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Effective Industry Institute Interaction Through SIG for the Improvement of Placement Activities in Engineering Education: A Case Study of Thiagarajar College of Engineering, India Between 2001-2007

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Abstract: Engineering Institutions play a crucial role in society as creators and spreaders of knowledge. Knowledge which is available in our imparting institutions shall be explored rigorously to improve the system of production and quality of the products and services. While, Institutions continue to impart basic knowledge and skills, Institution-industry interaction will enable to undertake research by staff and students relevant to industry. Industrial placements have been heavily emphasized and recognized within higher Institutions prior to graduation. Currently a lot of different undergraduate and graduate Engineering programmes incorporate a period of work-based learning which is assessed as part of the formal requirements of the course. Indeed, throughout its history there has been recognition of industrial placement in term of its benefits for students, employers and the university itself. Better interaction between technical institutions and industry is the need of the hour. This study proposes a novel Special interest Group Model to improve academia-Industry relation for the improvement of placement activities in an engineering Institution.

Key words: Industry-institute interaction, special interest groups, placement activities

INTRODUCTION

Thiagarajar College of Engineering (TCE), Madurai, affiliated to Anna University, Chennai is one among the several educational and philanthropic institutions in India. It was established in the year 1957. TCE is funded by Central and State Governments and Management. The courses offered in TCE are approved by All India Council for Technical Education, New Delhi. It was granted Autonomy in the year 1987. TCE has been accredited by National Board of Accreditation. TCE offers 9 Undergraduate Programmes, 11 Postgraduate Programmes and Doctoral Programmes in Engineering and Science. The major objective of this institution is to plan and implement a programme of education in Engineering and allied Sciences, to promote research, to disseminate knowledge and to foster co-operation and exchange of ideas between academic community and industrial organizations and to develop entrepreneurship skills among the students.

The fact that the Quality in Engineering Education is the development of intellectual skills and knowledge that will equip graduates to contribute to society through productive and satisfying engineering careers as innovators, decision-makers and leaders in the global economy of the 21st century (Grant, 1993). This will have great bearing on the engineering curriculum, subsequent placement of young graduating engineers in industries across the country. For students, placements have proved to be particularly beneficial regarding personal development, linguistic, intercultural and communication skills, increased employability and testing their aptitude for an international career.

Integrating work with learning is not a new approach taken by Higher education to develop students' 'graduate employability'. Work integrated learning, is very unlike other forms of learning. It associates with the needs of employers and/or the employment needs of those in work or seeking new research (Camm *et al*., 2006). Further study on this was carried out by Gush and Hall (2007) cited Grray (2001) where he defined the four different forms of work-integrated learning (WIL). A lot of studies produced evidence that claims students returning from a year of work placement have better academic performance than those who did not, although that is not the main intended outcome of work placement (Duignan, 2002; Gush and Hall, 2007), cited Jackson (1995).

Duignan (2002), has defined 2 different models (Laissez-faire model: tasks given to the student in the work environment, Formal-structure model: Appraisal of

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performance in the workplace by host and university of placement. Coll and Eames (2000) defined three organizational models for placement.

Economic and demographic trends continue to affect the job market and how employers develop and manage their campus recruitment programs. In a competitive environment, maintaining campus relations is crucial to the success of campus recruiting. To do this, companies must build relationships with faculty, administrators, career center staff and students.

Higher education institutions find in placements as a good opportunity to develop their international dimension through university-industry cooperation experiment with new educational methods improve their image and attractiveness, respond to students' mobility expectations, encourage internal cooperation between different departments (Branscomb *et al*., 1999; Nguyen, 1997, 1998). With the advent of globalization and opening up of Indian economy to outside world, competition among industries has become stiff. To solve their engineering problems they can look up now to engineering institutions. Similarly, there is an urgent need to prepare engineering students for jobs in multinational companies, by exposing them to newer technologies and engineering methodologies.

These objectives can only be achieved well by bridging the gap between industry and the academic institute. This study proposes a novel Special Interest group Model to improve Industry institute interaction for the improvement of industrial placement.

MATERIALS AND METHODS

Establishment of Industry-Institute Partnership/ interaction Cell provide the following activities to students to involve them with industrial activities.

- By encouraging experts from industry to visit Engineering Institution to deliver lectures. And making them to participate in curriculum development.
- Arranging visits for staff members to various industry and providing short-term assignments to faculty members Professional consultancy and joint research by the faculty to industries
- Visits of industry executives and practicing engineers to the Institute for seeing research work and laboratories, discussions and delivering lectures on industrial practices, trends and experiences.
- Memoranda of Understanding between the Institute and industries to bring the two sides emotionally and strategically closer.
- Collaborative degree programmes, Organizing Workshops, conferences and symposia with joint participation of the faculty, student and the industries.
- R and D Laboratories sponsored by industries at the Institute.
- Scholarships/fellowships instituted by industries at the Institute for students.
- Practical training of students in industries.

