

Students Industrial Internship Programme at Universiti Teknologi PETRONAS (UTP), Malaysia

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Abstract: Industrial training for students studying at higher learning institutes has been long recognised as part and parcel of the training required prior to graduation. It provides students with some exposure to the actual working life while at the same time allowing them to extend their theoretical knowledge into practice thus enhancing their understanding further. Industrial training has been set as one of the requirements for accrediting Engineering and Technology programmes in Malaysia. Currently, a minimum period of 10 weeks at industry has been made compulsory for all engineering programmes offered at the higher learning institutes. This is seen as an effort to provide working exposure to students such that they will have some practical experience prior to graduation. All the institutions of higher learning in Malaysia that offer Engineering programmes have this requirement in their curriculum. In the case of Universiti Teknologi PETRONAS (UTP), the requirement has been made compulsory for all engineering and technology students and the period has been extended to 32 weeks. The programme worth 16-credit hour, which is almost equivalent to a semester academic load and is, called Industrial Internship Programme. During the programme, the students will have to undergo a structured mode of assessment, which will contribute to their cumulative grade point average, used as the performance measurement in the University system. The paper will provide an overview on the UTP Industrial Internship Programme focussing on its objective and approach, management of the programme, operation and monitoring of progress, assessment method and challenges in running the programme.

Keywords: industrial training, industrial internship, practical training

1. Introduction

Among the third world countries, Malaysia is known to be one of the fast developing nations. With the ‘Vision 2020’ introduced by the government, Malaysia has set the target of becoming a developed country by year 2020. In line with this vision, policies pertaining to the development of engineering and technology based industry such as petroleum and petrochemical, automobile, high-rise building, electrical and electronics products and multimedia were developed and given high priority in terms of its implementation.

In order to support the fast development of these industries, the government has come to realise of the high demand for competent manpower especially the engineers and technologies. The Engineering and Technology based education was given high priority particularly at tertiary level where several private institutions of higher learning, conducting programmes on engineering and technology, which were set up with the approval from the government as an addition to the existing public institutions of higher learning. An independent body known as the National Accreditation Board was formed to formulate and implement policies and guidelines to ensure high quality of tertiary education at the private higher learning institutes. In addition, a professional body such as the Malaysian Institute of Engineers, has also played a role in accrediting engineering programmes offered at these institutions.

The paper will provide an overview on the UTP Industrial Internship Programme focussing on its objective and approach, management of the programme, operation and monitoring of progress, assessment method and challenges in running the programme.

2. Objective and Approach of the UTP Industrial Internship Programme

The main rational of introducing the industrial internship programme is to provide UTP students with exposure to practical aspects of industry and their work practices. During the programme, the students will have the opportunity to relate their theoretical understanding to the real application in industry and to develop skills in work ethics, management, communication and human relations.

The specific objectives as outlined by UTP in its Industrial Internship Guidelines [1] are to allow students to integrate theory with practice, to introduce students to industry and its work culture, to provide opportunity for students to work with industrial practitioners, to expose students to potential employers, and to acquaint students with industry and its programmes.

Based on the set objectives, the Industrial Internship approach has been developed and this contains several elements considered vital in accomplishing the objectives. These elements consist of hands-on practical training, individual and/or team project-based/research-based assignments and activities depending on the nature of the industrial work assigned, and individual/team management of projects and activities. Students are also expected to gain experience in other skills such as critical thinking, communication and behaviour, business acumen, solution synthesising, leadership and safety awareness.

3. Management of the UTP Industrial Internship Programme

At Universiti Teknologi PETRONAS (UTP), a unit called the Industrial Internship Unit was established under the academic division to co-ordinate and manage the programme. A head, which is selected among UTP lecturer, is appointed to plan and manage the implementation of the whole programme and is assisted by an executive officer.

Among the main responsibilities of the unit are;

- Planning and scheduling the students' internship programme
- Identifying suitable companies for the internship programme
- Applying for the industrial internship placement on behalf of students
- Co-ordinating UTP lecturers' visits to companies for comprehensive briefing on the programme and students' assessment.
- Compiling of assessments done on student by the industry and UTP lecturers which cover the students' performance evaluation, oral presentation, logbook and final report.
- Recommending students' final grade to the university Examination Committee for endorsement.
- Communicating with industries or any other personnel on matters pertaining to the programme.

