

Enhancement in Student Employability by Providing Internship and Project Track

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Abstract—In order to strengthen its final year engineering students' worldwide competency, our institute decided to launch four choice-based project tracks in 2017–18. According to this method, students can select one option from traditional capstone project (CP), undergraduate research experience (URE), entrepreneurship development (ED), and industry internship & projects (IIP). The current work focuses on industry internship & projects (IIP), how it affects students' careers, employability chances assessment techniques perceived by students and the institute, and the significant steps done to address such challenges. Students and their evaluators were surveyed to analyze the results of the four track project method. Students who choose the IIP track were found to have improved their skills. Self-learning capacity, self-assurance, and critical thinking all showed satisfactory growth. The pupils' resumes were aided by this. In order to improve students technical understanding Institute again decided to change in four track structure into three track in 2020-21 by making CP track compulsory to each students which will starts in second semester of third year and ends after first semester of final year. Students that undergo compulsory the CP track in their Third year were successful in gaining abilities like teamwork, creative problem-solving, and time management. Which can helpful to them for better survival in Industry during Internship. Overall, it has been noted that the institute's placement percentage increased from 78.68 to 82.32 and average package have been increased from 2.60 LPA to 3.71 LPA

Keywords—placement; internship; projects; employability
JEET Category—Industry and Academia Collaboration

I. INTRODUCTION

In today's competitive environment, employers look for engineering school graduates who are prepared for the workforce. In India, there are over 4282 engineering institutes. Every year, more than 30 Lakh students from diverse courses graduate from these institutions. Engineering students in this

situation must contend with intense competition while looking for a job that suits their preferences. Consequently, the growth of engineering students is greatly influenced by teaching and learning approaches. According to the engineering education curriculum, final year students are required to complete a significant project. Additionally, students must complete a group project on a specific issue related to their chosen engineering field. Students are not exposed to real-world job situations, even though this practice is helpful for developing skills like critical thinking, analysis, teamwork, project management, etc. (Waychal, 2016). Entrepreneurship education is seen as complimentary to the current engineering education system. Some students want to launch startups after graduation, but they don't acquire the necessary skills and expertise before they graduate. To improve students' chances of success in the actual world of employment, the curriculum needs to move its emphasis more toward experiential learning methods. Cooperative education, internships, service learning, research, study abroad, fieldwork, and other educational and professional experiences like entrepreneurial development are all included in the experiential approach (Gashaw, 2019). All of these experiences serve as a bridge between what is taught in the classroom and job expectations. Institutions and employers collaborate in cooperative education so that students can apply what they learn in class to the workplace. This improves decision-making skills and working experience (Jung and Lee, 2017). Students also receive limited-term work experience via internships. Paid internships under a professional's supervision are available. The main distinction between cooperative education and an internship is that cooperative students are paid for their work and are treated like full- or part-time employees. In the case of internships, students get paid nothing or little. According to a literature review, the majority of institutions favor internship programmes lasting four to six weeks within the four-year degree programme. Internships and cooperative education can help students embrace new ideas, generate possibilities, and become more conscious of concerns affecting their communities (Gol et al., 2001). A fruitful internship might provide important information for choosing the course of future education or job. An internship is a chance to apply and advance knowledge and abilities connected to a particular industry, as well as integrating internships into regular courses can be difficult for many universities (Parishani, Khorrooshi,

2016). (Renganathan et al.,2012). Although the advantages of internships have been the subject of several studies, few students and academic institutions actually implement these programmes. The planning of internships should start with assigning the industries, allowing enough time for the internship, providing adequate supervision and assistance, and providing financial support for the interns (Gashaw,2019). Otherwise, institutions and students may encounter a variety of difficulties. Our institute opted to advance an experiential learning paradigm after considering the existing state of the world. The institute started off by surveying 500 pupils. After graduation, 65% of students expressed a desire to work for medium- or large-sized businesses. 15% of students expressed a desire to complete their further education at reputable technical universities like IITs and NITs. The remaining 4% of students expressed interest in pursuing an entrepreneurial career, while 6% of students were willing to complete their post-graduation studies abroad. As a result, RIT, Rajaramnagar chose to launch four tracks of projects for B. Tech final-year students in the 2017–18 academic year.

II INDUSTRY INTERNSHIP AND PROJECTS (IIP)

The purpose of internship is to increase students' academic knowledge in their areas of study both in depth and breadth. Students have the chance to gain experience by applying concepts acquired in the classroom to particular experiences in the community and workplace. In the eighth semester, IIP track students must spend at least 21 weeks working in the industry. During this time, students labour in the field. It is expected that students would discover problems that are occurring in the engineering industry during their internship and provide a solution to the business. This track is given a total of 24 credits in the eighth semester of engineering. 10 credits come from these.

