency Distribution on the Respondents Creativity Level

Creativity Level	**Frequency (*f*)**	**Percentage (%)**
Very Creative	2	2.2
Creative	16	17.8
Uncreative	38	42.2
Very Uncreative	34	37.8
Jumlah	**90**	**100**

The data analysis indicated that the number of respondents who are fall under Very Creative are 2 persons (2.2%), and those who are under Creative are 16 persons (17.8%). While the numbers of respondents who are under the category Not Creative are 38 persons (42.2%), followed those who are Very Uncreative, 34 persons (37.8%). Overall, it can be seen that the majority of the final-year

students who pursuing Diploma in Mechanical Engineering at the Polytechnic A are fall under the category of Very Not Creative although there are a number of students who fall within the category of very creative and creative, however, the amount is relatively quite small.

DISCUSSION

Overall, the findings indicate that the final year students of Diploma in Mechanical Engineering at the Polytechnic A know what is meant by creativity. However, knowing the definitions only would not be enough to make the students achieved the high level of creativity. To build a creative nation, a creative citizen should be formed. Therefore, students should be taught and trained not only in theory alone but hand-in-hand with practical to ensure the students could enhance their creativity. This was also supported by Norhusna (2009), which stated course work that can stimulate the students' mind need to be exposed to the students because it would indirectly produce a more creative student.

Results from the analysis found that the majority of students fall under not creative category. Most of them were not answering at all the questions, or the answer does not meet the requirements of the questions. Analysis also showed that most of them put forward ideas that were too common, too ordinary and no originality. This situation is quite worrying because to achieve the status of a nation who are more advanced, the country needs to create a knowledgeable society, foresight, have a high motivation to change, and able to contribute their creative and innovative, especially in the field of science and technology in the future. Along with that, it is very important for a country to produce citizens who are creative, critical, open-minded and competent in the field of science and technology as outlined in the Integrated Secondary School Curriculum (Curriculum Development, 2006).

However, there are students who are under the category of creative even with a very small percentage. This might be because many of them do not realize that they are creative. They also might not understand the clear intent of creativity and thought that people who are creative are only to those who engaged in the fields of art such as painting, music and literature. In fact, creativity is encouraged at any field we involved. This is also supported by Azhar (2004) which stated that a creative individual personality is unique, which means more than the others in terms of thinking and how they react to their environment. Thus, as a technical student, having the element of creativity in them is very important, especially as a preparation before entering the job market which is needed to increase the productivity in the workplace.

CONCLUSION

Generally, the results show that creativity is the most important element, especially in preparing the country towards becoming a developed nation by the year 2020. To achieve this vision, relying only to physical development would not be enough, but it need to align with human development who could contribute to the country growth through their creative ideas and innovative creations. The main focus should be given in particular to the prospective graduates in technical and engineering fields, as science and technology is the heart that drives the country industrial development. Sound understanding about creativity should also being given to the prospective technical and engineering graduates especially at the polytechnic. Individuals who are really understand the concept of creativity are able to realize their understanding through creative thinking style that led to the potential of producing creative or innovative ideas, works, and products.

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