CHAPTER III
RESEARCH PLAN
AND METHODOLOGY
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2.1 STATEMENT OF THE RESEARCH PREDICAMENT

Higher education to the people plays an important role in the growth of the nation. Since from last 4-5 decades, the number of higher education institutions has been increased enormously to educate and provide employment opportunities to all the graduates. Having realized the importance of the education sector, the Government of India has implemented so many reforms to improve the higher education colleges and its student enrollment ratio. To provide educational facilities for all the people in India, the Government has liberalized the educational policy and given permission to a number of Universities, which include Central Universities, State Universities, Private Universities and Private Deemed universities etc.

Table 3.1 Growth in Universities and Colleges in India (2008-2016)

<table>
<thead>
<tr>
<th>Institutions</th>
<th>2008</th>
<th>2016</th>
<th>Increase (#)</th>
<th>Increase (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Universities</td>
<td>25</td>
<td>47</td>
<td>22</td>
<td>88%</td>
</tr>
<tr>
<td>State Universities</td>
<td>228</td>
<td>345</td>
<td>117</td>
<td>51%</td>
</tr>
<tr>
<td>State Private Universities</td>
<td>14</td>
<td>235</td>
<td>221</td>
<td>1579%</td>
</tr>
<tr>
<td>Institutions Deemed to be Universities</td>
<td>103</td>
<td>123</td>
<td>20</td>
<td>19%</td>
</tr>
<tr>
<td>Total</td>
<td>370</td>
<td>750</td>
<td>380</td>
<td>103%</td>
</tr>
<tr>
<td>Colleges</td>
<td>23,206</td>
<td>41,435</td>
<td>18,229</td>
<td>79%</td>
</tr>
</tbody>
</table>

Source: UGC, India / Analyzed by DrEducation.com

From the above table, it is clearly showing that an increase of 88% in Central Universities, 51% growth in State Universities, a 1579 % increase in State Private Universities and 19% in Institutions Deemed to be Universities. This clearly shows that State Private Universities has been increasing at an alarming rate[65].
The growth of Student enrollment in Engineering/Technology has been increased from 1,313,706 in 2008 to 4,885,134 in 2016[66], approximately 272% growth in the enrollment in Engineering Education. This automatically leads to poor quality of education, which will not provide the desired employment opportunities to the students.

After completing engineering education, most of the students are doing unrelated jobs because of lack of technical skills, communication skills and presentation skills, etc.. The skill gap is because of the curriculum set by universities and other educational institutions. Most of the subjects are theory based but no practical exposure [67]. The college management and universities should encourage plant visits, industrial tours, conducting practical games, inviting industry experts to the college, to interact with the students and share their practical knowledge. With this, the students can improve their practical skill set required by the industry.

The educational institutions should also provide extra learning facilities to the students to learn the required job skills needed by the industry by way of providing placement training, which includes aptitude, reasoning, verbal, communication and Technical training, which helps in preparing the student to ready for the placements.

After the privatization, the quality of education is deteriorating for many reasons. Initially, the infrastructure issues, followed by technology up gradation and funding issues, now the turn has come with the poor quality of teaching faculty and student learning attitude and behaviour. The skill sets required by the Employers to face competition in the global open markets is increasing day by day [68]. In this parlance, reforms and quality initiatives need to impose for the revamping the situation. The alarming rates of unemployment and under employment of the engineering graduates are indicating the nightmare situation in the country.

The educated youth without proper employment, attracting towards antisocial activities using technology, becomes a threat to the society in the long run. Hence, insisting on skill development and enforcing quality standards at academic institutions is the need of the hour. Hence, the current study has the focus on assessing the causes and
lapses in imparting the employability skills among the technical institutions and titled as Employability Skills in Professional Education - An Empirical Study On Selected Engineering Colleges In Greater Hyderabad City.

3.2 NEED FOR THE STUDY

At present the number of colleges and institutions are more when compared with 2 to 3 decades back. We can observe the mushroom growth of colleges in the professional education and also in the non-professional education. In the earlier days becoming a doctor or an engineer is a dream for the students and also for their parents. Now-a-days every student is getting admission in engineering colleges and some of the seats are left over without enrollment [69]. So many colleges in the recent times had closed their shutters because of poor intake.