2.1 STUDENTS PARTICIPATING IN INTERNSHIPS ARE EXPECTED TO,

- i)Examine how the business operates in terms of its inputs, transformation, and outputs (products and services).
- ii. Develop a mindset that will allow you to fit in with the company's culture, work standards, and code of conduct.
- iii. Recognize and abide by the safety standards and conduct code.
- iv. Exhibit the capacity to notice, analyze, and record the information in accordance with industry standards.
- v. Interpret the systems, processes, and procedures and relate them to the theoretical studies and concepts.
- vi.. Develop your communication and leadership skills.
- vii. Exhibit sound project management and financial judgment

2.2 STUDENTS ARE EXPECTED TO, AS PART OF THE PROJECT

- i. Determine the project or issue in the program's area that is pertinent to the business.
- ii. Gather information about the issue that has been identified.
- iii. Examine the data using statistical methods and tools.
- iv. Offer a workable alternative option and choose the best one.
- v. Present the solution to the business and ask for help putting it into practice. Measure the project's effect on the department's

or company's performance. To get three credits, students must choose one online course from a variety of platforms. Students can choose this online course if it relates to the subject of their project. The seventh semester of the engineering curriculum on the IIP track includes a one-credit course in liberal learning. The student should choose a non-technical online course for this credit, such as one on work ethics or professional skill development

III. INTERNSHIP TRACK ALLOTMENT PROCEDURE

In final year B.Tech students need to choose track by filling the Google form floated by Training and Placement office containing following questions mentioned in fig 3.1

The screenshot shows a Google Form titled "Response form for Three Track System". The form is addressed to "Dear Students" and asks them to fill in details mentioned in the form. It includes five main questions:

- Name of Student(Full Name) *
- Roll No. *
- Mail ID *
- Contact No. *
- Three track choice *

For the third question, there is a table with three columns: Preference 1, Preference 2, and Preference 3. The rows are:

	Preference 1	Preference 2	Preference 3
Industry Internship & Project (IIP)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Undergraduate Research Experience (URE)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Entrepreneurship Development (ED)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Fig.3.1 Google form for track allotment

I. Internship will be provided to students of Final year B.Tech.

II. Those who are interested to do the internship should register themselves on RIT AGE after declaration of T.Y. Sixth semester result.

III. Test (aptitude Technical) will be conducted at RIT in the month of August-September (7th semester) for making a shortlist of students.

IV. These shortlisted students will be scrutinized again by Panel Interviews at departmental Level.

V. Then final list of students, eligible for Internship will be prepared

VI. After selection students cannot withdraw their names.

VII. Students will be sending to the industries identified by Training & Placement department of college. In these industries students need to face the selection procedure.

VIII. If any student (from shortlist only) is having a reference in any industry, he or she should contact T&P coordinator of department. These students should apply to such industries with permission of TPO & HOD

IX. During internship period it will be mandatory to students to do a project on a problem given by respective

industry.

X. Students will be evaluated four times in a semester (Review I, II, III, IV) by College evaluator and industry supervisor.

XI. After Completion of internship students should submit report approved by industry, daily work diary and internship completion certificate to department

3.1 DURING INTERNSHIP STUDENTS SHOULD FOLLOW FOLLOWING GUIDELINE

I After joining the industry students should learn all the departments and their workings. Also, student should understand how each department of industry is interlinked with one another. Student should correlate the theoretical aspects learned in academics with industry practices. Students should gain knowledge of new technologies which industry follows. Students should follow the professional codes and ethics which industry follows. Students should follow all rules and regulations of industry. Special care should be taken regarding safety. Each student is provided with a diary which contains details regarding internship, do's and don't and evaluation scheme. Students is required to write the diary regularly and get it signed by the industry guide periodically during the visit the faculty assigned to the student should be able to go through the diary to access the work done and write the remarks/ instruction. At the end of internship, the duly completed diary to be submitted to the department. Duration: The internship duration is of one complete semester (Minimum 20 weeks) between 1 st January to 30 th May of respective academic year. Biometric attendance on working days is compulsory.

Project: When students will start internship, they should search technical problems occurring in the industry and they can select this problem as a project in consult with industry & institute mentors. III. Online/Self study course: Students enrolled in Internship and project track must select an online course. This course can be Self Study/Online/certification /NPTEL course approved by BOS (Board of studies) While selecting online or self-study course students must follow guidelines like Course must have an evaluation scheme (Either by platform or by Guide) Course must be completed in span of three months Selected course must belong to one of the given platforms. If selected course belongs to a different platform than that in given list, it can be adopted after approval by Dean Academics. Selected course must be in line with the area of project undertaken by candidate. Platforms for the online courses are given below.

