ISSN: 2455-8826

Asian Journal of Innovative Research in Science, Engineering and Technology
Available online at: www.engineeringjournal.info

REVIEW ARTICLE

AICTE's Initiative to Increase Engineering Education's Employability through Internship: Some Reflections

Arshvir Kaur*, Archana Tomar

School of Liberal Studies and Education, Navrachana University, Vadodara India.

***Corresponding Author: Email**: *arshsamra@yahoo.com*

Abstract

The Planning commission's 12th year plan 2012-2017 of India, government is looking to skill 500 million people in India by 2022, through its various initiatives. **I**ndian government is planning to make Indian youth more employable by viewing skill building as an instrument to improve the effectiveness and contribution of labour to the overall production. HRD Minister Mr Prakash Javedkar revealed that as per AICTE study only 40 % of engineering students are employable. The government is putting an effort to bring the number from 40 to 60% in next five years. This paper highlights the main concern for educators as how to prepare today's generation to succeed. It discusses the need to reform education system so future generations can successfully face the tough and rigorous competition in the global market and can join competitive workforce. Today's global advancement industry demands can be met by preparing the fresh graduates as career ready individuals. To eliminate these gap students should have out of classroom experiences and industry/field exposure along with the professional course curriculum's theoretical and practical assignments. AICTE plans to introduce summer Internships for 75% of engineering students to make them industry ready, by incorporating internship or field experience programs in the curriculum of Undergraduate Engineering Degree Program to provide the students an insight to the real life field scenarios. Author suggests along with the incorporation and crediting this program, the structured evaluation process for it should be made mandatory to find out the effectiveness in the learning process for students during their field experience.

Introduction

The economic viability, quality of life depends upon well-prepared future generation, which depends on well structured curriculum in education so that learner's mind can be developed for intellectuality and critical thinking skills. Emphasis is needed to develop learner's interest in learning and acquiring knowledge in their respective professional areas. Learning in 21st century is quite challenging and way different from the past times.

There are various sources such as e-journals, e-books, internet to attain theoretical knowledge. The structured curriculum for technical courses happens in the classrooms or laboratories. This lacks the field exposure of students. Engineering and Technology professions must incorporate an active learning practice like Project based learning in form of internships, practical trainings and field experiences.

These programs will prepare the students in their professional areas by developing skills like problem solving, technical analysis and soft skills which not only contributes in the professional growth of individuals but will also accelerate the process of economic welfare of the society.

Overview of Current Teaching-Learning Approach in Technical Education

Mode of Instruction varies across different institutes even similar curriculum is regulated by them. Some instructors discuss and demonstrate, some focus on application of concept and some on memorizing the content. Classroom learning happens in certain ways: Classroom lectures, Model study, and Practical sessions in Laboratories, Engineering Drawings, etc. Learners understand the part of holistic scenario of course.

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Includes both theory and practical related to the course work. Out of the learning happens in a controlled way at any institute's classrooms or laboratories which lack in exposure to the field. As per AICTE survey, Internship Program or field experience has not been made mandatory in all engineering institutes, at present only 5% of colleges practice internship program. Currently less than 1% participates in summer internship programs. Some institutions had made to attain 3-5 weeks field experience mandatory in the curriculum of the respective professional area. The institutes which does have mandatory internship program has been given no credits in the curriculum, which can make implementation and effectiveness of program little feeble.

Overview of Current Scenario of Technical Education in India

Technical education plays a vital role in the social and economic development of our nation. AICTE-All India Council for Technical Education has the responsibility for uniform development and qualitative growth of the Technical Education system and preparation of syllabi to maintain uniform standards throughout the country.