Quality in the education system has fallen because of poor infrastructure facilities in the college, poor teaching techniques, no qualified professors, less student-faculty ratio, out-dated syllabus, money oriented management and many other reasons different from institution to institution [70]. The attitude of the students is that, they want to get the job without any hard work. Everything related to the studies, they expect from the faculty. No self learning attitude among the students. Many of the reputed colleges supply a course syllabus with material to the students to write the end exams in every semester. This makes the students lazy in learning with their own skills and this leads to lack of initiative in doing any work.

The number of engineering graduates coming out of the colleges are more and the job opportunities are also good enough to meet their requirements. But students are not getting the job immediately after completing their graduation. This situation tells that there is a gap between what an employer wants and what a graduate is. So, we need to fill the gap by studying what are the factors that are responsible to increase the employability skills among the students to get the job immediately after their studies [71].
Employability skills among the technical graduates are a well-discussed subject worldwide and in the recent past in India. The gateway to Deemed universities and Autonomous colleges was opened way back 2003 is the initial steps towards the expansion of higher education horizons from limited qualitative to mass quantities. This has brought lots of changes in the educational system and perspectives of the people towards higher education [72].

The higher education is meant for all may be good, only when it is given with the required quality of inputs to value addition to the graduate like technical knowledge, behavioural attitude, personality, communication and value system and social responsibility insights. Whereas the deemed universities, private colleges, autonomous colleges took the control on the entire process of knowledge dissemination in awarding the degrees with commercial intention and the students take it as an advantage to get the degrees without sufficient learning and development. In this scenario, the social cost loss in terms of hard-earned parent’s money, precious time with the students, and the greater loss to the society in terms of inferior and unemployable graduates with higher degrees in hand. Later the regulatory bodies, opened their eyes and trying to control the system, by then the damage is approximately one generation [73].

In this scenario, the research studies conducted in India, by the committees, individuals are limited to a single factor or single skill requirement role in employability or career success. Hence, the present study took the initiative to examine the current state of employability skills of engineering graduates in a comprehensive manner by assessing the actual level of technical, professional, social, communication, interpersonal, creative, and socially responsible behavioural skills. This can help in identifying and alarming the system to focus on the teaching, learning process and curriculum for the engineering courses.
3.3 RESEARCH QUESTIONS

1. What is the current status of professional education?
2. What is the learning environment in engineering colleges and how far such environment will enhance the employability skills?
3. Is there any relation between socioeconomic profile of the students and their employability skills.
4. What is the role of pedagogy in providing Employability skills?
5. How the evaluation system influence practicality of education and thereby formation of employability skills.

3.4 OBJECTIVES OF THE STUDY

To fill the gaps we identify the following objectives for our study.

1. To know the learning environment of the students in engineering colleges;
2. To measure the impact of socioeconomic background of students on the engineering students employability skills;
3. To analyze the role of environmental and organizational variables in the development of engineering students employability skills;
4. To examine the role of pedagogy in providing the employability skills to the engineering graduates;
5. To study the relationship between evaluation practices and employability skills in engineering graduates; and
6. To suggest certain measures for enhancement of required skills for engineering graduates to get employment.
3.5 SPAN OF THE STUDY

The study includes the engineering colleges affiliated to JNTUH, Osmania University and some of them are Autonomous status are covered. The colleges are located in and around Hyderabad city and Rangareddy district. The colleges covered are having at least 10 years of existence and should have the basic five branches of study. The sample includes the students from the final year and started for applying and in the process of the campus recruitment stage. In addition, the study exempted some of the institutions due to restrictions by the management.

The University campus-based schools; institutions are also exempted due to the existence of a different level of image and infrastructure setup. The students from electronics, electrical, mechanical, computer science and civil engineering are many in the sample. Whereas biosciences, earth sciences, aero and biomedical courses are very few in the sample and thereby the sample is proportionately low when compared to other courses. The institutions running as deemed university status and the institutions of special status exempt from the study.

The institutions offering courses under the Osmania University affiliation and JNTU affiliation are only considered based on merit and through Telangana State Engineering Entrance Examination (TS-EAMCET). In addition, many students in these colleges are from rural background and from middle-income groups. In the majority of the cases, the students are depending on government fee reimbursement scheme for payment of tuition fee and they are all first graduates from the family.

On the other hand, UGC specified syllabus, courses and credits and Pedagogy adoption and implementation are high among these colleges. It also gives the light on the role of UGC and AICTE as apex bodies, what steps needs to be initiated to get better employability of the engineering graduates. The Human Resource Development (HRD) Ministry in its recent updates, has proposed a new Agency – Higher Education
Empowerment Regulation Agency (HEERA), which is responsible for higher education in place of University Grants Commission (UGC), which is responsible for universities and AICTE (All India Council for Technical Education) is responsible for engineering and business colleges, which are affiliated to Universities. Hence, the sample selection is based on the very specific and having salient features when compared to others in the sample area.

