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## Authentic Assessment of Industrial Training Program: Experience of Universiti Teknologi Malaysia

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### Abstract

This paper discusses on the method used in assessing the industrial training students. It focuses on the authentic assessment that relates to the contextualized tasks and enabling students to demonstrate their competency towards meaningful learning. Each assessment item has course learning outcome, and is related with the program outcomes of the academic program. The Course Review Report (CRR) is explained and how it is used to analyze the overall performance, measures the achievement level and determines the effectiveness of the program for further improvements. The CRR provides useful framework for analysis of the authentic assessment of the industrial training. It provides a holistic view of the course, assists with the planning of future course developments and provides core material for curriculum review.

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**Keywords:** Industrial training; authentic assessment; Course Review Report; meaningful learning

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### 1. Introduction

Industrial training is a program that refers to the placement of students at the industry to gain experience in the professional employment world. This program is an essential component in the curriculum of all Bachelor degrees at the Universiti Teknologi Malaysia (UTM), in which students need to pass the program to be eligible for the degree (UTM, 2007). Each student will be assigned a lecturer as the faculty supervisor who is responsible to identify the scope of the training, monitor and evaluate the students' work.

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At the organization, each student also has an industry supervisor who will guide the student at the work place and assessed his/her technical performance and soft-skills. During training, students are required to get involve with the work or project that relates to their majoring, solve the given problems professionally, work in a team, interact and communicate effectively, and demonstrate excellent ethics and integrity in their work conducts. Students should also write daily reports to show their progress and at the end of the program, they need to deliver a comprehensive technical report and present oral presentations to their supervisors. Assessment is the process of gathering data and analyzing it to determine whether the intended learning outcomes have been achieved. Assessing the performance, work quality, as well as the personality development and meaningful experiences of the students while undergoing the training are a challenging task. Traditional assessment which involves multiple-choice tests, fill-in-the-blanks and essay writing may not be suitable with evaluating the students performances in industrial training program.

The training components that need to be assessed include the daily log book activity report, the technical report, oral presentation, and the performance skills. The faculty supervisors are required to evaluate the reports, log book and the work performance, while the organization supervisor are responsible to evaluate the students' technical skills as well as the soft skills.

Although the grade given to the student is only Pass or Fail, the continuous assessments of students' achievement of the curriculum program outcome is still important and need to be reported. Due to the quality of improvements, we need to know how well a student has achieved the curriculum program outcome.

Therefore, this paper presents the method used in assessing the industrial training students at the Universiti Teknologi Malaysia, specifically for the Computer Science majoring students. We focus on the authentic assessment which refers to the measurement of intellectual accomplishments that are significant and meaningful to students' learning during the industrial training.

## **2. Current Practice in Conducting Industrial Training at the Universiti Teknologi Malaysia**

There are fifteen faculties involve in Industrial Training at the Universiti Teknologi Malaysia each year. Faculties in UTM can be categorized into three main streams, namely Engineering, Sciences and Social Sciences. The credit hours for the industrial training program for the engineering and social science streams is 5 credits with the durations of 12 weeks and is done during the short semester. Meanwhile, for the science stream, the credit hours is 12 credits and its being done during the normal semester for 20 weeks. The final result given is either Pass or Fail (UTM, 2007).

The implementation of industrial training in UTM is divided into three phases, which are pre industrial training, during industrial training, and post industrial training. These three phases' implementations of industrial training are supported by the used of *Industrial Training System (ITS)*. ITS is an information system used to manage the implementation of industrial training in UTM (FSKSM, 2011).

Pre industrial training is referring to the placement process. In the placement process, students are needed to find and select an organization for them to do their industrial training. Students should undergo the industrial training at external organizations, unless with the consent from the Faculty Dean. Students must select organizations that relevant with the work scope of the industrial training.

During the industrial training, the students are placed at selected organizations for a certain period, in which they shall be exposed to the reality of the industrial environment. Students are assigned with an Organization

Supervisor and a Faculty Supervisor. Students are required to note and update their daily activities in the log book using ITS on every working day. The log book should be checked by the Organization Supervisor bi-weekly.