Table1: Curriculum structure by AICTE with a BREAKDOWN of credits for under graduate Engineering & Technical degree programs

S. No.	Course Work - Subject Area	Range of Total Credits (percentage) Minimum	Maximum	Suggested Break-down of Credits To-tal=176 (No.)
1	Humanities and Social Sciences (HS), including Manage-ment;	5	10	14
2	Basic Sciences (BS) - Mathematics, Physics, Chemistry, Biol-ogy;	15	20	30
3	Engineering Sciences (ES), including Materials, Workshop, Drawing, Basics of Electri-cal/Electronics/Mechanical/Computer Engineering, Instru-mentation;	15	20	30
4	Professional Subjects-Core (PC), relevant to the chosen spe-cialization/branch; (May be split into Hard (no choice) and Soft (with choice), if required ;)	30	40	50
5	Professional Subjects – Electives (PE), relevant to the chosen specialization/branch;	10	15	20
6	Open Subjects-Electives (OE), from other technical and/or emerging subject areas;	5	10	12
7	Project Work, Seminar and/or Internship in Industry or elsewhere.	10	15	20
8	Mandatory Courses (MC);	Non-Credit		8 units

As per AICTE the Table 1 suggested Course Work of 176 Credits needs to be completed successfully by a student to qualify for the award of the Under Graduate Engineering & Technical Degree from the concerned University/Institution.

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Critical analysis of AICTE'S current curriculum for technical Undergraduates

Review from Technical and Engineering Field experts for the need of Field experience or Internship Program: Author had communicated with some experts in industry and technical educational field to find out their opinion regarding why large number of fresh Engineering graduates remain unemployable? Field experts shared that fresh technical graduate's lacks knowledge in field activities and real life scenarios from their experience in hiring process of individuals.

A human resource expert reveals that fresh technical graduates not only lag behind in technical knowledge but also in soft skills. Fresh graduates fail in expressing themselves in the areas of decision making and problem solving skills as of no experience of site or field activities. The site supervisor field experts felt that technical

individuals lack in understanding the construction design drawings which questions their capabilities at project construction sites.

Author had consulted few construction site managers who reported that technical individuals face challenges while preparing a detailed report for the projects. They are unable to identify some areas of construction management which can be the shortcomings in their work abilities. Technical Field experts recommended that technical education students must visit the production or construction sites during their ongoing semesters along with the summer or semester end internship programs.

Experts emphasise that the institutes must incorporate and focus on group discussions, preparing technical reports and presentations for the attended internship program not only to enhance their soft skills but also measure their reflectiveness for the gained field knowledge. The exposure to such can only be made if individuals go through rigorous industry and field experience where they would be able to identify the challenges and obstacles faced during certain activities. They will also get an insight of skills such as time management, team work and Problem solving skills. Experts suggested making internship program as mandatory for engineering students for the much needed exposure to the industry in their respective professional courses.

Review on AICTE Study

As Per Times of India's article on AICTE study, More than 60% of the engineering graduates every year remain unemployed and this is the potential loss of 20 lakh man days annually. AICTE study reveals that only 40% of engineering students are employable. The job Industry reveals that 60% of our graduates are not fully career prepared so they need further training and these 60% students won't also get compensated in terms of salary as compared to 40% of their peers. Inspite of Technical Education Curriculum by AICTE which includes professional core courses, Practical's related to Course work, Projects and other promotional programs for technical education, technical society still lacks to keep up with the job Industry.

The response to above concern by Mr. Anil Sahasrabuddhe, Chairman, AICTE. Those fresh graduates are not unemployable but they are under employable. HRD Minister Mr Prakash Javedkar revealed that the government is putting an effort to bring the number from 40 % to 60 % in next five years. Authors view on the need of field experience or internship Programs for engineering and technical students: Learners can learn the subject content theoretically in classrooms and from the other e-sources but lacks in experiencing field work scenarios.