4. Operation and Monitoring of the UTP Industrial Internship Programme

The operation cycle for each batch of UTP students undertaking the industrial internship programme starts with the planning activity which is conducted a semester earlier. The UTP academic central service produces the list which identifies students who will most likely have fulfilled the requirement of minimum 105 credit-hour for engineering students and 85 for technology students by the end of that semester. The list is then used by the Industrial Internship Unit in determining the number of placements required as well as planning for the companies to be approached. Meanwhile, the unit also gathers feed back from students in terms of their preferences on the choice of company and its location. The students are also required to submit their resume and photograph for the application purposes according to the format as outlined by UTP.

Once the required information has been collected, it will then be forwarded to the agreed companies for their acceptance and confirmation. Companies may request for detailed briefing on the internship programme as well as interviewing the students prior to accepting them for training. Upon clearance from the company, the students will be informed of their confirmed placement. The head of the Industrial Internship Unit will then conduct a detailed briefing to the students on the internship programme.

In securing placements for UTP students to undertake the internship programme, UTP has an advantage in the sense that being one of the subsidiaries of PETRONAS, it has a full backing from the parent company. Nevertheless,

through the experience of implementing the programme for three batches so far, it was also found that most of the established companies in Malaysia are willing to accommodate UTP students. This was mainly because of the 32-week training period which allows the company sufficient time to train and later, gain returns from the students for their benefit.

On the first day of the internship programme, students will report for duty at the specified industry to the Company Training Co-ordinator. They will be introduced to their main supervisor who normally has extensive working experience in the field relevant to the students' academic programme in order to ensure the students getting proper guidance. The students will discuss and formulate the training schedule for the whole 32 weeks duration with their main supervisor.

During the third or fourth week, UTP lecturers will make the first visit to meet the students and their respective supervisors and to discuss the training schedule. Lecturers from different academic programmes are grouped together and assigned to visit students in various companies according to region. The idea is to ensure that the training schedule devised allows students to achieve the set objectives of the programme. UTP lecturers may further brief the students' main supervisors on the UTP expectations of the programme. From then on, students are required to follow the training schedule and to report their progress throughout the programme. However, the main supervisor may later recommend changes, subject to UTP agreement, to the training schedule as a result of unforeseen circumstances. For monitoring purpose, students are required to send a copy of their weekly report extract from their logbook to the Industrial Internship Unit on monthly basis. If any student is found to have major difficulties during the programme, the head of the unit will make a special visit to the company to resolve the problems.

In the final two weeks of the programme, the same group of UTP lecturers will make the second visit to the industry. This second visit is aimed at conducting a number of joint assessments on the students with the respective industry supervisors. Students are required to deliver oral presentation on the company's perspective and selected projects conducted by them during their internship programme.

At the end of the programme, students are required to submit a copy of their logbook verified by their supervisors and a final report, which will then be evaluated by the UTP lecturers. The Industrial Internship Unit will then conduct a meeting involving all the UTP lecturers who made the visits for moderation purposes on the students' final grades prior to the endorsement by the Examination Committee.

5. Assessment Method for the UTP Industrial Internship Programme

In view of the significant credit-hour awarded to students for the internship programme, UTP has developed a method which takes into account of students' ability in several aspects deemed to be important in developing the students' potential. From a survey conducted by Arthur D Little (M) Plc. on the university stakeholders during the development of UTP Academic Master Plan [2], it was found that most of the local university graduates has a high technical know-how but lack on the aspects that make them 'well-rounded'. Seven attributes were identified in the master plan as the important aspects in contributing towards the 'well-rounded' features and these consist of technical know-how, communication and behavioural skills, analytical and critical thinking, practical aptitude, solution synthesis ability, lifetime learning capacity and entrepreneurial skills. Consequently, the aim of producing graduates with these 'well-rounded' features was made explicit as one of UTP mission statement.

In line with the findings above and realising the opportunity of exposing students to actual working environment, UTP has carefully developed a structured assessment method, which will enable students' performance during the internship programme to be assessed by industrial supervisor and UTP lecturers in a systematic way. The assessment comprises overall performance evaluation, oral presentation, logbook assessment and final report

5.1 Overall Performance Evaluation

The overall performance assessment makes up 30 percent of the total marks awarded to the student. The evaluation is done jointly by the industrial supervisor/s and UTP lecturer during the second visit. In this evaluation, the

assessment is made based on two main categories i.e., Performance and Tasks Completion and Students' Competence.

For the first category, a student is assessed based on knowledge about workplace, job understanding, job performance, work quality and job timeliness. For the second category, the student is assessed based on their self-initiative and motivation, leadership quality, adaptability to working environment, work commitment and dedication, interaction and teamwork ability, self-discipline and integrity, communication skills, safety consciousness and decision making ability.

