

The importance of Industrial Training: Students' Perception in Civil Engineering Sector

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Abstract: - Rapid growth of infrastructure development in Malaysia recently has increased chances of job market to many graduated students. In order to keep up with the demands, universities hold responsibility to produce students with sufficient background and excellent qualification. As an assurance for the performance of students is up to the standards, preparation and exposure to the industrial training is a must in the programme. This paper discusses the perceptions of the undergraduate students from Civil Engineering Department on their industrial training programme. Students were evaluated on the benefits of the training programme based on the questionnaires given to them once they have completed the training programme. Various aspects were asked and these can be summarised into three main aspects i.e. Attitude, communication and work attitude of the students before and after the training programme. The results show that the overall student's performance before the training is in average of 48% - 63% for those three main aspects. However, after the completion of the training programme, the percentage of these three main aspects has increased up to 89% - 95%. These results also proven that the industrial training programme is merely beneficial to the students in terms of engineering education improvement and engineering profession.

Key-Words: - industrial training, civil engineering, attitude, work attitude, communication

1 Introduction

The increasing numbers of development projects in Malaysia nowadays has made the university constantly produce the graduate engineers every year. This is inline with the Malaysia status as one of the developing countries, therefore around 200,000 of engineers are expected to serve and build the country to achieve the Malaysia's Vision 2020 [1]. In order to ensure the graduate students are well equipped with excellent qualification and background, the industrial training programme is made a compulsory course for all students and this is also under the requirements of Board of Engineers Malaysia through Malaysian Engineering Accreditation Council (EAC) [2]. Furthermore, with this training programme, it will also help students to expose to the profession reality of civil engineers and their responsibility which include on the daily interaction within working environment and writing skills.

Every year students in the Department of Civil & Structural Engineering from Universiti Kebangsaan Malaysia (UKM) must undergo their industrial training programme for at least 2 months. Normally the training programme will be carried out in the third semester for third year students who have

successfully completed their six semester studies. As to investigate the level of students achievement in the training programme, this study is carried out to evaluate their performance before and after the industrial training programme. These evaluations were based on three main aspect such as behaviour, communication and work attitude.

2 Research Methodology

This study was conducted to all 105 civil engineering students who have carried out their training programme from 5th Mei 2008 to 4th July 2008. 17 questions were asked and evaluated based on 1 – 5 likert scale ranging from strongly disagree given as 1 and to strongly agree given as 5. All questionnaires were prepared to investigate the students evaluation on the industrial training programme which were includes of:

- a) Students profile
- b) Place of industrial training
- c) Students perception before undergo the industrial training programme
- d) Students perception after undergo the industrial training programme

- e) Students perception on the benefits of industrial training programme and
- f) Placement method for the industrial training programme through SMPLAI

The overall questionnaires can be classified to three main aspects that are attitude, communication and work attitude. The questionnaires were given to the students once they have completed the training programme.

3 Results and Discussion

Results from the questionnaires are discussed and divided accordingly as follow.

3.1 Students' Profile

The total numbers of 105 students in the third year of Civil and Structural Engineering Department were divided to 34% (36 person) of female students and 66% (69 person) of male students as shown in Figure 1. The majority of the students were from Malay races in around 50%, Chinese were around 40%, Indian were around 1% and 9% were others.

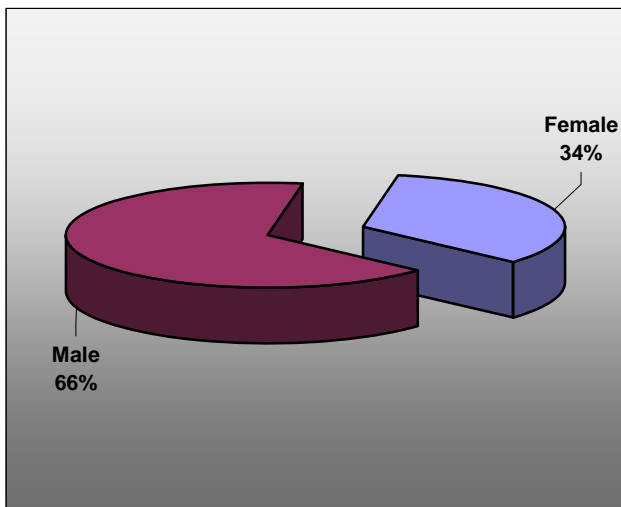


Fig. 1 Students percentage by gender

3.2 Place of Industrial Training

Table 1 below shows the percentage of students placement in various companies throughout Malaysia. As expected most of the civil engineering students were interested to have their training placement in Properties and Construction Development (37%) and followed by Consultancy sector (34%). As usual in civil engineering sector, female students were liken to have their industrial training in Consultant design office whilst for male

students they always preferred to be placed in Construction sector.