Faculty Supervisors need to visit the industrial training site to monitor and assess the student's performance. During the visit, the faculty supervisors discuss with the organization supervisor regarding students' performance, as well as the opportunity of research collaborations. The assessment marks by both supervisors are entered online through the ITS system. Besides that, the students and the supervisors are encouraged to fill in surveys into the ITS system for feedbacks and recommendations.

In the post industrial training phase the students' performance, work quality and surveys from ITS system are analyzed to produce Course Review Report (CRR).

### **3. Authentic Assessment in Industrial Training**

Authentic assessment usually means presenting students with tasks that are directly meaningful to their education and preparing student to meet a future world demand (Jacalyn, 1997). This kind of assessment tends to focus on contextualized tasks and enabling students to demonstrate their competency in a more authentic setting (Clark et al., 2010). Authentic characteristics require students to use their knowledge (combinations of different knowledge, skills and abilities) on holistic task (Cumming and Maxwell, 1999).

Normally, industrial training for the Computer Science majoring involves students to perform individual project or group project (which relates to real problems) in a long term activity (i.e. twenty weeks) that result to a product such as a computerized system, functional model and a technical report. Upon accomplishing the tasks, the student is guided mainly by a supervisor at the industry. A properly designed projects require students to apply and integrate a wide range of abilities and knowledge, and use creativity, originality and some sense of aesthetics in which will engage them in critical thinking, creative thinking and problem solving (Nitko & Brookhart, 2007).

In authentic assessment, the student's performance is measured based on the following features (Macquairie University, 2008):

- put emphasis on whether the student can apply his/her knowledge on top of assessing what he knows
- focus on whether the student able to achieve the learning objective
- use realistic problem so that student can be acquainted with their working experience.
- support open-ended thinking

Both the industry supervisor and the faculty supervisor are responsible to assess the students' performance and soft-skills. To assess the students, the scoring rubric, scoring schemes and rating scales are developed. The components to be assessed are Industrial training Report, Log Book, Industrial training Oral Presentation, Student Performance Evaluation by Organization Supervisor, and Student Performance Evaluation by Faculty Supervisor (FSKSM, 2011).

Industrial Training report writing require students to produce a substantial report to explain about the organization's background, the overall training that have been performed and the specific projects that they have conducted. The students must apply the skills of communicating using written language, outlining, organizing, and planning a report, as well as using reference materials and sources (UTM, 2006).

Log book contains a student daily work, along with comments and feedbacks from supervisors. Log books are able to demonstrate the student's learning that has progressed over a given period of time and can be used to measure the learning and growth of the students (Janesick, 2006; Kerka, 1995). The student plays important role in deciding what should be included in the log book and learn to understand and evaluate her own progress (FSKSM, 2011).

Oral presentations permit students to verbalize their knowledge and use their oral skills. Objectives of oral presentation in industrial training are to focus on the correctness of the content, as well as the style and communication skills (FSKSM, 2011). It supported the reported by Scott (2000) that stated the scoring rubrics for oral presentation should include both criteria.

Student performance evaluation focuses on a student's work performance and the personality. The scoring rubric forms are used that relates assessment item to the learning outcome. The work performance is the ability to complete the given tasks within the specified time frame independently using their knowledge and skills with good quality of work (UTM, 2006). The personality is the soft skills include the socialization and communication, initiative and motivation, discipline and cooperation and teamwork (UTM, 2006).

#### **4. Course Review Report**

Course Review Report (CRR) provides a framework that offers a formal vehicle for analysis of the authentic assessment of the industrial training Flores (2009). The idea of CRR is to draw together assessment issues so that the faculty can take a holistic view of the course, to assist with the planning of future course developments and to provide core material for Curriculum Review. The operation of the CRR process and the reports produced will be closely examined during the results meeting at the faculty level and also the university's Senate.

