

## A Study of Quality Aspects in Teachers of Engineering Institutions in Chhattisgarh

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**Abstract:** Fresh engineering graduates to have employment must have employability skills but employers are not finding these skills in graduates. The teachers being agent for generating employability skills in students need to have learning attitude and research orientation. This study focuses on finding the status of teachers teaching in engineering colleges on their learning approach and research activities. The study is conducted in three parts. First, the literature review through which various learning and research activities/ practices carried on by teachers are identified. This study being carried in Chhattisgarh, learning and research activities/ practices in engineering colleges of CG are identified by exploratory research having the principals of self-financed engineering colleges affiliated to CSVTU as sample. For main study i.e. knowing the status of faculty members on these learning and research activities/ practices, again the samples of principals (this time more) were taken and their opinion of six questions were sought in percentage. The questions were related to research paper publication, working on projects, patents, PhD awarded/ enrolled, workshops attended and their industrial visit. The response highlighted that the teachers are very poor on most of the activities/ practices suggesting that this poor quality of teachers may be the reason for un-employability among engineering graduates passing out from engineering colleges located in Chhattisgarh.

**Keywords:** Engineering Graduates, Employability Skills, Learning and Research Activities/ Practices, Engineering Teachers.

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### I. Introduction And Literature Review

The demand of engineering graduates is a substantial factor in growth of Indian Economy but it is found that engineering graduates are not getting employment. Before going ahead with, discussion on the study of the model given below makes the connection of graduates, employability and employment clear.



### Magic Bullet Model of Employability

Source: Harvey (2002), Employability and Diversity

As shown in above model, graduates need to have employability skills to get employment. The graduates and in this study engineering graduates are those AICTE approved B.E., B.Tech. programme while Bianca and Peter (2004) expressed engineering as a profession where scientific knowledge related to technology, mathematics, science and management is applied and this is obtained through formal education [1]. Employability means work readiness. As per Hillage and Pollard (1998) employability is an individual's ability of obtaining preliminary employment, preserving employment and gaining another employment in case needed [2]. Yorke (2003) defined employability collection of the skills, understandings and individual characteristic

those organize graduates to get employment [3]. Robinson (2000) declared that employability skill to be a number of essential skills necessary to gain any employment and afterward to carry on the obligation also [4]. **About.com** and **Wikipedia** defined employment as an association between company and worker in which the employee deliver his services in the company for the accomplishment of companies goals and worker gets compensation [5] [6].

Various researchers have verified that the unemployment problem is not due to lack of employment but because of lack of employability skills in engineering graduates. Singh (2014) highlighted from report of NASSCOM and McKinsey Global Institute that the employability in India among fresh engineering graduates are only 25% [7]. Subbarao (2013) highlighted that the quality of engineering graduates is poor and due to this majority of them are unemployable [8]. The employers are getting it very hard in hiring engineering because of lack of work related skills as reported by Career Builder (2013) [9]. Somalingam and Shanthakumari (2013) highlighted that in India, due to lack in skills and competencies necessary for employment, engineering graduates are under-employable and getting less compensation [10]. Aey Cee (2015) stated from SuccessCDs report that 64 percentage engineering graduates due to deficiency in their skills are not satisfying the employers [11]. Singh (2016) presented the output of Aspiring Mind's National Employability Report highlighting that eighty percent of engineering graduates every year in India since last five years due to poor in essential skills are unemployable [12].

Engineering graduates to get employment should possess various employability skills but are lacking on these. Anderson and Mitchell (2006) stated communication skills and team working [13] to be essential skills for employability while Pauw et al. (2006) highlighted skills like communication, presentations, creative thinking as necessary [14]. Martin et al. (2008) acknowledged communication skills, team-working skills, problem-solving skills, numeracy skills, IT skills in students as employability skills needed by engineering graduates [15]. Weligamage (2009) stated communication, teamwork, problem solving as employability skills [16]. Blom and Saeki (2011) acknowledged teamwork, problem solving skills, communication skills, technical skills, computer knowledge, application of mathematics etc as employability skills for engineering graduates [17]. Mishra (2016) added personal presentation skills and technical skills.[18].