1. Coursera <https://www.coursera.org>
2. NPTEL <http://nptel.ac.in>
3. Udemy <https://www.udemy.com/>
4. edX <https://www.edx.org>
5. SoloLearn <https://www.sololearn.com/>
6. Udacity <https://in.udacity.com/>
7. FutureLearn <https://www.futurelearn.com/>
8. Alison <https://alison.com/>
9. Cognitive Class <https://cognitiveclass.ai/>

3.2 RESPONSIBILITIES OF COLLEGE MENTOR (EVALUATOR)

The Evaluator's responsibilities may be summarized as follows:

1. Be in touch with supervisor of industry though mail regarding student's performance
2. Visit at Industry 4 times in a semester for evaluation
3. To explain the internship assessment method to the students.
4. To guide students to define the project objectives and the expected deliverables.
5. To provide advice and guidance but leave solutions to the students.
6. To be available to the student for consultation during assigned time.
7. To evaluate the student's project using the assessment rubrics.

3.3 EVALUATION

The student is required to complete both internship and project successfully to become eligible For award of the degree along with the credits for the self-study/online/certification courses. An honors certificate will be awarded to him by the institute along with B Tech Degree after successful completion of internship. Internship Monitoring: Each student is assigned a faculty mentor by the institute who monitors the progress of online course, internship, project and helps the student to sort-out any issues/problems arising. Mentor of student from college will visit the industry as per the schedule given below.

1. At the beginning of the program for orienting Students to the company and finalize the project During 2 nd Week
2. Review-I During 10 th week
3. Review-II During 15 th week
4. Review-III During 20 th week

Note: Apart from these scheduled visits, the faculty on request of students/company will visit in case of any issue related to the internship project. Internship: The assessment of the internship will be done jointly by the industry and the faculty assigned to The students. The tentative scheme of assessment includes following aspects.

1. Punctuality, behavior and following code of conduct (to be assessed by the company personal)
2. Initiative, observation and interest in learning new things (faculty in Charge) Familiarization with specific Department/shop/function assigned to Student (to be assessed by the company personal)

Final evaluation based on presentation of work, internship report (Jointly by the company personnel and examiner appointed by Institute & faculty guide) Minimum 50% is mandatory for successful completion of internship or else the extension will be given to make the student to come up to the expectation. II Project: The tentative scheme of assessment will be 1 Project/Problem identification and preparation of project proposal approved by both the company and faculty endorsed by the DPC 2 two Mid reviews of the project as per schedule specified jointly by company and faculty assign 3 Final examination of the project along with detailed project report (industry person + Faculty guide + External examiner, Either at institute/company required) Sample evaluation

rubrics is mentioned in fig 3.2

Industry Internship and Projects (IIP)
Rubrics for Internship (Review-II)

Class: _____ Date: _____

Branch: _____

Sr.No	Criteria	Need Development 1	Competent 2	Proficient 3	Advanced 4	(Score) Roll Numbers
A	Quality of Work	Work was done in a careless manner and was of erratic quality; work assignments were usually late and required review; made numerous errors	With a few minor exceptions, adequately performed most work requirements; most work assignments submitted in a timely manner; made occasional errors	performed all work requirements; submitted all work assignments on time; made few errors	Thoroughly and accurately performed all work requirements; submitted all work assignments on time	
B	creativity	Had little observable drive and required close supervision; showed little if any interest in meeting standards; did not seek out additional work and frequently procrastinated in completing assignments; suggested no new ideas or opinions	showed moderate interest in assignments; completed work but need supervision; Lack of creative thinking	Worked without necessary supervision; in some cases, found problems to solve and sometimes asked for additional work assignments; normally set own goals and, in a few cases, tried to exceed requirements; offered some creative ideas	Was a self-starter; consistently sought new challenges and asked for additional work assignments; regularly approached and solved problems independently; frequently proposed innovative and creative ideas, solutions	

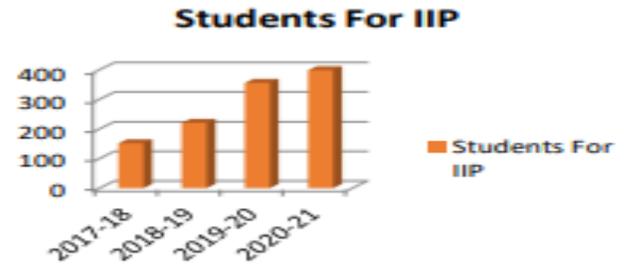


Fig.4.1 Number of students opted for IIP Track

As per student's interests and requirement in Industry increases from period 2017-18 to 2020-21 students doing internship count goes on increases up to 80 % of total students Completed internship in IIP track as mentioned in fig 4.1

4.1 OPPORTUNITIES FOR STUDENTS IN EMPLOYABILITY PROSPECTIVE

As the result of students engagement in company for more than 20 weeks company also evaluate the students on their assessment criteria and give them employment as per requirement of company as the graph shown in fig.4.2 number of students get absorbed in same company where they have done internship for 20 weeks .

