

# Improving of Placements, Higher Studies and Entrepreneurships of Civil Engineering Students through Quality Circle Activity

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**Abstract**—Outcome Based Education (OBE) system is playing a vital role in engineering education as per New Education Policy 2020. In OBE, different types of active learning tools, varying from a simple, class room assessment tools like one-minute paper, think-pair-share, flipped classroom, to a more complex technique like problem based learning, cooperative learning, peer supported independent study are used so that the engineering graduates get equipped with required skill sets to make them industry ready. In India, nowadays the quality of education provided by the institutions and the programs run by these institutions is evaluated by two major bodies namely NBA and NAAC. Accreditation of the programs and institutions by NBA and NAAC is based on some criteria and it has become an essential requirement to ensure the quality technical education. In NBA and NAAC, students' placements, higher education, entrepreneurship, industry internship and connect with industry are considered to be the key indicators for ensuring quality technical education and a higher weightage has been provided in the evaluation process. In this paper, an attempt has been done to improve students' placement index (i.e. placements, higher studies and entrepreneurship) by implementing the concept of Quality Circle (QC) activity for the students of civil engineering department of Rajarambapu Institute of Technology, Rajaramnagar. The results indicate that implementation of QC concept could improve placement index by 10% for last two batches and could maintain progress even during COVID pandemic. Thus, study concludes that implementation of QC concept helps in enhancing placement index of department.

**Keywords**—NAAC; NBA; Outcome Base Education; Placement Index; Quality Circle;

**JEET Category**—Research

## I. INTRODUCTION

The engineering education is an important field for achieving full human potential, developing an equitable and just society, and promoting national development. Universal

high-quality education is the best way forward for developing and maximizing our country's rich talent and resources for the growth of the individual, the society, the country, and the world. India will have the highest population of young people in the world over the next decade, and our ability to provide high-quality educational opportunities to them will determine the future of our country. The global education development agenda reflected in the 4<sup>th</sup> sustainable development goal (SDG4) for sustainable development adopted by India in 2015 which seeks to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” by 2030.

The world is undergoing rapid changes in the knowledge background. With various dramatic scientific and technological advances, such as the rise of big data, machine learning, many unskilled jobs worldwide may be taken over by machines, while the need for a skilled workforce, particularly involving mathematics, computer science, and data science, in conjunction with multidisciplinary abilities across the sciences, and humanities, will be increasingly in greater demand. The growing emergence of epidemics and pandemics will also call for collaborative research in infectious disease management and development of vaccines and the resultant social issues heightens the need for multidisciplinary learning.

With the quickly changing employment background and global ecosystem, it is becoming increasingly critical that engineering students not only learn, but more importantly learn how to learn. The Pedagogy must evolve to make education more experiential, holistic, integrated, inquiry-driven, discovery-oriented, learner-centered, discussion-based, flexible, and, of course, enjoyable. The curriculum must include basic arts, crafts, humanities, games, sports and fitness, languages, literature, culture, and values, in addition to science and mathematics, to develop all aspects and capabilities of learners; and make education more well-rounded, useful, and fulfilling to the learner. All these abilities are possible to be achieved in the presently adopted OBE system. The NBA and NAAC are the two major bodies at the national level which play a great role in evaluating the performance of programs run by

the institutions and systems adopted by the institutes based on specific criteria for ensuring the quality of education.

One of the important criteria considered by NBA and NAAC as a key indicator for assuring quality technical education is students placements, higher studies and entrepreneurship and has also a greater weightage in the evaluation process. However, over the past decade the engineering institutions are facing a lot of challenges in making their students employable by equipping with them the required skill sets despite their great efforts in the form of hands-on experience, software trainings, educational visits etc. From the studies carried out to know the present status of students, it was observed that the students were lagging in the soft skills, communication skills, decision making, etc. which were not been properly addressed by the institutions in solving the employability issue. Hence, it was proposed to implement the concept of QC to address these issues that were hindering for making the students more employable. QC is one such tools which helps in solving a variety of the problems. QC is a group of members consisting a leader, deputy leader, members and facilitator. that perform similar work and meet regularly to identify, analyze and solve work-related problems. Thus, in the present paper, a study is carried out by implementing the concept of QC activity for improving the placement index of civil engineering students of RIT for academic year 2018-19, 2019-20 and 2020-21.