Table 1 Students placement in various Companies

Types of Companies	Percentage (%)
Manufacturing Sector	2
Properties & Construction Development	37
Transportation	7
Agriculture & Food	1
Material Engineering	1
Energy & Natural Resources	2
Built Environment Sector	8
Consultancy	34
Others	9

3.3 Students' Perception Before Industrial Training

As mentioned before all the 17 questionnaires can be classified into three main aspects as shown in Table 2 below. Based on these questionnaires (as shown in Figure 2), 66% of the students agreed that they have good attitude as an engineer and 63% have an ability to perform good work attitude before the training. However only 48% of the students are confidence in their communication skills.

Table 2 Questionnaires classification

Aspects	Questionnaires
Attitude	Good self esteem
	Good self & time management
	Self confidence
	Punctuality
	Curiosity
	Presentable self appearance
Communication	Oral presentation skills
	Written communication
	Interaction skills
Work attitude	Ability to work independently
	Adaptable with environment
	Teamwork
	Ability to work under pressure
	Leadership
	Problem solving skills
	Subject knowledge

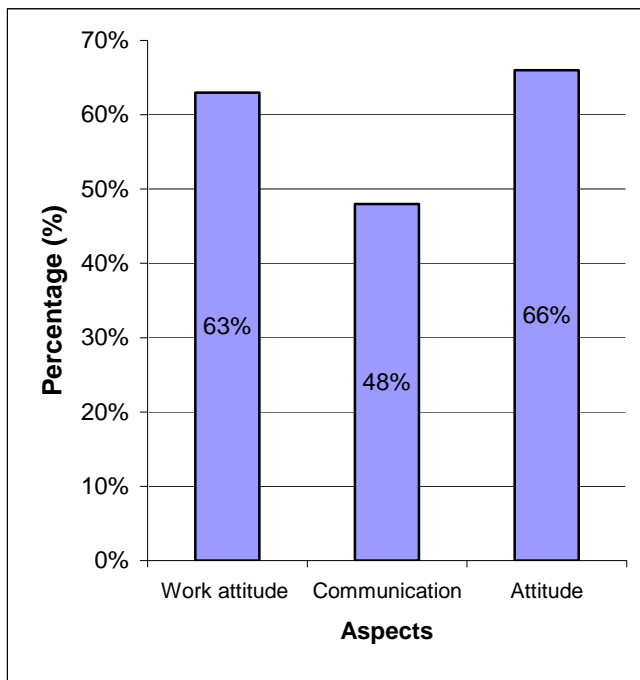


Fig. 2 Students' perception before industrial training

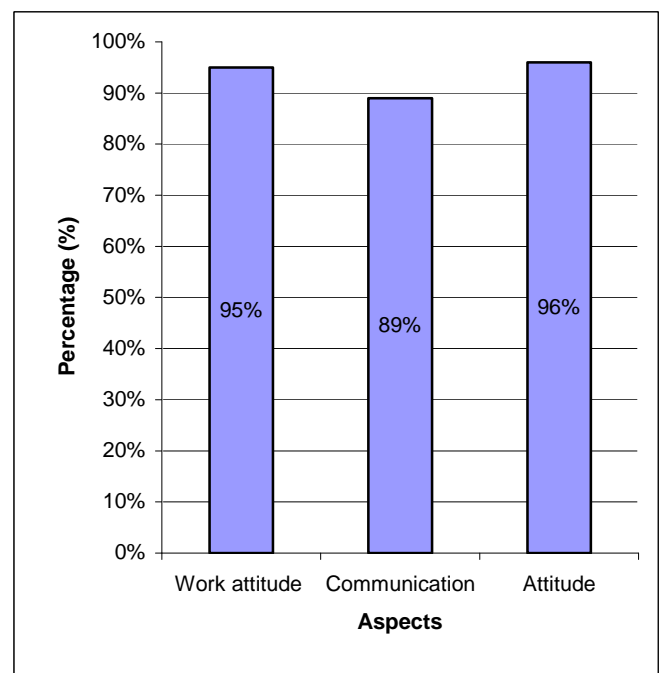


Fig. 3 Students' perception after industrial training

3.4 Students' Perception After Industrial Training

After completed the industrial training, the percentage for these three main aspects has now improved. The percentage for work attitude and attitude are increased up to 95% and 96% as shown in Figure 3. The increment around 30% - 32% of these two aspects showed that by having the exposure to the industrial training had made the students improved their attitude and work attitude. It is also means that the students can adapt themselves with the working environment and have gained confidence in delivering their works.

In the aspect of communication, the percentage has now increased up to 89% as shown in Figure 3. Most of the students agreed that after having their industrial training, they are now confidence to express their work in terms of verbal and written skills. Interaction with the office colleagues at all levels had also improved on their daily communication and this has been proven by the increment of 41% compared with that before the industrial training. The improvements in these three aspects have shown that the students are capable to be a good trainer engineer as well as a professional civil engineer. This is important as an engineers they are responsible to the human life and safety, health and public wealth fare.