C	Dependability	Was generally unreliable in completing work assignments; did not follow instructions and procedures promptly or accurately; was careless; and work needed constant follow up	Was generally unreliable in completing work assignments; did follow instructions and procedures; but work needed constant follow up	Was generally reliable in completing tasks; normally followed instructions and procedures; was usually attentive to detail, but work had to be reviewed occasionally; functioned with only moderate supervision	Was consistently reliable in completing work assignments; always followed instructions and procedures well; was careful and extremely attentive to detail; required little or minimum supervision			
D	Technical Skill	Must be assigned only routine duties and coached or instructed regularly. Unable to develop more advanced skills	Demonstrates acceptable ability in primary job duties and procedures; but needs advanced skills	Performs all routine tasks well. With some follow up instruction, can develop a variety of relatively advanced skills.	Excellent development of all phases of job duties. Can readily become proficient at even the most advanced skills.			
E	Attendance	Was absent excessively and/or was almost always late for work	Frequently absent without permission	Was never absent but not on time	Always reported to work as scheduled with no absence and was always on time			
F	Communication	Answer at least one questions correctly	Answer most questions correctly	Answer most questions correctly	Handle difficult questions with ease and confidence			
G	Work Diary	Daily Not maintained	Maintained but more errors and need improvement	Maintained but fairly meets all expectations	Maintained accurately and meets all expectations			

Final Score:

Total score = A+B+C+D+E+F+G

Average score = (Total Score/number of criteria 's')

Average Score = _____ (Refer Grade table given below)

Final Grade = _____ (Refer Grade table given below)

Result Summary:

Sr.No	Roll Number	Name	Total score	Average score	Grade(Mark)	Final Grade
1						
2						
3						
4						

Name & Sign: _____
College Mentor

Name & Sign: _____
Industry Mentor

Name & Sign: _____
Head, Dept

The average score point is converted to a grade using the following table:

Grade point range	Grade(Mark)	Final Grade
3.9 ≤ x < 4	AA+ (96-100)	AA
3.67 ≤ x < 3.9	AA- (91-95)	AA
3.33 ≤ x < 3.67	AB+ (86-90)	AB
3 ≤ x < 3.33	AB- (81-85)	AB
2.67 ≤ x < 3	BB+ (76-80)	BB
2.33 ≤ x < 2.67	BB- (71-75)	BB
2 ≤ x < 2.33	BC+ (66-70)	BC
1.67 ≤ x < 2	BC- (61-65)	BC
1.4 ≤ x < 1.67	CC+ (56-60)	CC
1.2 ≤ x < 1.4	CC- (51-55)	CC
1.0 ≤ x < 1.2	DD (46-50)	DD
0 ≤ x < 1	FF (<40)	FF

Fig3.2 Assessment Rubrics for IIP Students

IV. RESULTS AND DISCUSSION

Retention (IIP TO Plcement)

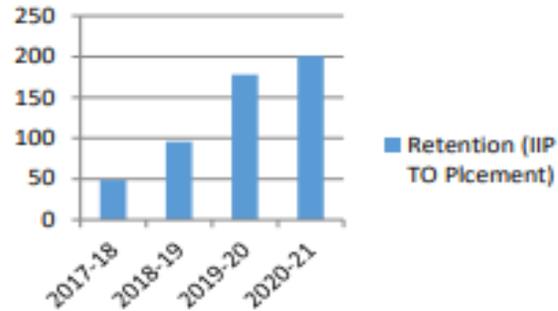


Fig.4.2. Retention

For the students those doesn't get absorbed in same company will get job offers from placement drives scheduled by Training and placement office. While giving the interviews in recruitment process students uses their skills and knowledge gained during Internship period and overall placement of Institute increases.