3.6 HYPOTHESES DEVELOPMENT

H\textsubscript{01}: There is no significant difference between socioeconomic background of students with respect to various dimensions of the factors influencing the employability of engineering graduates in the sample;

H\textsubscript{01.1}: There is no significant difference among parent’s occupation with respect to various dimensions of the factors influencing the employability of engineering graduates in the sample;

H\textsubscript{02}: There is no significant difference among Mean Ranks of the environmental variable degree of influence on learning behavior and attitude of the business graduates and employability skills

H\textsubscript{02.1}: There is no significant difference among Mean Ranks of Organizational variables degree of influence on learning behavior, attitude and employability skills of the engineering graduates in the sample.

H\textsubscript{03}: There is no significant difference among Mean Ranks of Teaching, learning variables, degree of influence on learning behavior and employability skills among the engineering graduates in the sample.

H\textsubscript{04}: There is no significant difference among Mean Ranks of Evaluation and improvement practices degree of influence on learning behavior and employability skills of the engineering graduates in the sample.
H05:

There is no significant difference among Mean ranks for suggestions to improve the learning behavior and employability skills among the engineering graduates among the sample.

### 3.7 METHODOLOGY

Descriptive research methodology is adopted in the study. The present work is focused on studying the role of environment and Academic and administrative factors in the employability of the engineering graduates from Hyderabad city. For the purpose of the study, selected students from the engineering colleges in the city are drawn as a sample using a judgment sample method. The study relates to descriptive and exploratory. The students are taken for the study are final years and appearing for the campus placements and few of them are placed. The sample size for the study is fixed at 500 and the final analysis is done with 442 samples. The data required for the study are collected through a protected structure questionnaire. All the students are from the eighth semester and appearing for placements. Some of the students are already placed and waiting to complete the course. The combination of the experiences of the interviews and the skill gaps observed in the self-assessment is presented. But, many colleges are not willing to allow for such surveys and the students too not cooperative in providing the true and fair opinion about the issues relating to employability and its associated issues relating to individual and institutional.

In case of the sample population is not known, the following sample size formula is applied and found a lower number of sample size requirement. Scientific Method is used to calculate the size of the sample. The SD of the 85 samples used for pilot studies and by allowing 5% standard error.

\[
\text{Size of the Sample}(N) = \left(\frac{ZS}{E}\right)^2
\]

\[
Z = \text{Standard value (95% confidence level)} = 1.96
\]

\[
S = \text{SD of 85 samples used for pilot study} = 0.536
\]
\[ E = \text{Acceptable error(5\%) = 0.05} \]
\[
\left( \frac{Z}{E} \right)^2 = (1.96 \times 0.536 / 0.05) = 441.47 \text{ and rounded off with 442.} \]

However the responds from the unknown sample and related persons and some of them may feel shy to share and hence large sample is proposed to select. On completion of data collection, a physical verification needs to be done to remove the partially filled, double entry questionnaire, etc. By considering all these risks of data validity large sample is proposed. The sample unit is the engineering colleges having more than 10 years of existence and having a minimum of five branches are selected based on the university affiliation list of OU and JNTUH. In this study, we are following Judgment sampling technique, by considering the experience of the institute in the industry and the number of courses running. (This is used to select the sample unit. Whereas sample respondents are selected at random).

### 3.8 DATA DESCRIPTION

The study consists of all engineering and technology institutions located in three districts in and around Hyderabad city. The districts include, Rangareddy, Sanga Reddy and Medak. Among these institutions, deemed university institutions are excluded, because, the nature of environment prevailing in these is entirely different from the affiliated colleges.

The institutions taken for the research should have a 10 years existence and 5 branches. From each institution 10 students per branch is selected at random among the eligible students for placements. The eligibility to attend campus interviews is a minimum first class with without arrears from class X.

A structured questionnaire is prepared to receive the data from the sample students and the pre testing pilot study is made. The reliability of the existing questionnaire based on pilot study is found by using SPSS- Corn Bachs alpha value and found at 0.8456 i.e. 84.56% and The outcomes are showing 5 % level of significance, with recorded p value of 0.001 (Less than 0.01 is considered as highly significant).
The structure of the data collection instrument is as follows.