3.5 Students' Perception on the Benefits of Industrial Training

Based on the students' perception towards the industrial training as shown in Figure 4, most of them (94%) agreed that the industrial training can increased their job prospect and 92% feel that it also provides more confidence in terms of job qualification. Whilst, 97% of them agreed that by doing the industrial training can provide more knowledge and guidance in choosing the job after graduated.

These results also proved that most of the students are satisfied with the industrial training and it is significant in helping them to plan for their future prospect. In addition by doing the industrial-training students can relate the fundamental theory with what they have learnt in the university. For example in structural design course, the application of real project is much important in order for the students to have real picture of the design concept. Even though the students are now have been exposed to the outcome based education (OBE), to blend the industrial training with the fundamental theory in the university may produce a better graduate engineers.

According to Fallows and Steven (2000) [3], fresh graduate students are immediately required to perform well with sufficient knowledge and

background by the employer, hence, by having the industrial training it is one of the options to equip students with such experiences.

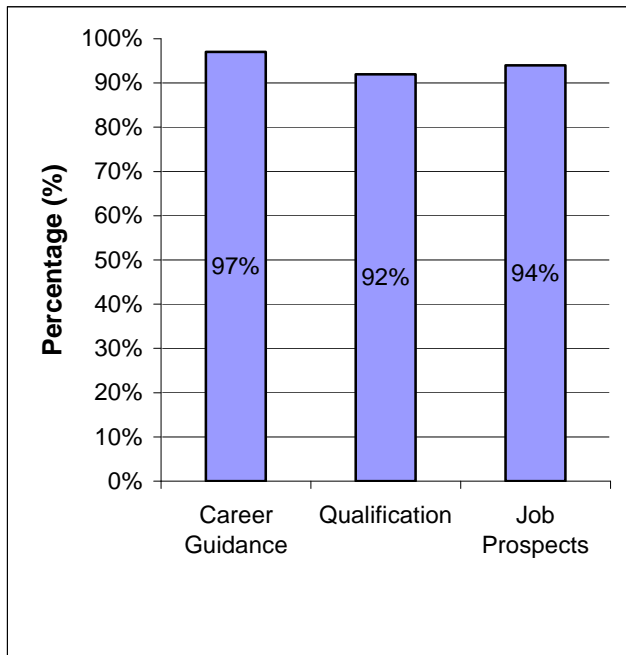


Fig. 4 Students' perception on the benefits of industrial training

3.5 Placement Method For Industrial Training (SMPLAI)

Starting 2008, a new application method for industrial training, which is known as SMPLAI has been introduced to the students. By using the SMPLAI method via online system, students can minimize their time and cost for the placement process. Based on the questionnaires results shown in Figure 5, 80% of the students were successfully obtained their industrial training placement through SMPLAI process and only 20% were managed to get their placement using the other method. Some of them have sent their application letter, email or phoned directly to the companies, which are not listed in the SMPLAI. Normally most of the civil engineering students were not having problem when searching for their training placement. There are many small to medium size contractor or consultant companies that are available to accept students. Even some companies have their own structured training program or division to handle the students.