If this situation is prevailing then question arise, who is responsible for this. Lets study this is two parts. First, who is normally responsible and second what is the status of the responsible agent i.e. is competent or lacking. Kamsah (2004) stated that the responsibility of guiding and facilitating the engineering graduates to learn generic skills required for employment lies with teachers [19]. Now, there was need to know the status of teachers on their preparation and updation required to guide the students in generating employability skills. Here the point is, what are those things which reflect the teachers' learning and updating approach. Various literatures give idea about these things and also about where the teachers stand on these. Agarwal (2009) pointed out that academicians are not obtaining Ph.D. at required pace and thus research direction is also suffering [20]. Rao (2012) highlighted that patents issued to universities are very less in number [21]. Subbarao (2013) concluded that lack of interaction with industry; very less publication of paper and meager on patents by teachers is the contributing factor for poor quality of graduates [8]. He further highlighted that engineering education is facing problem of quality faculty members and that that publication and patents play role in training of teachers. Kalwade (2016) verified that lack of industrial exposure of the teachers affects the employability of engineering graduates and acts as barrier in development of students [22]. Mohanty and Dash (2016) verified that development of students suffered due to the faculty members lacking of industrial experience [23].

UGC's Academic Performance Indicator (API) shows various indicators on which the teaching staffs are evaluated. Few of these indicators related to this study are research paper publication in refereed and reputed journals as notified by the UGC, chapter or book publication by publishers are notified by UGC, doing projects as specified by UGC, having patents and Ph.D. award or enrollment [24]. With this literature provided numerous practices which every teacher need to do as a learning teacher. The literature highlighted the situation prevailing at different part of India. It was essential to have the idea of same w.r.t. Chhattisgarh state.

## **II. Objective Of The Study**

Objective setting is required to give direction to the work to be carried out. Objective(s) guide about the data to be gathered and the avenue for where.

The prime objective is to know about the status of teachers teaching in engineering colleges on their practices required to show them that they are involved in continuous learning and updation as per requirement for generating employability skills among engineering students.

But before that it was necessary to know about the learning and updation practices required by teachers in Chhattisgarh for developing employability in students.

### III. Research Methodology

#### First Stage: Exploratory Research

To verify whether the same practices are applicable in Chhattisgarh or not and further, whether more practices exist, an exploratory research was needed.

For this, the population was the Principals of the non-government engineering colleges affiliated to CSVTU and the sample size was 15 Principals. Only one open-ended question was asked. The question was “What are the activities/ practices of faculty members teaching in engineering colleges which reflect that they are learning and involved in any sort of research. The activities/ practices gather from their responses were mostly those derived from the literature review while few of these were the new for this study. It can be said new as we have not found them in our limited literature review. After literature review and responses from the sample the final list of major activities/ practices appeared to be as follows.

1. Research paper published in refereed or reputed journals
2. Book or chapter published
3. Worked or working on standard project/ research work
4. Having patent or applied for
5. Involved in industry interaction
6. Engaged in industrial visit
7. Awarded Ph.D. or enrolled for
8. Attended standard workshops
9. Attended seminars/ conferences
10. Attended Faculty Development Programmes
11. Delivering guest lectures
12. Studying research papers/ articles

#### Second Stage: Descriptive Research

There was no such study regarding the status of faculty members teaching in non-government engineering colleges affiliated to CSVTU on activities/ practices they are involved in and reflect their learning and research approach. Looking into the above scenario, the need of confirming the status on above issue is felt. For this sample of 30 principals were taken. Six important activities/ practices from above were taken for study and a questionnaire with six questions were constructed. What helps the students to have employability skills was the base for selecting six questions as mentioned below.

1. Teachers teaching engineering students have worked or working on project
2. Teachers teaching engineering students regularly go for industrial visit
3. Teachers teaching engineering students have attended standard workshops
4. Teachers teaching engineering students are having patents or have applied for
5. Teachers teaching engineering students have research publication in standard journal.
6. Teachers teaching engineering students are PhD awarded or are enrolled for.