**Table 3.2: Showing Structure Of The Data Collection Instrument - Questionnaire Along With Reliability Value**

<table>
<thead>
<tr>
<th>Q.No</th>
<th>Title</th>
<th>Nature of Questions</th>
<th>No. of questions</th>
<th>Reliability alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-19</td>
<td>Demographic profile of the respondents</td>
<td>Bipolar and Multiple Choice</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Q20</td>
<td>Socioeconomic demographic variables influencing the employability skills</td>
<td>Likert's scale</td>
<td>10</td>
<td>0.798</td>
</tr>
<tr>
<td>Q21</td>
<td>Personality / Interpersonal skills, influencing the employability skills</td>
<td>Likert's scale</td>
<td>15</td>
<td>0.890</td>
</tr>
<tr>
<td>Q22</td>
<td>Environmental variable degree of influence on learning behavior and attitude of the business graduates and employability skills</td>
<td>Likert's scale</td>
<td>10</td>
<td>0.789</td>
</tr>
<tr>
<td>Q23</td>
<td>Organizational variables, degree of influence on learning behavior and attitude of the business graduates and employability skills</td>
<td>Likert's scale</td>
<td>10</td>
<td>0.768</td>
</tr>
<tr>
<td>Q24</td>
<td>Teaching, learning variables, degree of influence on employability skills</td>
<td>Likert's scale</td>
<td>15</td>
<td>0.877</td>
</tr>
<tr>
<td>Q25</td>
<td>Evaluation and improvement practices degree of influence on employability skills.</td>
<td>Likert's scale</td>
<td>13</td>
<td>0.789</td>
</tr>
<tr>
<td>Q26</td>
<td>Suggestions to improve learning behavior and attitude of and employability skills.</td>
<td>Likert's scale</td>
<td>15</td>
<td>0.826</td>
</tr>
<tr>
<td>Q27</td>
<td>Open ended question asking suggestions</td>
<td>Open ended</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>108</td>
</tr>
</tbody>
</table>
Cronbach’s alpha is used to determine reliability, this shows how well they are positively correlated to one another (Sekaran & Bougie, 2010). Reliability was assessed by coefficient alpha using the SPSS.

**Variables Used In The Study:**

**Independent Variables:**

1. Demographic variables—(Personal/Physiological): demographic variables included two aspects, namely personal demographics and parental demographics relating to a student. The variables or dimensions included in this part are:
2. Environmental variables- (Learning environment and availability and accessibility of technology).
3. Organizational Variables (Physical and intellectual capital availability and accessibility).
4. Pedagogy and Evaluation Variables (Teaching, learning and evaluation practices)

**Dependent Variable:**

1. Degree of employability skills among the engineering graduates

**Sources Of Data:**

The study concentrated on information received from primary data and secondary data sources. The Questionnaire is used to collect primary data, designed and developed by the researcher. Before the survey, the questionnaire is customized and a pilot study is conducted. The Pilot study results are tested using the Cronbach's alpha and found reliable. The technical aspects of the questionnaire are simplified for easier understanding of the respondents. The questionnaire is self-explanatory in nature and free from errors of duplication and dilemma.

**Primary Data:** Fixed Questionnaire is used to collect the information from the final year engineering students. They are selected from in and around Greater Hyderabad city. Covered college management, placement people and principals to gather the information related to research.

**Secondary Data:** Reviewed journals, newspapers, survey reports given by AICTE, UGC and the other available resources in the internet. Referred some of the
Journals related to engineering education, research papers and reports given by the survey institutions.

**Sampling Method:** Used ‘Judgmental Sampling’, for the convenience of the researcher.

**Data Analysis:** The data collected with the help of a questionnaire are classified into different categories. Used SPSS software for overall analysis.

### 3.9 EXPECTED CONTRIBUTION

It is identified that the role learning environment and organizational environment play an important role in the employability levels of the engineering graduates in the sample. The learning environment includes peer groups, reference groups and the family environment and the role of parents in motivating and guiding the students. Similarly, the organizational environment includes, the learning culture of the college, learning resource availability in terms of physical infrastructure and intellectual capital, the career guidance services to the students and counselling, etc.

In addition, the role of Teaching, learning process planning and execution as per the schedule and follow up of remedial actions helps to increase the level employability skills among the engineering graduates in the sample. Hence, it is concluded, that the role of independent variables on employability is inseparable. However, the degree of influence may vary from variable to variable. Hence, the combined efforts to modify the of the learning environment and organizational environment in terms of career-oriented culture and learning behaviour inculcating, the learning could happen in a better way and thereby the level of employability can be increased in the years to come.

