

Importance of Industry Training for Engineering Undergraduate students-case study

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Abstract

This paper is an exploratory study based on training programs within the industry. The information gathered and discerned in this paper will explore the training needs of the engineering students in industry and will give an insight on effectiveness of training in industry. Training is the activity that are designed to provide learners with the knowledge and skills needed for their jobs. Formal education from academic institutions is basically the proper venue for acquiring appropriate knowledge and skills necessary for future employment. Training is part of the tertiary curriculum which connects the gap between theory and practice as well as between classroom education and real industry life.

I. Literature Review

Training is beneficial for students of all discipline. This is because it plays an instrumental role in improving communication and managerial skills, building confidence and getting jobs. It is also concluded that our course curriculum should be reoriented towards practical knowledge and art of doing things. There is a critical need to establish some training centers close to universities or within the universities. This is because 80% students have supported that venue for training should be near to residential areas. [1]. It proposes that students demographic and motivation (human factors), as well as supervisor, duration, job scope and culture (organizational factors) may influence students' communication skill [2].

Six generic skills are communication skill, teamwork skill, critical thinking and problem solving and moral and professional ethics. The development of these generic skills is influenced by or have some relationships with students' demographic and motivation, as well as organizational characteristics and culture [3].

Students need the practical skills to secure jobs, however competency can be acquired on the job. Though skills acquisition is important, not every skill acquired adds value to the student. Therefore, the variety of skills acquired does not really matter but rather the ability to identify the most relevant employers' expectations [4].

Industrial training is beneficial to the students. It significantly improved their 'attitude', 'communication', 'work attitude'. The experience gained has given them the opportunity to become better students and could, in the future, provided them with better employment prospects[5].

Students were evaluated on the benefits of the training program based on the questionnaires given to them once

they have completed the training program. Various aspects were asked and these can be summarized into three main aspects i.e. Attitude, communication and work attitude of the students before and after the training program [6,7].

II. Introduction

Training is teaching, or developing in oneself or others, any skills and knowledge that relate to specific useful competencies. Training has specific goals of improving one's capability, capacity, productivity and performance. It forms the core of apprenticeships and provides the backbone of content at institutes of technology (also known as technical colleges or polytechnics). People within many professions and occupations may refer to training as professional development. With industrial relevance we mean that the education prepares students so that they are ready to cope with industry. It is also important that students are aware of the challenges and proven techniques related to industry.

III. Need of training

Industrial placement, where a student undertakes a period of training with an organization usually during a semester break, plays an important role in preparing the student for a professional career. From the hands-on training, the student learn about the skill sets required, demands of the industry and also work ethics. At the same time it gives the student an opportunity to put into practice what he or she has learned at university.

IV. Objective

To gain practical experience in an engineering practice environment outside the teaching establishment for a minimum of 15/ 30 working days.

V. Industry interaction

Today, most industries are providing opportunities for the engineering students to have hands-on training for future employment because they realize that the training of engineers is not the sole responsibility of the academe but a

shared task with industry. Training aims to change trainees' performance through improved knowledge, skills, and attitude. Several industries have shared generously their company resources to impart knowledge, skills and also work values to the on-the-job trainees. The training and experiences brought by the companies to the students have contributed to the development of their

attributes to become true engineers and professionals in the real work environment. Among all potential interactive linkages, companies can directly cooperate with or acquire research results from academic institutions, financially support academic research, and hire students, graduates, and researchers etc. to enrich their innovation capabilities. This study determined the students' academic performance.

VI. Role of Industry in Student Success

Most of the Electronics Engineering students conducted their Training in Telecommunication Service Providers and Semiconductor companies. These types of companies that provide communication services are also best training grounds with facilities and work environment that are good sources of information related to electronics. They could also provide enough skills and experiences in handling problems related to their fields of specialization. Electronics manufacturing industries provide the knowledge and students in terms of their company operations, processes and other related activities to electronics and communication technologies. The students were trained to operate large machines used to manufacture components designed for certain electronic gadgets and devices.

Hardware and Software distributors and Software/Information Technology Solution Providers were also types of companies where most Computer Engineering students conducted their Training. They were given the chance to know the flow and process of handling the business of product distribution and providing software solutions to the clients. The operation of these establishments provides entrepreneurial skills to the students on how to deal with the customers and also learning the marketing aspects of Computer and Information Technology.

Mechanical and Industrial Engineering students had chosen to work at Power Generation and Energy Related Business, Milling Industries and Steel Fabrication. These companies offered products or services most related to Mechanical and Industrial processes. Results show that majority of the students have chosen the right companies to become their training grounds during training. The industry exposure enhances the undergraduate's work life through added enthusiasm and commitment; provides a lifelong learning experience is an opportunity to engage with the profession to which they aspire in a realistic work environment; appreciate and understand the practical application of their academic program; work with professional mentors and to begin to build networks within their profession. So, even before the student graduates he or she is trained to be job-ready, thus increasing the student's employment prospects.

While the student will have much to gain from industrial placement, the same is also true for organizations which have such training programs in place. These programs can be of mutual benefit for employers because they may benefit from the quality of support, fresh ideas and energy that the student brings into the work environment.