Special Interest Group (SIG): Member-initiated groups focused on educational or research issues which appeal to a select and identifiable subset of Technical community (Tariq, 2004). And it is a catalyst for Engineers who would like to cultivate advanced technical endeavors in specialized fields. Each SIG organizes itself around those specific activities that best serve both its practitioner- and research-based constituencies. Industry technical skills can be taught to the students through SIG, So that they are trained in focused theme area. There is a need to have a mechanism to identify important areas/disciplines that should grow and develop policies and institutions that facilitate this.

SIG activities: Shares information, viewpoints and experiences within special interest group. Collaboration across the Engineering education is achieved. New activities and services are initiated. Increases society membership based Identification and encourages new talents. It provides more effective representation of other public and private agencies on behalf of the society. It improves research and promotes the discussion of innovative ideas in engineering education including development, implementation and evaluation. Explores publication of articles in learner-centered engineering education. So, the SIG helps for the industry as well as institution.

SIG model: In the proposed SIG model (Fig. 1), the inputs are faculty, infrastructure and students. By improving the processes Teaching and Learning, research and

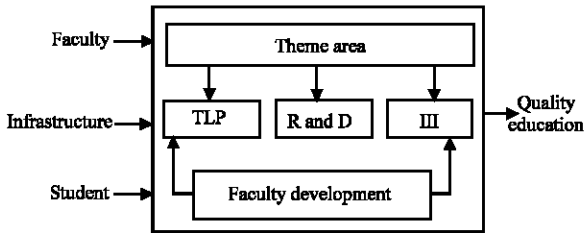

Fig. 1: Proposed SIG model

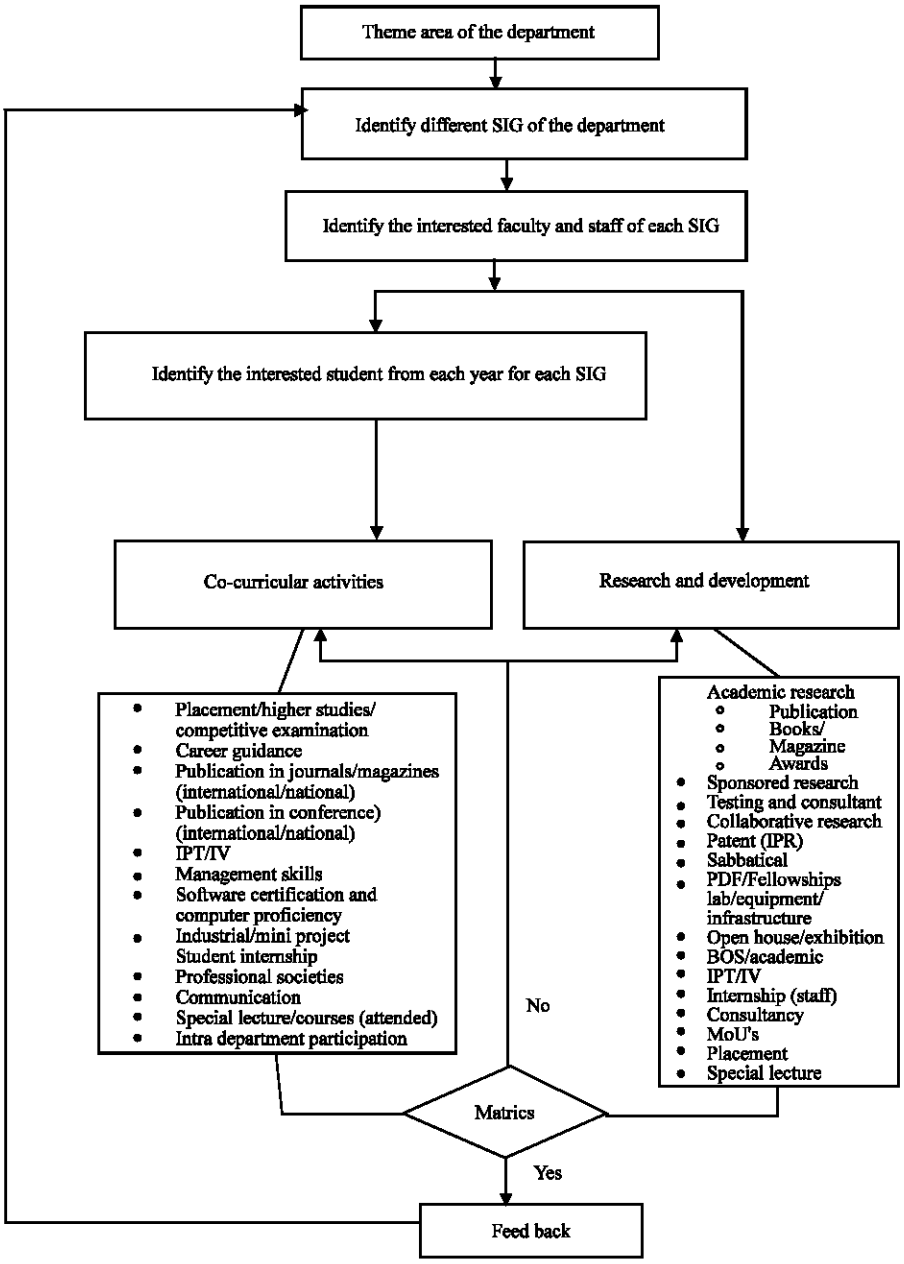

Fig. 2: Role of SIG for III

development, Industry Institute Interaction (TLP, R and D and III) we can enhance the output. In this process, the theme areas are identified for each engineering field .Here the output is the Quality excellence in an engineering education.

To improve the quality of Education, SIG concentrates on III, TLP and R and D. But to improve placement, the concentration should be on Industry Institute Interaction. Figure 2 shows the SIG activities for industry institute interaction improvement. After choosing the theme area for each department the interested students from each year and staff for each SIG are identified. The co-curricular activities and research and development are to be concentrated for improving interaction between the industries and institute. The various factors are to consider in the co-curricular and R and D. The most important factors are considered for the continuous improvement. The feedbacks are collected for the further improvement. We have to train the student according to the industries requirement. For new innovation, the industries will contact the institution .so that the research based education helps to innovate the

new ideas. Though TLP R and D and III are very important factors for an Institution, Placement as an objective one should concentrates on better Industry institute Interaction among the three.

RESULTS AND DISCUSSION

