

Kongres Pengajaran dan Pembelajaran UKM, 2010

Assessment of Programme Outcomes Through Exit Survey of Chemical/Biochemical Engineering Students

Nur Tantiyani Ali Othman*, Rahaiza Misnon, Siti Rozaimah Sheikh Abdullah,
Noorhisham Tan Kofli, Siti Kartom Kamarudin, Abu Bakar Mohamad

Faculty of Engineering and Built Environment, Universiti Kebangsaan Malaysia, 43600, UKM Bangi, Selangor, Malaysia

Abstract

Questionnaire of prospective university graduates have been identified as one of the effective methods for the strength and weakness assessment of the program curriculum. It is based on student feedbacks regarding on their performance and satisfaction in Department of Chemical & Process Engineering (JKKP) in order to determine the effectiveness of the Chemical and Biochemical Engineering Program at Faculty of Engineering and Built Environment, UKM. The questionnaire include a general information of future graduates, information on program outcomes over 4 years and acquiring skills, career preparation and student-lecturer relationship. The results of the evaluation process and recommendations for improving the curriculum were also studied. The study was conducted over two sessions (semester 2009/2010 and 2010/2011) for two batches of students. Overall, mostly all the prospective graduates are satisfied with the current system of teaching and learning in JKKP as well as also willing to involve into the working environment. Achievement of the 12 program outcomes indicates a satisfactory performance with an average of more than 70% and 57% for respective Chemical and Biochemical Engineering Program. Based on this study, approximately more than 27% graduate in Chemical Engineering believes that the theoretical-practical and technical oriented projects should be adopted, while 19% of Biochemical Engineering graduates thinks that the project design should be separated and should be more focused to the field of biochemical engineering area.

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Selection and/or peer-review under responsibility of Kongres Pengajaran & Pembelajaran UKM, 2010

Keywords: exit survey; chemical/biochemical engineering; program outcomes;

1. Introduction

Questionnaire is an effective method of assessment to measure the strengths and weaknesses of a curriculum program based on students' feedback regarding on the performance and student satisfaction after their graduation. The Department of Chemical and Process Engineering (JKKP) University Kebangsaan Malaysia is always trying to get opinions and feedbacks from the graduates regarding the program, teaching and learning system that graduates get and achieve along their study as an undergraduate student and before they enter the real working environment. These feedbacks are very important to improve the quality and standards of teaching and learning in the JKKP. This

* Corresponding author. Tel.: +603-8921-6412; fax: +603-8921-6148.

E-mail address: tantiyani@yahoo.com

study is based on the questionnaires given to the students at the end of final year semester. This type of questionnaire study has been conducted since 2006 in which its mission to measure the effective of Chemical and Biochemical Engineering Program. Career choice is an important aspect in an individual life since the chosen career will determine the pattern of work that will be played by individuals in the community later (IPPTN, 2003). Career choice is an important process individual life when a person starts thinking about involving in the real world of working environment (Sidek Mohd Noah, 2002) and it is one of the biggest problems faced by graduate students.

The objective of this study was to obtain the basic information about the career choices of graduates and the respondents' assessment of teaching and learning in JKPP. In particular, this study will also determine the level of graduate's preparation into the working environment, industry area options, and to measure the achievement level and program outcomes of graduates over four years in JKPP. The measurement of program outcomes was determined through a graduate survey of Chemical and Biochemical Engineering graduate based on the 12 program outcomes (PO), which has been outlined by the Faculty of Engineering and Built Environment as shown in Table 1.

Table 1 Program outcome (PO) of Department of Chemical & Process Engineering

No.	Learning Outcome
PO1	Ability to acquire and apply knowledge of basic science and engineering fundamentals.
PO2	Ability to communicate effectively, not only with engineers but also with the community at large.
PO3	Having in-depth technical competence in chemical engineering.
PO4	Ability to undertake problem identification, formulation and solution.
PO5	Ability to utilize a systems approach to design and evaluate operational performance.
PO6	Ability to function effectively as an individual and in a group with the capacity to be a leader or manager as well as an effective team member.
PO7	Having the understanding of the social, cultural, global and environmental responsibilities and ethics of a professional engineer and the need for sustainable development.
PO8	Recognizing the need to undertake lifelong learning, and possessing/acquiring the capacity to do so.
PO9	Ability to design and conduct experiments, as well as to analyze and interpret data.
PO10	Ability to function on multi-disciplinary teams.
PO11	Having the knowledge of contemporary issues.
PO12	Ability to use the techniques, skills, and engineering tools necessary for engineering practice.

2. Research Methodology

This study used questionnaire type survey to collect a basic quantitative information relating to the teaching and learning assessment in JKPP. About 106 graduates of the 76 respondents from Chemical Engineering program, while 30 respondents of Biochemical Engineering students for the batch 2009 and 2010 participated in this study. The questionnaire includes general information of future graduates, including information on the program outcomes over 4 years, their performance during four year period in JKPP and preparation to face a career world and the relationship between the students and the lecturers. Prospective graduate survey was conducted into two batches of JKPP graduate students, which graduated in the last two sessions of April 2009 and April 2010. Based on the collected information and objectives of the study, data analysis was limited to the basic descriptive analysis based on the index number, percentage and charts. A questionnaire was developed specifically to gather the information. The questionnaire was measured by using a likert scale of 1 (low) to 5 (excellent) scales. This questionnaire consists of four sections, namely:

- a. Part A (General Information of Respondents)
- b. Part B (Information of Teaching and Learning) which consists of four sub-sections (i) program outcomes over 4 years in JKPP (ii) achievement of performance over 4 years in the UKM (iii) preparation to face a career world and (iv) Lecturer-student relationship

3. Results and Discussion

3.1 General Information of Respondent

General information section in this exit survey focuses on valuable information after graduation day, the field of career choice and job offer before graduation. The analysis will be reported according to the item or group of being

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