Moreover, participating in training programs allows the staffs of an organization to develop leadership and mentoring skills, create exposure for the company, bring new perspectives and fresh ideas into the work environment. It is also a convenient pathway for the company to recruit human resource as some absorb trainees into their workforce after they graduate. Through the Industrial Training, students will be able:-

- To apply engineering knowledge learned in classroom environment in real industrial situations
- To expose to professional engineering practices in the industries
- To understand the role and responsibilities as well as code of ethics that engineers should uphold
- To develop awareness about general workplace behaviors and build interpersonal skills
- To prepare professional work records and reports.
- To build rapport and network with future employers to increase employability

VII. Research Methodology

The research was conducted after the students have completed their training. A total of 60 students were involved from the four different departments. The data collection was carried out using a set of questionnaires. The evaluation was set on 4-point. In order to simplify the report, answers are grouped together as 'Yes', 'No'.

The questionnaires contains :

- Place of training
- Students' perception on 'attitude', 'Motivation' and 'skill' aspect after
- undergoing industrial training
- Improvement in communication skill
- Students' perception on advantages of
- industrial training

VIII. Result and Analysis

1. Place of Training

46% students have supported the fact that the place for industrial training should be nearer to the residential area as shown in fig. 1. It shows that now a day's students are ready to go anywhere to learn technical things. And if we consider girl students they are also ready to go anywhere. Greater than 50% students want the place of training should not be near to home. Means the students approach towards training is changing.

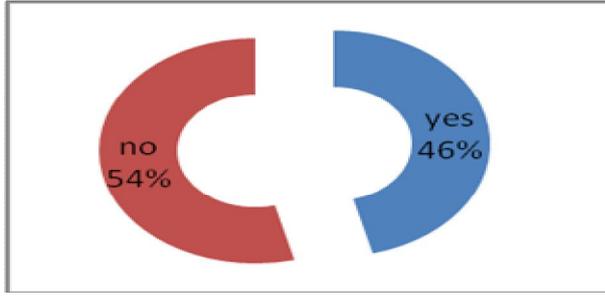


Fig. 1.

2. Communication skill

From the survey results, it has been found that 73% students do not agree with the fact that training plays an important role in enhancing communication skills while 27% students do agree with this fact as shown in fig. 2. But the authors also personally feel that with the help of such training students can improve and enhance their communication skill after completing the training and will gain confidence at work.

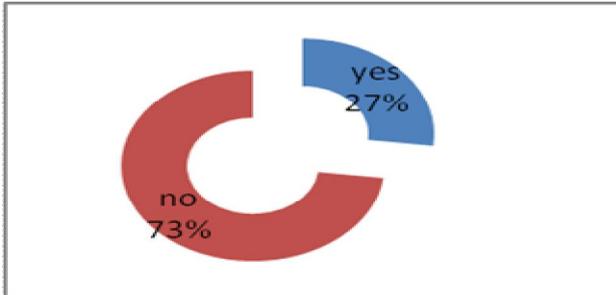


Fig. 2.

3. Motivation, Attitude and Skill

Students are accepting that training provides proper knowledge and job skills as shown in fig. 3. This work has found that such training programs give great combination of practical as well as theory knowledge of technologies. These days it is very tough to get a good job and to survive in the corporate world without strong technical knowledge of their respective technical domain. Moreover, there is nothing special in the syllabus of engineering which can enhance technical knowledge of students. The first requirement of most companies nowadays is that the candidate should be technically sound so that he can easily understand the technology quickly and start working as soon as possible. It is also suggested that special doubt sessions should be arranged for shooting out the doubt of students, so that they can feel confident in their work.

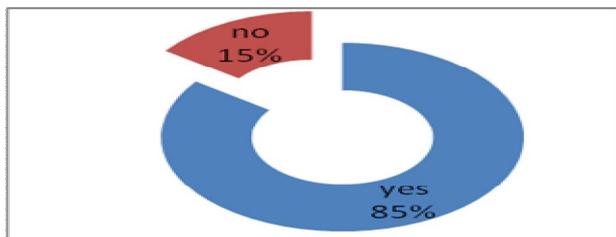


Fig. 3.

4. Training advantage

All most 90% Students have a strong opinion that the industrial training is advantageous for them, as indicated in Fig. 4. In authors' opinion, industrial training can help in reforming and grooming students in their profession and can produce better engineers. It is suggested that colleges should take keen interest in arranging such trainings in industries. So that students will get a better chance to work in a market oriented professional environment compared to their college laboratory.

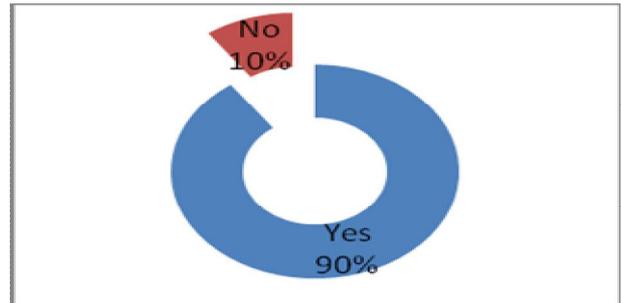


Fig. 4.

XI. Conclusion

To practically implement the issues raised above, these following steps should be taken into account:

1. Faculty Training with Modern industry on short term basis should be organized.
2. Training schedule in all the Engineering colleges should be maintained.
3. Engineering colleges should develop a small workshops to develop the skills for students and also for faculty.

All respondents understand that training is beneficial for students of all discipline. This is because it plays an instrumental role in improving communication skills, building confidence and getting jobs. It is also concluded that our course curriculum should be reoriented towards practical knowledge and art of doing things. This paper also suggests the methodology for increasing significant percentage of practical/workshop which is necessary before training for students.

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