Fig 4.3 shows increment in placement after implementation of IIP track. After launch of four track system in 2017-18 there is rise of placement percentage seen in 2018- 19 but due to Pandemic situation all over the world, decrement in placement percentage seen in 2019-20. In pandemic situation also students have done internship in virtual as well as in offline mode that resulted into placement percentage goes on increases in year of 2018-19 to 2021-22

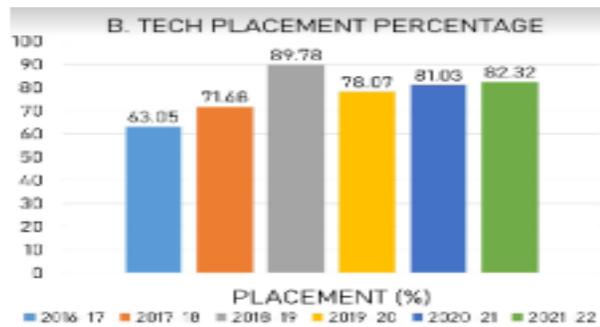


Fig.4.3 Placement statistics for last 6 years

V. CONCLUSION

Students that followed the IIP programme were successful in connecting theorems with practical application. Students' technical expertise is enhanced. Students gained a variety of workplace competencies, including work ethics, time management, and work-life balance. In the past five years, the institute's placement rate has grown from 71.68% to 82.32%. More than 50.5% of interns who finished internships have received job offers from the same organization. Also, average package of students increased from 2.60 LPA to 3.71 LPA. Also, highest package for institute increased from 10 LPA to 15 LPA for student who has done Internship under IIP track.

REFERENCES

- Mr. Ganesh L. Suryawanshi., Dr. Sachin K. Patil., & Dr. Mrs. S. S. Kulkarni (2021). Impact of Choice based four tracks project system on development of final year Engineering students and challenges faced during implementation: Case Study: *Journal of Engineering Education Transformations, Volume 34, January 2021, Special issue, eISSN 2394-1707*
- Gashaw, Z.(2019). Challenges facing internship programme for engineering students as a learning experience: a case study of Debre Berhan University in Ethiopia. *IOSR Journal of Mechanical and Civil Engineering (IOSRJMCE), 16(1), 12-28.* 3
- Waychal, P. (2016). Innovating final year (capstone) projects in engineering education. *Journal of Engineering Education Transformations, 30(1), 26-29.* 4.
- Jung, J., & Lee, S. J. (2017). Impact of internship on job performance among university graduates in South Korea. *International Journal of Chinese Education, 5(2), 250-284.* 5.
- Lutz, F.C., & Schachterle, L. (1996). Projects in undergraduate engineering education in America. *European Journal of Engineering Education, 21(2), 207-214.* 6.
- Parishani, N., & Khorrooshi, P. (2016). Challenges and Opportunities of Internship Lessons in the View of Students from Farhangian University Case Study: *Colleges of Pardis Fatemeh Zahra and Shahid Rajai in Esfahan. Mediterranean Journal of Social Sciences, 7(5), 143-147.*
- Renganathan, S., Karim, Z. A. B. A., & Li, C. S. (2012). Students' perception of industrial internship programme. *Education+ Training 8*
- Gol, O., Nafalski, A., & McDermott, K. (2001). The role of industry-inspired projects in engineering education. *31st Annual Frontiers in Education Conference. Impact on Engineering and Science Education. Conference Proceedings (Cat. No. 01CH37193) (Vol. 2, pp. F3E-1).* IEEE. 9.
- Gerba, D. T. (2012). Impact of entrepreneurship education on entrepreneurial intentions of business and engineering students in Ethiopia. *African Journal of Economic and Management Studies. 10.*
- Duval-Couetil, N., Reed-Rhoads, T., & Haghghi, S. (2012). Engineering students and entrepreneurship education: Involvement, attitudes and outcomes. *International Journal of Engineering Education, 28(2), 425*
- Wang, E. L., & Kleppe, J. A. (2001). Teaching invention, innovation, and entrepreneurship in engineering. *Journal of Engineering Education, 90(4), 565-570.*
- Täks, M., Tynjälä, P., Toding, M., Kukemelk, H., & Venesaar, U. (2014). Engineering students' experiences in studying entrepreneurship. *Journal of engineering education, 103(4), 573-598*
- Kim, M., & Park, M. J. (2019). Entrepreneurial education program motivations in shaping engineering students' entrepreneurial intention. *Journal of Entrepreneurship in Emerging Economies*
- Chandrasekaran, S., Stojcevski, A., Littlefair, G., & Joordens, M. (2012). Learning through projects in engineering education. *SEFI 2012: engineering education 2020: meet the future: proceedings of the 40th SEFI annual conference 2012. European Society for Engineering Education (SEFI).*
- Blicblau, A. S., & Steiner, J. M. (1998). Fostering creativity through engineering projects. *European Journal of Engineering Education, 23(1), 55-6*