Figure 6 shows the students' perception on the SMPLAI based on five aspects. By referring to the figure, 45% of the students agreed that the SMPLAI system is informative in helping or providing the place and 72% of them found that the system is user friendly. Whilst, 65% and 62% of the students satisfied with the application period and the

application procedure that they have to follow in choosing the preferred place. However, only 38% of the students have stated that the companies' data were sufficient in the SMPLAI. Based on these feedbacks, it shows that the SMPLAI system still need to be improved as to ensure the application process can run along smoothly. Enhancing the system in various aspects with complete and latest data of the companies as part of the improvement that should be carried out.

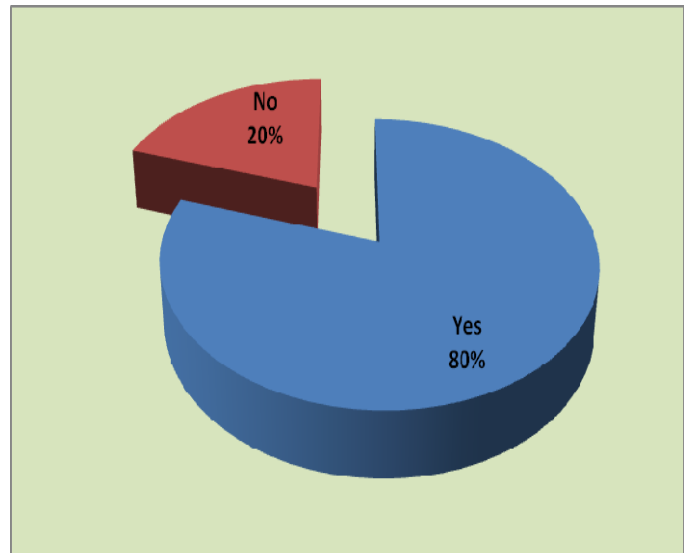


Fig. 5 Percentage of students' placement through SMPLAI

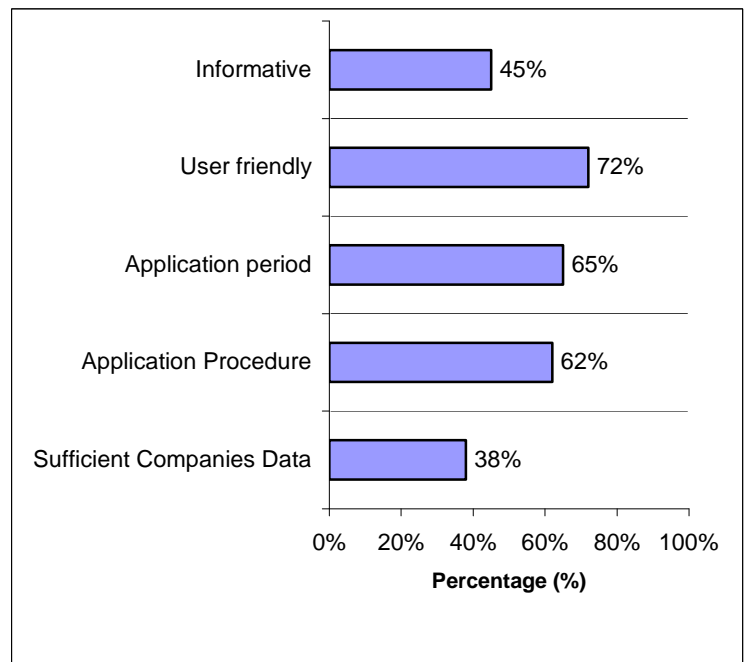


Fig.6 Students' perception towards SMPLAI

4 Conclusion

In conclusion, the objectives of this study have been achieved as all data of the students' perception towards the industrial training were successfully obtained. Almost all the students agreed that by doing the training has really benefited and exposed them to the real working environment. In addition, the three aspects of work attitude, communication and attitude have significantly improved. Apart from that, latest technology, knowledge and experiences that they had gathered can be used as an advantages for their future job prospect.

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