The results of this research both confirm and add to the existing approach on student placement success and retention in engineering by revealing some of the complex relationship among industry and institution. The delivery of placement leading to the realization of potential benefits for all stakeholders (university, student and enterprise) is not a simple task. It can be argued that 'there is no single model of successful practice' (Martin, 1997) and programs have to be tailored to suit the particular needs of the stakeholders involved, whilst considering all the available resources. For the successful industrial placement the relationship between industry and institute should be improved. The proposed SIG model list out the factors which affect the Industry Institute Interaction and gives priorities to them using Analytical Hierarchy Process (AHP) proposed by satty (Partovi, 1994; Saaty, 1996). It is a decision approach designed to aid in the solution of complex multiple criteria problems in a number of application domains. It establishes structural Hierarchy and makes comparative judgments among the factors selected then identifies the most important factor.

There are three level 1 factors in an engineering education. They are academics, research and development, co-curricular and extra curricular. All institutions take necessary steps to improve academics. But research and development and co-curricular activities are the very important factors for improving Industry Institute Interaction. According to the proposed SIG model

TCE started to frame SIG for each department during 2004. It directly improves the industry interaction by establishing the activities mentioned in Fig. 3 through special Interest groups.

Student Placement Success: The following results in Fig. 3 show clearly the sudden increase in placement after the establishment of SIG. Student placement success is a primary requirement in an organizational development. Consistently over 90% of graduates are placed into career positions. This rate is due to the campus 's focus on achieving its mission and the proposed SIG model that assures the activities offered closely correspond with career demands and employer stakeholder needs.

At the starting period of SIG formation many activities are not defined. After a year, Each SIG defined its own activities and SIG members are working towards

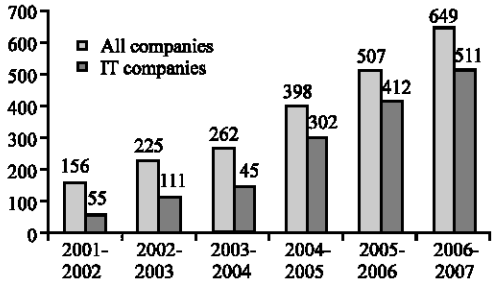

Fig. 3: Annual employment report 2001-2007

a successful goal. This tremendously increases the placement rate from 2001-2007.not only has overall placement rate always been high, but an increasing number of graduates are finding employment in or related to their major.The average annual salary offered by IT companies and core companies increased from 2.14-2.2 lakhs and 3.8-4.02 lakhs between 2005-06 and 2006-07, respectively. As a key indicator of achieving the mission and student success, TCE makes an effort to train every one of its students by developing better industry institute interaction through SIG model.

CONCLUSION

When it comes to excellence in engineering education, the general feeling is that students and staff would like to see more opportunities to give input to the system. Much can be learned from involving students and staff in the process of educational/instructional development. It is important for academia and industries to get together to identify the types of skills that students need to work in real life. There should be synergy of curriculum between university and industry. Industry-academia partnership is not only desirable but has emerged as an essential condition to foster academic and research excellence in the institutions and universities, to accelerate the growth of relevance research and to foster the environment of technology innovations.

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