## II. METHODOLOGY

### 1. Quality Circle activity:

Quality circle basically consists of a formal, institutionalized mechanism for productive and participative problem solving interaction among the employees of the organization. It is made of a group of employees who perform similar tasks or share an area of responsibility. It consists of minimum three and maximum twelve members in number. The quality circle structure is as given in Fig. 1. QC has the proven and systematic 12-step methodology that can be applied to solve almost all types of problems. It involves application of several quality circle tools and techniques such as Pareto diagram, cause-effect diagram, why-why analysis etc. This tools can be used for overall development of student from Civil Engineering Department.

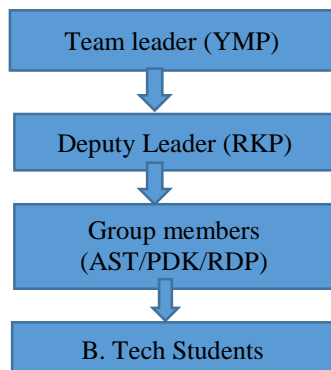


Fig.1 Quality Circle Structure of Civil Department

1. Identification of work related problems.
2. Selection of problem.
3. Define the problem.
4. Analyze the problem.
5. Identification of cause.
6. Finding out the root cause.
7. Data analysis.
8. Developing solution.
9. Foreseeing probable resistance
10. Trial implementation
11. Regular implementation
12. Follow up and review

### 2. Formation QC group and its implementation

In year 2020-21 department is applied NBA UG compliance. In UG NBA compliance placement and internship plays very important role. By considering requirement of institute and department we selected student development as problem for quality circle. As a part of this activity Department of Civil Engineering RIT Rajaramnagar formed QC group with name **“Bridge”** for better placement and industry internship activity for 2019-20 and 2020-21. In a QC team total five members were worked for placement improvement of students. This problem is selected by using brainstorming and voting method. After selection of problem following method is adopted for solving problem.

1. Preparation of student data card
2. Gathering of student’s personal information indicating strengths, weakness and career goals.
3. Analysis of student information and categorization of students based on the interest for
  - a. Getting placement,
  - b. Seeking higher education (MTech/MS/MBA etc.)
  - c. Becoming an entrepreneur
4. Organizing mentoring sessions with final year students for training need analysis
5. Scheduling and conducting training sessions, interactions with alumni and industry personnel, entrepreneur, government/semi-government officials.
6. Receiving feedbacks from students and experts for improving placement index
7. The outcome of QC activity is studied for AY 2018-19, AY 2019-20 and 2020-21.

The student information was collected by using student data card. As per student data card student choices were analyzed. The details of student choices are given in Fig.2

There are 12 steps of Quality Circle are as follows:

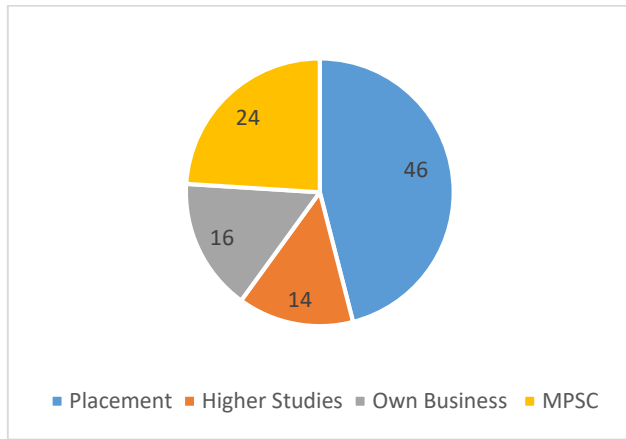


Fig. 2 Student choice for various vertical

KES, RIT, Rajaramnagar Department of Civil Engineering STUDENT DATA CARD (TAP) Final Year B. Tech. Academic Year-2020-21			
<b>Basic Information:</b>			
Name of Student	Swarnal shankar amare		
Gender	Female		
Student Mobile Number	987351391		
Email ID	swarnalshankar118@gmail.com		
Address (Correspondence & Permanent)	Near Sai cloth center yashwantrao nagar sashinge road, Vite.		
Name of the Parent/Guardian	Shankar rangnath amare		
Parent's Mobile No.	897537099		
Parent's Occupation	Worker		
Address (Correspondence & Permanent)			Near Sai cloth center yashwantrao nagar sashinge, road vite.
<b>Educational Details:</b>			
Sr.	Examination	Year of Passing	Marks (%&GPA)
1.	SSC	2015	88.60%
2.	HSC	2017	66.52
3.	DIPLOMA		
4.	B. TECH. (C.G.P.A. till 7th Sem)	6.2	RIT, Rajaramnagar.
Electives opted		Worked as (see entrance)	
Details of Field Training		Royal construction, Vite	
<b>Student's choice of study and future career:</b>			
Sr.	Student's Expectation	(Yes/No)	Area of Interest (specify)
1.	Whether interested to get recruitment through campus placement drive?	Yes	Site engineer, project manager, etc.
2.	Whether interested in Higher Studies through competitive exams (GATE, GRE, CAT, etc.)?	No	
3.	Whether interested in seeking job opportunities in Govt. through competitive Exams like MPSC, UPSC, etc.	Yes	PWD, WRD
4.	Want to become an Entrepreneur?	No	
<b>Student's Strengths &amp; weaknesses (for improving skills)</b>			
Sr.	Strengths	Weaknesses	
1.	Team work		
2.	Good communication skill		
<b>Student Achievements if any</b>			
Sr.	Particulars		
1.			
<b>Details of family members/relatives/friends working in construction industry:</b>			
Sr.	Name	Designation	Contact No.
1.			
Student Signature _____ Parent/Guardian Signature _____ TPC Signature _____ HOD Signature _____			

Fig.3 Sample student data card

The final year students' data is collected by using student data card. The sample student data card used for collection of student information is as shown in Fig. 3. The collected data were divided into four verticals viz. interested in placement, interested in higher studies, interested to start own business and interested for competitive examinations like MPSC, GATE, GRE etc. As per analysis of student interest for AY 2020-21 46 % students from civil engineering department need placement is good company. Total 14 % student from batch willing to join higher education in reputed organization like IIT/NIT/IIM etc. Total 16 % student from batch willing to start their own business. The remaining 24% student shown interest in preparing for competitive examination like MPSC/UPSC/GRE etc.

### 3.0 Training session design and its effective implementation:

As per choices/interest of student training sessions were planned for four verticals selected by student. The details of training session conducted are given in Table 1. All this training sessions were designed by considering need of student from Civil Engineering Department.

Table 1: Schedule of Training Sessions

Vertical	Training session	Date and time	Trainer
Placement	CV writing	8/10/21 10AM-12.30AM	Prof. R. D. Patil
	Interview technique	18/10/2021 10AM-12.30AM	Dr. P. D. Kumbhar
	Soft skill training	1/09/21 10AM-12.30AM	Dr. P. N. Pawar
	Mock Interview	10/11/21 10AM-12.30AM	Interview panel from Civil Engg. Dept.
Higher Studies	Importance of GATE	10/10/21	Dr. Y. M. Patil
	GATE coaching session	10/10/21 to 2/2/2022	Online session by Unique academy Pune
	Expert talk of Alumni	11/12/21 10AM-12.30AM	RIT Alumni
Entrepreneurship	Idea development as a business	11/11/21 10AM-12.30AM	Er. Tejas Zagade
	Business registration process	12/11/21 10AM-12.30AM	Er. Karan Chavan
	Expert talk of Alumni	14/12/21 10AM-12.30AM	RIT Alumni
Competitive Examinations	Importance of MPSC and other competitive Examination	16/12/21 10AM-12.30AM	Competitive Examination cell of RIT
	Schedule of MPSC and other examination	18/12/21 10AM-12.30AM	Dr. Y. M. Patil
	Expert talk of Alumni	24/12/2021 10AM-12.30AM	RIT Alumni