In order to produce a CRR, a range of documentations are needed. The assessment marks from the faculty and organization supervisor were the main contributors. A summary of student, faculty and organization supervisor feedback from the surveys also needed. Besides that, module documentation for students such including logbooks and industrial training report will be evaluated as well.

Figure 1 presents the CRR implementation flowchart. The components of CRR are the faculty, the department, the course reviewer and the stakeholders which consists of students, faculty and organization supervisors. In general, the CRR implementations involved 3 stages, starting with the plan/reflect, evaluate/review and quality assurance

At the first stage, the faculty developed a schedule for course review and laid out the Programme Objectives (POs) for the industrial training. Each department will initiate the Course Objectives (COs) respectively that aligned with those POs. The stakeholders contributed the inputs from the survey and evaluation forms at the end of the industrial training period. It is important that their views of the course be taken into account through feedback from sources such as surveys and evaluation forms.

The committee of industrial training aka course reviewer will complete the course review template in order to analyze and provide the reflection in the second stage. The course review form will be submitted to the head of department to review the mapping for each CO to particular PO. The COs are achieved the target if it was exceed the benchmark set by the university that more than 65%.

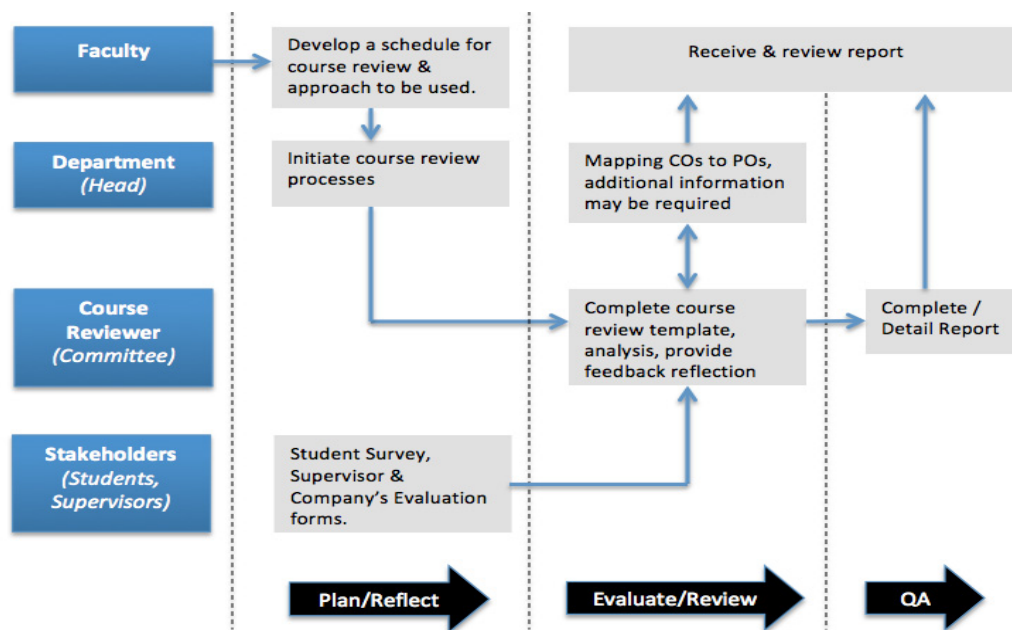


Fig. 1. Course review report implementation flowchart

These results can be obtained for each department and also individual students. Updated CRR report will be received and reviewed by the faculty. Additionally, the final report of CRR from each department can be submitted in a more complete and detail form in the Quality Assurances (QA) stage. The faculty can use this complete report to improve the curriculum of industrial training. All recommendations from organizations and/or other stakeholders will also take into account in designing and reviewing the curriculum, where applicable for development in the forthcoming year.

## 5. Conclusions

This paper discusses on assessing the industrial training students using authentic assessment method at the Universiti Teknologi Malaysia. Authentic assessment intends to determine how well a student can use knowledge. The course review report is produced to analyze the overall performance, measures the achievement level and determines the effectiveness of the program for further improvements.

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