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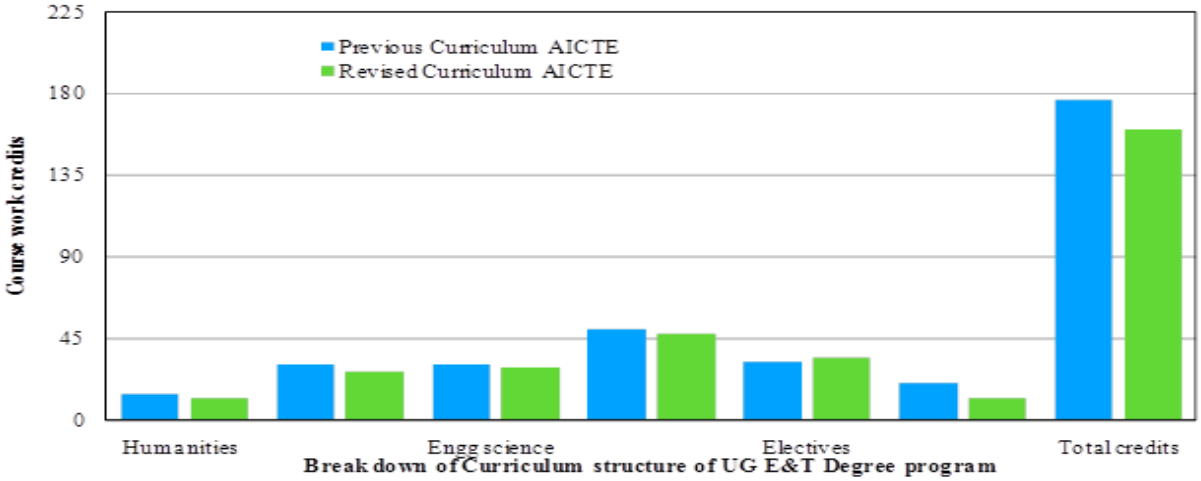
To be career ready, students need to get engaged in outside classroom project activities. It is needed to acquire the development of key skills required by industry such as group work, time management along with improved Academic and Technical Competence skills. Author believes that internship Experiences will also help engineering students to explore their professional interests which may guide them later to choose right professional track per their interest.

Table 2: Revised curriculum by AICTE for engineering and technical courses: Structure of undergraduate engineering program as per revised AICTE curriculum

S. No.	Category	Breakup of Credits (Total 160)
1	Humanities and Social Sciences including Management courses	12
2	Basic Science Courses	26
3	Engineering Science courses including workshop, drawing, basics of electri-cal/mechanical/computer , etc.	29
4	Professional core courses	47
5	Professional Elective courses relevant to chosen specialisation/branch	23
6	Open subjects – Electives from other technical and /or emerging subjects	11
7	Project work, seminar and internship in industry or appropriate work place/academic and research institutions in India/abroad	12

8	Mandatory Courses	(non-credit)
	[Environmental Sciences, Induction program, Indian Constitution, Essence of Indian Traditional Knowledge]	
	Total	160*

Chart 1 below shows the comparison of breakdown of curriculum structure of UG engineering and technology degree program



*Minor variation is allowed as per need of the respective disciplines.

AICTE has revised the curriculum for Engineering and Technical courses which may help to meet the industry demands, by reducing the number of credits in theory in the updated total of 160. The Industrial internship has been made mandatory with the aim to improve practical skills of engineering students and preparing them industry ready and practically skilled. "Every student in technical institute should undergo three internships each spanning four to eight weeks before completion of his/her under-graduation course.

The responsibility will be on the institute to help students find a suitable industry for the internship," HRD minister Mr. Prakash Javadekar. The Plan is to introduce summer Internships for 75% of engineering students to make them industry ready so engineering students will be required to do 2-3
Months of internship to make them career ready

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Critical analysis on revised credits for theory & internship program

In the opinion of the author by reducing the overall credits for theory work which serves as a base of knowledge for students in professional courses will not benefit much to achieve the aim of getting the fresh graduates career ready. With the lack of theoretical base the knowledge gains in terms of practicals, projects, etc., will be very shallow. Theory provides the solid foundation for students where Practicals, Projects are pillars of strength, which leads to more development in terms of knowledge with the field experiences and internships.

Recommendations and Suggestions

Authors opinion on AICTE's revised curriculum for undergraduate technical graduates to bridge the gap from fresh graduates to industry ready individuals won't get covered by reducing the theory credits and incorporating internship program in the curriculum but by introducing a mandatory structured curriculum and evaluation process for the assigned internship periods. Evaluation is a process that critically examines a program.

