

# PROJECT SUMMER INTERNSHIP FOR ENGINEERING STUDENTS: A BOON OR BANE? – A REVIEW

Shreenidhi Sriram <sup>1</sup>, Renugadevi Somu<sup>2</sup>

1 – Student, BE (Computer Science & Engineering)

2 – Assistant Professor

1,2 - *Department of Computer Science & Engineering, College of Engineering, Anna University, Guindy, Chennai, India.*

## I. BACKGROUND

The challenges faced by engineering students in our country have been multifarious. Engineering education these days, as a basic stepping stone for a brighter future, is faced with daunting tasks and intimidating encounters. The challenges faced by the engineers, both as students and as professionals, have been so formidable and onerous that these students ended up in jobs unrelated to their basic professional education, forcing themselves to take up alternative positions and occupations [1].

The sad reality is that on one side, the world is getting richer, better educated and well-connected, but on the other side, we come across many engineers who struggle fervidly in this potentially unstable world. As per the UNESCO report, the basis for this instability may be multi-factorial, but the bottom line factor would be a gross mismatch between the supply and demand [2]. The ever-rising global expectations for better engineers would also add on to the already existing global competition. This in turn has prompted many leading institutions and organizations to formulate novel strategies in order to have an inventive and innovative work-force that gives the institution and its faculties, a distinct competitive edge over its counterparts [3].

In our country, engineering education starts from student level and extends up at post-doctoral level. The role of each level has its own significance. Under graduation level carries the most significant role, as the career moulding begins there. Students adopt various methods of enhanced learning to keep their basic skills and knowledge on par with the developed world. Internship during under graduation is one such method of enhancement of one's learning process. Though internship

has been existent for a long time, most students don't go for it, either because of lack of opportunity or a lack of initiative. In order to keep in pace with the rest of the world, All India Council for Technical education (AICTE) in 2017, keeping in mind to create a talent pool for our country, had redefined the internship policy for the engineering students. They had come up with an amendment making it mandatory for all engineering students to undergo at least three internship programmes before they finish their course. AICTE also had laid down guidelines to the teaching faculties, highlighting a positive correlation between content focus in professional development and increased teacher knowledge that would enhance students' achievements. Such programmes immensely help the students gain professional experience and benefits the corporate companies choose the best and discover potential future business leaders [4,5,6].

## II. NEED FOR INTERNSHIP

The biggest hurdle that the students have to overcome whenever they apply for a job would be the 'work experience'. In this competitive world that we are in today, every organization looks for the best candidate with appropriate work experience. Having a degree in hand alone may not be the intrinsic criterion to secure a good job. A good first hand industrial experience would further enhance their profile. A good internship makes the students equip themselves better, especially when they are trained at the skills that they are good at and it also gives them an opportunity to apply their knowledge practically in the institutions that they are attached with.

Summer Internships and Projects during an engineering course has now become an integral part of engineering education. It provides hands-on exposure, facilitates a practical application of theoretical knowledge and is complimentary to the basic education [7]. It also helps students to narrow down the industrial area to work, do fundamental research on the work environment and plan timing of internship accordingly. Summers, being longer vacation times, may be the ideal period to concentrate on on-site internships. Such experiences will augment outcome based learning process and also instil various attributes in a student in line with the prerequisites laid down by the accreditation boards.

A survey conducted by NACE (National Association of College and Employers) in 2010 disclosed that 44% of new employees were recruited from their employee internship program [8]. Another survey conducted by NACE in April 2012 disclosed that the conversion rate for the interns into full-time employment rate was as high as 58%. Surveys conducted in 2015-16 revealed that nearly 60% of students are unemployed after completing their engineering due to lack of required skills and experience [9]. A study conducted by Wallaroo Media revealed that 65% of paid internship turned to full-time job offers and 39% unpaid internship turned to full-time job opportunities [10]. The unwritten fact remains that the Interns are more likely to be hired as Full Time Employees.