Environment, learning conditions and employability skills inculcation among the engineering graduates in the sample is the need of the hour. A positive debate with students with Learning barriers, learning conditions and its impact on the performance outcomes and the role of a student’s involvement can help in identifying the best models suitable for learning and development and thereby improved level of employability among the engineering graduates in the sample. The standard strategies can help in the design and development of training programs, customized learning environment, skill
development models and the personality development programs, etc. Such quality and mutually agreed methods of learning and implementation are easy with the involvement and commitment of the students. The involvement of students in all skill development programs can help in improving the personality and life skills of the students and thereby increased the level of employability is possible.

Good subject knowledge, pleasant personality, communication skills, out of the box thinking, working with team spirit and commitment is the potential skills expected by the recruiters in the industry. If a graduate is having increased levels of conceptual learning and practical exposure to fix the business and industry issues, then, there is no worry about the employability. The improved level of employability will be the ultimate objective and vision of the higher educational institutions in the country as well as in the sample area. Let’s hope, this should happen at the earliest possible time to help engineering graduates.

3.10 RESEARCH LIMITATIONS

The research is limited to the colleges which are located in and nearby Hyderabad city, consisting of a large number of educational institutions and also the hub of many industries.

1. The study is conducted on engineering students and the responses are collected simultaneously and thereby the level of understanding of certain areas is low.
2. This study has focused only on selected colleges with 10 years of existence and a minimum of five engineering branches of study.
3. The study is restricted to colleges located in and around the greater Hyderabad city and affiliated to state universities and hence the findings cannot be generalized to all sectors.
4. Included only primary and secondary data gathered from the sample respondents, media sources, but college management views are not included.
5. This study measured the factors influencing the level of employability and trying to present to the colleges to take necessary action in the dimensions of environmental variables improvement, organizational variables, teaching learning
process, evaluation and improvement practices, etc., but the majority of the respondents are not willing to share the perceptions due to the fear of college management threat.

3.11 SCOPE FOR FUTURE RESEARCH

The present research is limited to the Greater Hyderabad city can be further taken to a PAN India level where the employability of the Indian graduates can be studied on a larger scale. Since the research is limited to, engineering course, it can be further studied in other undergraduate professional courses as well.

The dimensions of employability are multiple in nature. Each of the variables can be studied in depth and also develop the strategies to overcome such issues pertaining to a particular dimension. In some cases, the same dimension of the problem may not be the reason for low level of employability. The reason for the low employability level will change from one area to another, similarly, from one institution to another. In such cases, a common comprehensive research may not help a lot. Concentrating on the single dimension and finding solutions for the same will be of great use.

Institutional based micro research projects as case studies can be the best alternatives to resolve the issues from case to case. In some areas, it is found that, within the institution, one department or a school is performing well and the other one is not so. In such scenarios, micro level observation, interview schedule, type of data collection and interaction with the students and faculty belongs to a particular school can help in resolving the division wise problems in the institution. No single approach gives the best results for any problem. Constant efforts towards, identification of issues, involving the stakeholders in resolving the issue, identification of alternative solutions, design and development of implementation methods and recognizing the best performers and continuous practice of the programs, audit and rectification or redesigning the programs can help in growing together along with the objective of improving employability skills among the students in the sample.
Individual issues among the students can be curbed through personal counselling, advice and guidance towards career and the skills required for the future. A mentor system design, development and practicing the same meticulously can help in resolving personal issues and to make them focused on studies. This can help in building confidence and trust among the students towards the system and future.

Institutions should think of establishing permanent student support services center with experienced faculty by providing the technology, types of equipment, basic learning and printing materials and communication facilities along with counselors and mentors. This initiative can bring a parental care and personal advice to the students through various types of assessment of the individual behaviour, strengths and weaknesses. Based on the assessment, parents can be intimated, about what is best and what needs to be done in the years to come. If it happens in the First year, another three years can be used to mould a student and make him/her employable anywhere with a good attitude and team spirit. These are some of the dimensions to work to reach out the vision of employability of the engineering graduates rather than heavy research.

The results of such best practices can be published and propagated to many, either in terms of print material or digital sharing can help many others to follow and get benefitted. A constant support from the management, student involvement and co-operation is the need of the hour. The degree of support indicates the degree of success of the program and the level of achievement of the specific goal of skill development and employability.