It contributes to the formulation of objectives, designing of learning experiences, assessment of learner performance, use the results as feedback and if needed guides to amend the learning activities to meet the desired outcomes for program's learning objectives. Similarly and as per Industry needs for the well preparedness of engineering individuals, structured curriculum and its evaluation process needs

to be framed with the required learning objectives, related field experiences or internships and performance assessments. Students must go through strict assessment process of Post test,

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Project Reports, Project Presentations and Viva voce as they finish their internships. The analysis of performance results will help to find the effectiveness of program. This effort may help in putting forward the technical fresh graduates on the track of industry or career ready engineering graduates. Evaluations from Internship supervisor can also be helpful to get better insight of attitude, behavior and student performance during their internship period.

Industry or Engineering Firms should also accommodate the engineering and technical undergraduate students for providing internships and can cooperate with college faculty for strictly implementing the requested structured curriculum for interns. With the supervisor's guidance and discipline students can learn, explore and perform well during the internship period. On the other side students can also make professional network connections which may benefit both hiring agency and trained and skilled individuals further for hiring process in their profession /career.

Conclusion

Government is planning to initiate the skill building programs for betterment of technical education. Presently technical society lacks to meet the industry demand. Fresh graduates has been facing unemployable situation because of very less exposure to the field scenarios.

AICTE's current curriculum includes theoretical and practical knowledge of technical courses but does not made field experience or internship program mandatory. Only 5% of technical institutes or universities offer internship program, which are also non-creditable ones. To address this issue of untrained or under-employable fresh engineering graduates, AICTE proposes a revised curriculum for under graduate engineering programs by reducing theory credits and including credited internship programs.

As per the revised curriculum the field experiences are made mandatory and degree will be rewarded only after the completion of internship programs. Author applauded on amending the curriculum by making internships and field experience mandatory for students but also shares the disagreement on reducing the theory credits in the curriculum. For any course work theoretical knowledge serves as a base and foundation to the knowledge and by minimizing its content will not help to uplift any program.

Students will get deprived of basic knowledge and they may lack in understanding the field activities during their internship program. The more important is to implement and evaluate the internship programs. The evaluation process needs to be framed with the required learning objectives and desired student outcomes in relate to the internships and their performance assessments. This might help the graduates site preparedness and to achieve the aim of bringing employable percentage from 40% to 60% for the fresh graduates.

So, these career ready individuals may be able to better demonstrate the competencies, intellectual skills and knowledge through productive and satisfying careers as innovators, decision makers and leaders to contribute in the national and global economies.

Acknowledgements

I would like to express my gratitude for their valuable feedback, suggestions and recommendations from their experiences of hiring and interviewing fresh graduates towards the following experts from Cube Construction engineering limited, Mangalam Soil testing Facility and Neptune Realty Group, Vadodara, Gujarat. Mrs. Durba Bhattacharya, Mr. Vinit Shah, Mr. Harshad Patel, Mr. Jatin Patel, Mr. Bhavin Parmar Mr. Shivang Trivedi and Mr. Anil Desai, Dr. Nipa Desai, Mr Yusuf Ghadiyali.

I am thankful to all the above field and education experts who took out the time from their busy schedules and provided me their insight on the need of field training or internship program for the technical graduates.

References

1. Vinayshree J (2017, July 30) "AICTE to cut down on theory, focus more on practice "- Retrieved from Times of India.
2. Manash Pratim Gohain. (2017, July 30)"Internships to be made must for engineering" AICTE chairman/timesofindia.indiatimes.com/home/education/news/internships-to-be-made-must-for-engineering-aicte-chairman
3. Education I (2017, March 30) Business- Industry -Services News, Education. economictimes.indiatimes.com
4. Government of India, All India Council for Technical Education |. (2018, May 18). www.aicte-india.org
5. Hindustan times –Javedkar / Story. (2017, July 26), Hindustantimes.com.
6. Technical education, Unemployability. (2013, October 3). Retrieved from Rediff, Get ahead.