Before entering into the industry, fresh engineers need to work on projects, visit industry, attend workshops, publish papers of their research work. Those in teaching must go for Ph.D.

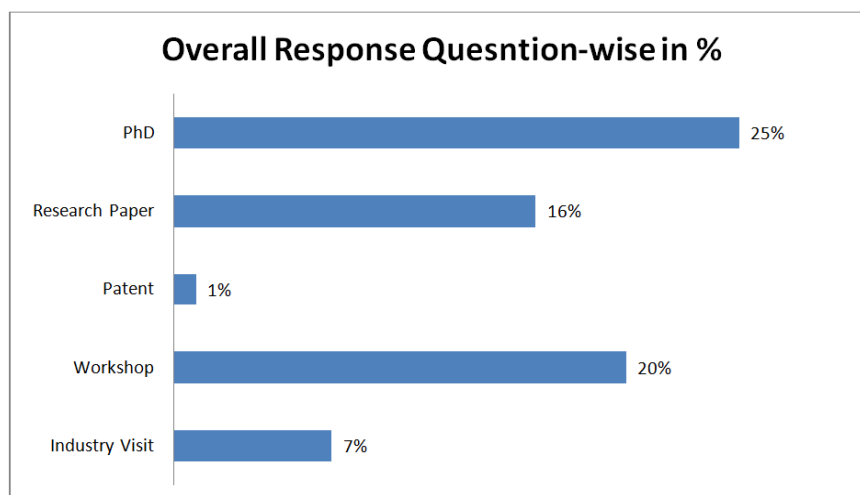
Book or chapter publication, attending seminars/ conferences/ faculty development programmes, delivering guest lectures do not surely reflect the learning. Further, studying research papers/ articles can't be traced. Involved in industry interaction can be considered to be covered under industry visit.

The responses from sample were asked in percentage (%). Responses in percentage form all respondents were added question-wise and then divided by 30 to have overall response question-wise in percentage.

### IV. Results And Discussion

The findings of this study are given below in table and were presented using bar graph.

Q.No.	Questions	Aggregate responses in percentage
1	Teachers teaching engineering students have worked or working on project	11%
2	Teachers teaching engineering students regularly go for industrial visit	7%
3	Teachers teaching engineering students have attended standard workshops	20%
4	Teachers teaching engineering students are having patents or have applied for	1%
5	Teachers teaching engineering students have research paper published in standard journal.	16%
6	Teachers teaching engineering students are PhD awarded or are enrolled for.	25%



The figures in table shows the responses of the principals of self- financed engineering colleges affiliated to CSVTU, Bhilai.

### V. Conclusions

As such there is no such standard figure set for the comparison as far as the above activities/ practices are concerned. Still the percentage against all the activities/ practices is low and in some very almost nil. The figures above show that faculty members are not working on project then how it is possible that they will teach the same to students. Attending standard workshop leads to learning of attending faculty members but the teachers are rarely attending such workshops. If the teachers are not interested in this then how come they will know about the new skills, knowledge and how they will keep themselves updated. The teachers are not visiting industry then definitely they will be lacking on knowledge regarding what are recent trends in industry and so delivery about industry will not happen. Publication is the medium to show the empirical research done by the faculty members. All the faculty members must involve in empirical research but the figure above shows that most of the faculty members are not doing so. This is barrier in generating research skills among students. Anyone who is in academics must continuously grow. Teachers must get enrolled for PhD which reflects various aspects of growth. The enrolled or awarded figure is to less. There is almost no patent in name of colleges or individual faculty members.

This study shows that the faculty members can't be said to be learning and keeping themselves updated as is required. This attitude of teachers is hampering the growth of students especially in learning the employability skills.

### VI. Future

This study is based on the opinion of the principals of various engineering colleges located in Chhattisgarh. The same study can be conducted in other states. Further, to be more precise on the result in this area, research can be conducted taking teachers of engineering colleges as sample and then collecting the data directly from them on the points mentioned above and later find the result. This way exact status of faculty members on their learning and updation approach can be known.

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