The assessment is done using a rating method whereby specific points are given for each aspect. The point rating used is as shown below;

1	-	Unsatisfactory
2	-	Below Average
3	-	Average
4	-	Good
5	-	Excellent

In awarding the points for each aspect assessed, the industrial supervisor and the UTP lecturer will discuss and rationalise on the points awarded to ensure fair assessment.

5.2 Oral Presentation

During the second visit conducted at the end of the industrial internship period, apart from the overall performance assessment, students will also be required to deliver an oral presentation on their overall experience while undertaking the internship exercise. The assessment will contribute 20 percent to their final marks awarded for the programme.

The students will be expected to give the background of the company and its operation, their overall schedule, details on some of the projects undertaken and other matters. The assessment will be done jointly by their industrial representatives and UTP lecturers, which focuses on the quality of presentation materials, its content and clarity, and the students' ability to handle questions.

5.3 Logbook Assessment

During the period of the internship programme, students are required to make a short report on their daily activities. These are then summarised into a weekly-based report for the industry supervisor to assess. The same rating method as used in the earlier assessment will be applied. At the end of the 32-week period, the overall score can then be calculated and this is used to reflect the quality of the report. This assessment contributes 30 percent of the total marks awarded for the final marks.

While the industrial supervisor solely does the assessment, it is the job of the UTP lecturer to brief him or her on the aspects that he or she should be considering in the report contents. Criteria such as the technical ability, critical comments, problem solving skills, additional source of information and creativity, in line with the 'well-rounded' qualities, shown in the reports should be given higher priority. The industry supervisor will then compile and submit all the weekly result for the logbook assessment to UTP. In addition, upon completion of the internship programme, the student will have to surrender the logbook to UTP for reconciliation purposes.

5.4 Final Report

At the completion of the internship programme, the students will have to write a comprehensive report, which will contribute 20 percent to their final marks.

The report should include the host company's verification statement, executive summary, acknowledgements, table of contents, introduction, main projects and activities, lesson learned and experienced gained, discussion and recommendations, conclusion, references, and appendices.

6. Challenges in Running the UTP Industrial Internship Programme.

In running the student industrial internship programme, there have been pleasant as well as unpleasant experiences faced by the Industrial Internship Unit.

At first, the growing number of students in the university has presented the unit with a challenge in securing enough placements at appropriate industry in order to ensure the success of the programme. As a matter of fact, this issue has led to most local universities reluctant in conducting the programme seriously. On the other hand, UTP views this as a golden opportunity in developing its student thus providing them with the edge needed upon graduation. Significant amount of resources in terms of financial and academic-staff time were poured into securing the placements needed. The fact that, UTP is a subsidiary of PETRONAS has considerably eased the burden. UTP has been given the priority for students' placement by any PETRONAS owned or partly owned companies.

Having secured sufficient placements for students at the industry, the next challenge faced by the unit and the UTP lecturers is on the negotiation on the training schedule for the internship programme. Frequently, industries such as manufacturing companies have concerns, which can prohibit students from practically, involved with their day-to-day operation. These mainly arise from the fear of accidents happening to the students or the possibility of fault action done by the students leading to fatal incident in the plant. Consequently, it has led to the students being given more of office-type assignments or being asked to observe activities in the plant. In addressing these concerns, UTP assists in getting its students' insurance policy to cover them during their training period. In order to avoid the possibility of fault action leading to fatal accidents, negotiations on the training schedule between UTP lecturers and the industry supervisors are made thoroughly in order to ensure that both parties' requirement are met.

7. Conclusions and Recommendations

The Universiti Teknologi PETRONAS has so far successfully managed its Students' Industrial Internship Programme with the support and co-operation from industries. The increasing number of students' intake will continue to give challenges to the university to find and secure more places for the students' as well as to manage the internship programme in the future. Preparations to face these challenges are continuously being done at Universiti Teknologi PETRONAS through expanding its university-industry collaboration to create more placement opportunity and using on-line facilities for more effective management of industrial internship programme. Finally, the continuous support from industries are essential to realise Universiti Teknologi PETRONAS objectives to produce well-rounded graduates.

8. References

1. Universiti Teknologi PETRONAS Industrial Internship Programme Guidelines, January 1999.
2. Arthur D Little Plc., Universiti Teknologi Petronas Academic Master Plan Report, 1998.