All the above facts and surveys clearly give us an idea about the importance of internships for the students. In one of the recent surveys done by Caroline D Abate in 2010, they concluded that by doing internships, one gets more support in career development [11]. There would be more job satisfaction, commitment towards the organization and more career satisfaction.

### **III. TIMING OF INTERNSHIP**

The most perplexing question amongst the students is when one should apply for internship during their four years of program. The various factors that decide the timing include: the kind of internship that one is interested in, knowledge and skills that the candidate possesses, level of their academic learning and the self-taught acquired skills that they possess. Also, as mentioned earlier, most students prefer internships during summer vacations owing due to the long break they get during summer. It is prudent to start internship in the early semesters because the earlier they start, the better would be the final impact. It's always better to engage oneself in real-world experience as much as they can and in as many as possible in the four years' term.

The State of Millennial Hiring Report by Look Sharp in 2016 concluded that those students who complete three or more internships stood a better chance to get a full-time job, with 81% of students reporting that internships really boosted their career directions either significantly (35%) or slightly (46%) [12]. Knouse & Fontenot in 2008 reported internships not only created newer employment opportunities but also facilitated an enhanced employability even prior to completion of their graduation [13].

A properly timed internship should facilitate development of intentional learning objective goals that are structured into a visible experience and supervised by an appropriate professional. It should also aid in promotion of academic, career and professional development. It should strike a strong balance between intern's learning goals with the organization's needs. It may be part-time or full-time; longer the duration, the better.

Internships done at early years and acquisition of in-depth knowledge in specific fields help in achieving higher grades in academics in subsequent years. On-site Internships can also be done during weekends, in the evening hours after regular academic sessions or during national holidays. With advancement in technologies and with a better internet connectivity and higher bandwidth, virtual or remote internships have also become distinct possibilities these days. In a multi-institutional trial done on 75 Engineering students across 5 institutions, it was observed that all students (100%) recruited in the study observed that lack of time to do the internship was one of the major constraint [14]. In order to overcome this problem, AICTE has suggested that students can also do internship before or after finishing a course. Placement interviews are conducted by various institutions in their final year. Preparing oneself adequately for such interviews and applying for interviews according to the companies that visit their campus could very well augment the chances of a better job with better package. Writing internship reports and documenting them as manuscripts in peer reviewed journals will also enhance the possibility of employment in a better organization.

According to the news published in Times of India on March 18<sup>th</sup> 2017 quoting AICTE, there were about 60% of engineering graduates who were unemployed at one point of time, accounting for the loss of 20 lakh man-days annually. With the introduction of mandatory internships in 2017, the placements were expected to increase from 40% to 60% in the forth-coming years. More importantly, AICTE has also recommended that the institutions should ensure 75% of the students get industry exposure in the form of summer internships [15].

#### **IV. IS INTERNSHIP COMPULSORY FOR PLACEMENT?**

Internships may be a pre-requisite for appearing for the final exam, but not a mandatory obligation for getting selected in campus interviews. Doing an internship in a reputed organization would place

the candidate far ahead of others during short-listing for placements. Having hands-on training will undoubtedly offer a significant edge over the other candidates.

Internship is not compulsory for placement, but offers the following significant advantages over other candidates at the time of interview.

- It gives a broader exposure to the organization,
- helps us create a professional network at the time of studentship itself and
- Facilitates a real time experience even before joining at work [16].

## V. AICTE INITIATIVES & GUIDELINES

The All India Council for Technical Education (AICTE) is a national-level advisory council that conducts regular surveys on the facilities and infra-structure available for engineering and other technical education. It also promotes development in the country in a coordinated and integrated manner. The main objectives of AICTE have been to promote a high-quality education, to coordinate, regulate and maintain norms and standards [17].

National Board of Accreditation (NBA) was established in 1994 by AICTE. It is entrusted with the task of periodically evaluating technical institutions and programs based on the norms and standards laid down by the All India Council of Technical Education. By giving NBA the power to grade and accreditation, AICTE indirectly motivates the institutions to scale newer heights while maintaining the basic standards [18].