After successful completion of this training for placement of department on campus and off campus placement drive is organized with the help of training and placement cell of Civil Engineering department. For placement of students from Civil Engineering department help from alumni is taken. Our alumni Er. Sachin Shete owner of Merit Consultancy, Pune conducted interview of student and gave 05 placements for RIT student. From last three batches our total 40 students selected as an Assistant Engineer Grade-I and Assistant Engineer Grade-II in Public Works Department and Water Resource Department.

After successful completion quality circle activity all four vertical data is collected and presented in Fig. 3. The quality circle activity and training sessions conducted by RIT faculty and alumni resulted in improvement in placement, higher studies and entrepreneurship activity is improved. This improved placement index is useful for NBA and NAAC accreditation of the department.

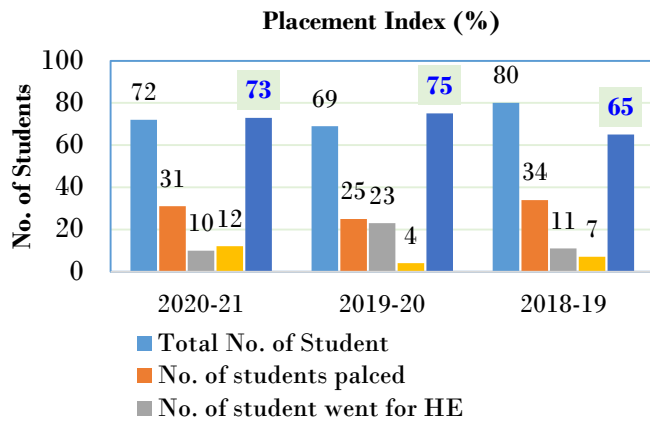


Fig.4 Placement Index of Civil Engineering Department

### III. RESULTS AND DISCUSSIONS:

As shown in Fig. 4 the placement of AY 2019-20 is 36 % and placement of AY 2020-21 is 43 %. The 7 % improvement in placement is observed during 2020-21. This improvement in placement activity is due to quality circle activity and training sessions conducted by expert member from RIT, Rajaramnagar. The improvement in placement is due to mock interview and soft skill training conducted by alumni and faculty member of RIT. The placed student has given good feedback about Quality circle activity. They also requested to conduct QC activity for next batches from Civil Engineering department.

From Fig. 4 entrepreneurship activity no. of student started his/her own business for AY 2019-20 is 4 and is 6 % of total student from same batch. In AY 2020-21 total 12 student started his/her own business and is 17 % of total student from same batch. The 11 % improvement is observed in entrepreneurship activity of Civil Engineering department. The improvement in entrepreneurship activity is due to training and guidance sessions conducted by RIT faculty and alumni. The student from this vertical gave good feedback about Quality circle activity conducted by department. They also requested to conduct this activity for coming batch also from Civil Engineering Department.

The success of QC in higher studies is also increasing for AY2019-20 and AY 2020-21. Through QC students also motivated for higher studies in NIT/IIT. The many students qualified GATE examination and taken admissions in IIT and NIT and reputed college from Maharashtra. The students from higher studies vertical also requested team member to continue this activity for coming batches also.

Overall, QC activity conducted under “Bridge” resulted in improvement in placement index of the department. This activity motivated student for placement, higher studies and entrepreneurship activity. QC activity also improves self-

confidence, communication skill and critical thinking skill of student. QC activity is very useful for development of department, faculty and students.

### 5.0 Conclusions:

1. The Quality Circle activity conducted under “Bridge” is resulted in good placement and entrepreneurship activity of Civil Engineering department for AY 2019-20 & AY 2020-21. This type of systematic approach will be useful for development of student and department in the view of NAAC and NBA.
2. The Quality Circle activity is also useful for branding good image of department in society.
3. The success of QC activity is depending on the efforts of all stakeholder participated in quality circle activity.

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