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Researchers' Perspective on Science and Technology Research Graduate

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Abstract

This study focuses on the perception of undergraduate researchers towards science and technology research activities. The activity is carried out in the form of a research project in their final year of studies at Universiti Kebangsaan Malaysia, which is a requirement for graduation. Responses from these students are the most important component in determining whether the Faculty of Science and Technology is producing future graduates suited for postgraduate research. In this study, 41 respondents were surveyed to determine their perception towards the scientific process they had experienced during their research. It found that a research process consists of the deduction of a suggested idea; execution of an experimental protocol and data acquisition based on a predetermined methodology; and a conclusion of the hypothesis, which in itself is a significant metamorphosis in shaping the mind of a student into a postgraduate researcher. The approach of this research considers the basic scientific competency of the students and by doing so, confirms that students are no longer technophobic, and boost the confidence to observe the aspects researched through a global overview through the utilization of the internet, before and after experimentation. Research minded science and technology graduates are hoped to contribute to the reflection and provide a more critical and practical solution to everyday issues that they will face in communities throughout their careers.

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1. Introduction

Research minded science and technology graduates are an asset to the university and country. The extension of theoretical interpretations learned at institutes of higher learning into post-graduation life is an issue often discussed. The teaching and learning of science and technology knowledge in institutes of higher learning has always been pseudo-vocational by nature, due to the fact that science, by itself, may never ignore the importance of theory and substantiation, as well as fundamental scientific understanding. As a member of the scientific community, a

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dilemma exists between the learned theories from reference text and lecture, and whether or not this knowledge is practicable in the working world has always been questioned.

However, most scientific practitioners, especially graduates should realize that the scientific processes begin from the first day of lectures, and is further strengthened through field work, laboratory work, tutorials, discussions, assignments and the likes. This demonstrates that as a science and technology researcher, training in thinking begins even at the early stages of the first university education year.

According to Bailey (1991), research is an activity of continual improvement. Research is mind simulation in order to solve problems that are given. Research does not necessarily result in the development of a product or commercially profitable findings. It may also take the form of validation, through the replication of a previous study, with the objective of substantiating the results. Researching is a process that begins informally in the young ages of infancy through trial-and-error, before being more formally introduced in schools. Hence university academics should instill the understanding that problem solving is an integral component of research methodology, which should be utilized during their formal studies and career.

The success or failure of a research university to gauge the level of science graduate research mindedness can be determined through the reflections provided by the final year undergraduate students who carry out experiments or research projects. Upon completion of a bachelor's degree, a typical graduate's path can be divided into 3: those who get a job straight away, those who continue to study at the postgraduate level and those who are uncertain whether to work or continue their studies.

Hence, a study which encompasses these future graduates is highly relevant to illustrate the ability of a bachelor's degree program in producing a researcher which utilizes research knowledge and skill in the university and throughout their careers.

2. Material and Methods

A total of 41 respondents participated in this study. The respondents were the final year undergraduate students from the Nuclear Science Programme, School of Applied Physics, Faculty of Science and Technology who registered for the scientific training module for two final semesters. The module requires students to conduct a research project and report their research findings in the form of dissertation. The students were represented by both gender and race. Other than that, the students' education background before admission to UKM of either through Matriculation or STPM intake were not considered as measured variable.

A total of 15 questions related to research competency have been asked through expression of confidence level. Questions pertaining to the use of internet materials as research aid were weighted to assess the students' confidence in dealing with globalization of knowledge and the various sources of information searches and reference data. Data were analyzed by analysis of mean with confidence intervals using the SPSS statistical package.

3. Results and Discussion

This study involved 41 respondents whom expressed their opinion through questionnaire responses. These are final year students undergoing final year research project and expected to have received research experience and training throughout their three year period of undergraduate study. Male respondent comprises 51.2% of the total feedback and the rest percentages are female students. These indicate significantly equal gender demography for the conducted study. The age of respondent distributed from 21-23 years old. Majority are 22 years old (75.6%), followed by 23 years old (17.1%) and 7.3% of 21 years old final year student as shown in Figure 1. The entry qualification for undergraduate courses is national pre-university matriculation (22 years old group sample) and Higher Certificate of Education (STPM) for 23 years old group of sample.

One of the reasons that young researchers especially final year undergraduate has been the target group for this study is that they are immediate career starter and also portion of this group will pursue their post-graduate study. Amount of research work for postgraduate study are relatively much more compare to their current undergraduate research project. The response is reflecting their preparedness to apply research experience, research problem solving skill and research methodology that they obtained in the university to the real outside world of career and postgraduate study.