AICTE reiterates the fact that Internship is a student centric activity. AICTE also reinforces that a major role has to be played by the students. It has stipulated a minimum of 14-20 credits of Internship activities / Project work/ Seminar for 4 year engineering courses programme, with 1 credit point being given for 40 hours of work experience.

Internships may be full-time or part-time. While part-time internships may be adopted during regular academic sessions, full time internship can be practised during summer vacations. Institutions have also been asked to show flexibility to accommodate and time the schedule of internship, without causing hindrance to other regular academic activities [19].

## VI. ROLE OF MHRD

The Ministry of Human Resource and Development (MHRD) has introduced the 'MHRD Internship Scheme', with a primary objective to motivate students to engage in internship programmes and also be part of the Ministry in formulating various educational policies. The basic eligibility criteria is that one should be a citizen of India and should be from an academic institution and should have completed two years of his/her engineering education. It offers two such programmes in a year, during summer and winter, each of two months' duration. To motivate students to join such programmes, the ministry also offers stipend for the internship period.

## VII. ROLE OF UNIVERSITY GRANTS COMMISSION (UGC)

During the Covid-19 pandemic, when the whole world is confined to indoors, UGC has come up with novel online internship programmes, urging all universities across the country to promote various online activities for the engineering students. Keeping in mind the safety and security of the students during the lockdown period, giving the highest priority to health, UGC has allowed students to take up online internship programmes that can be digitally carried out at home.

## VIII. MERITS OF INTERNSHIP

The benefits of Internship can be multi-faceted. It is not just the students, but also the affiliated organization and the whole industry get benefitted by such internships.

For students, such exposures give an excellent opportunity to get hands-on experience, to see how theoretical aspects learned during academic sessions can be integrated with the practical experience gained, helps them learn new skills and also practice communication and teamwork skills. Most importantly, it provides an opportunity to know more about the organization before committing to a full time profession.

On the other hand, the affiliated organization/institution finds the placement process a lot easier. A better connect with such industries would have already been established. The reputation and credibility of the institution also is greatly enhanced. Moreover, the feedback obtained from the students would greatly help the institutions to revise the curriculum that suits the expectations from the industry.

The industries offering internships are also not without advantages. The industries will be flooded with 'Ready to Contribute' candidates, visibility of the industry also is increased and the industry's image in the community is also greatly enhanced by their generous contribution to educational institutions.

## IX. LIMITATIONS OF FORCED INTERNSHIP

While AICTE strongly advocates implementation of internships across all engineering courses, there is another school of thought that internships should be optional and not mandatory. As the competency level of students varies from person to person, making it compulsory to secure minimum required credit points may not be accepted well amongst students. While most agree to internship, there is one group that still considers that industrial training is a waste of time especially for students who are interested in the field of research. It may then be prudent to allow that student who feels the need for a requirement of internship to approach the placement cell for information on various companies. By making it mandatory for all to do internship, students may do so to complete their graduation, but not because one wants to do it to learn something new and exciting. As the benefits of internship largely outweigh its limitations, AICTE has made it compulsory, which would not only help students to take internship but also will shape their career for bright future.

## X. CONCLUSIONS

The purpose of this article is to create awareness amongst the engineering students about the growing need to do internships during their four-year engineering programme. As many students are unaware of the existing AICTE guidelines and policies, this manuscript provides a broader overview of the need for internship, its distinct advantages and the guidelines of AICTE. Summer internships during the regular academic sessions have their own inherent limitations. But as the benefits of internship largely outweigh its limitations, internships do offer a considerable advantage during campus interviews and job placements and should be considered a boon to all engineering students. AICTE ensures high standards of technical education as per global norms and has enforced stricter guidelines to the institutions to keep in pace with the basic required standards. In exact statistical terms, our country has enough and more of superlative man power to meet the

growing needs of leading and reputed international organizations. An arduous engineering education, reinforced by an exceptional industrial experience would feed those ever-hungry institutions with talented engineers.

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