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Study of Employability Skills of Engineering Students

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Abstract : *This paper explores the different skills needed by todays youth specifically the budding engineers of tomorrow to be highly successful in their respective professions. It tells about the 360 degree development which is the holistic development of the aspiring engineer. The research student had designed a questionnaire by keeping this things in mind.This study tells about the necessary skills which the students have to develop. Hope the findings are really and eye opener which will boost up the confidence of the engineers and remove the short comings.*

Keywords : *Employability skills ,Generic skills, Life Skills, Out of the box thinking, Technical Skills,*

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I. INTRODUCTION

This study tries to explore the existing literature on "Employability skills" which is found in India. In a nutshell Employability skills are the skills which make a person employable during his lifetime ensuring a highly successful carrier. A lot of debate is going on these days about what constitutes "The Employability Skills for Engineers" to be employable. In the present scenario the definition of "Employability Skills" has broadened to include not only technical skills or soft skills but a lot of attitudes which are job specific.

Employability skills include a variety of skills across industries like soft skills, communication skills (verbal and written), leadership skill, Etiquette and manners, creativity (out of box thinking), and the list is almost endless. This paper will focus on the Study of Employability Skills of Final Year Engineering Students who are ready to enter the world of job market. To analyze and provide awareness of Employability skills for Engineering students, I have conducted a survey for the same by short listing certain skills, and got the questionnaire completed form the final year engineering students.

The skills which were included in the questionnaire prepared for this purpose included the following skills, :-

A. Generic skills
1. Plan and organise
2. Designing applications
3. Application of knowledge
4. Teamwork
5. Problem solving

B. Soft skills
1. Communication skills
2. Employability
3. Creativity
4. Negotiation skills

C. Technical skills
1. Basic practical knowledge
2. Clear understanding of theory concepts

II. Literatue Review

Chitra. R (2013) 1 in her study entitled " Employability Skills – A study on the perception of the Engineering Students and their prospective Employers" studied the perception of Employers and Employees which were required by the entry level Engineering graduates for multinational companies. Questionnaires were developed to understand the perception of students and their employers. The study concluded that there is significant difference in the perception of the students which makes them unemployable. It further explained that the students with work experience have better awareness about employability skills that the students with no work experience. Specific training will definitely enhance the skill and knowledge of the students to perform jobs in the best possible manner which is the need of the hour. The study concludes by stating that employers

give importance to personal and behavioural attributes of a candidate whereas students give more importance to their technical skills. Further, there is significant difference between the perception of students with work experience and without work experience. The research shows that the students with work experience have better awareness of the employability skills than the students with no work experience. Enhancing the skills and application of knowledge through specific training will enable the workers to perform their jobs in the best possible manner is the need of the hour

Padmini, I (2012) 2 in her study entitled "Education Vs Employability- The Need to Bridge the Skills Gap among the Engineering and Management Graduates in Andhra Pradesh" has highlighted that education with training makes assets which include knowledge and skills which is called human capital. Education is said to be the process of skill formation and is treated at par with the process of capital formation. The major stumbling block in this growth path is the in inadequate skill set of the workforce. On one side we have the world's large stock of scientist, engineers and management graduates, but are unable to derive full economic benefit because of the mismatch of the industry needs and the university output. The purpose of this study is to identify the employability skills required by young graduates and see how they can add value through effective knowledge management in terms of pedagogy, evaluation process and feedback mechanism. The study concluded by stating that Human resources, in terms of quality and quantity, are India's biggest assets. A favorable demographic structure (with about 50 percent of the population below 25 years of age) adds to this advantage. However, to capitalize fully on this opportunity and not face the possibility of a skills-shortage, it is essential to gear up the education system through innovative initiatives

Nidhi Pandey. A (2012) 3 in her study entitled 'Awareness of Life Skills for Job Sustainability amongst Management Students' has highlighted that Indian youth has upgraded itself with apps and technologies but lacks the necessary skills required for sustainability both in personal and professional dimensions. She further stated that Employers are seeking initiative, motivation, integrity and the desired competency to meet deadlines, setting aside external or internal pressures and obstacles. They don't want an individual who requires months to brush himself. They want their job to be done efficiently from day one. In such a scenario what is lacking in our Indian youth? The curriculum is designed and redesigned to meet industry expectations; still we falter. Since day one the child is taught to memorize without understanding a single word of it. By the time they reach professional college they are parrots who reproduce everything without any logic. If only schools and colleges would have adopted life skills education, the gloomy scenario wouldn't have existed. The crux of the problem is that critical thinking, problem solving and application of concepts are in short supply among our youth as they never had exposure to it. As the gap widens betweens industry expectations and talent available, it leads to suffering of industry's competitiveness which calls for life skills learning.

Efficient networking of educationist, psychologist, mental health professionals and policy makers is required to develop a concrete life skills training programme. Life skills dealing to train to cope up loss and stress and at the same time develop critical thinking are required among youths. This is feasible when they have practical exposures and case study teaching methodology.

Divya Shukla (2012) 4 in her study entitled "Employability Skill among Professionals – Chagrin of HR Executives in Indian Labor Market : A Study on Engineering Graduates of Bhopal City" has highlighted that The objective of the research is to identify the level of employability skill among students. The analysis reveals the average and moderate level of employability skills among the professionals. The findings of the research stated that students' employability skills as a whole are at the moderate level. Mathematics is an important element to carry out duty especially production works and works which involved technological tools. Even an employer gives priority to mathematical skill and basic calculations when working such as the usage of mathematics in computer and calculator are very common. It further states the employments status of the respondents needs further improvement. Being good at the one skill cannot facilitate the competency in other. So today's scenario is that the applicant who is multi tasking can sustain and gain in the employment. The base of the entire career and its growth lies on the primary education and its further hierarchical stages; hence the focus towards the learning should start from the primary education and then should go further till the end of the learning. And learning is continuous not actually gets over by completion of the curriculum. Hence to this regard individual centric approach is needed. The redesigning of the university curriculum with more apprenticeship and live industry projects will facilitate the pre job training which will surely enhance the employability among graduates. The Indian educational governance is the one which is in earnest need of reforming. Besides that, instructors should practice employability skill during teaching

III. Objectives

- To study the employability skills
- To study the employability skills from students perspective
- To study the employability skills among aspiring engineering graduates

IV. Methodology

Convenience sampling method is used for this purpose. The researcher had visited various colleges in the city. Accordingly 120 final year Engineering students participated in the survey .The response rated of the students was 75% (90/120)

V. FIGURES AND TABLES

V A. Testing Of Hypothesis

1. There is positive perception among engineering students about employability skills in the engineering education

In order to test the hypothesis, researcher tested the following aspects

Factors (A)	% of respondents who stated the criterion as either very important or important(B)	Strongly Agree (C)	Agree (D)	Uncertain (E)	Disagree (F)	Strongly Disagree (G)
Team work Improves Ability to work as a team (Team Work) and team leader	96%	35	51	4	0	0
Problem solving Engineering Programs help to develop your ability for problem solving	94%	34	51	4	1	0
Employability Improves employability prospects	93%	33	51	2	3	1
Plan and Organize Engineering programs help to develop your planning and organizing skills	92%	34	49	5	1	1
Communication Improves your communication skills	91%	33	49	4	4	0
Creativity Develops out of the box thinking	91%	27	55	7	1	0
Engineering Fundamentals and its applications Engineering Programs help to develop your concepts and Ideas of Engineering Fundamentals and its applications	91%	33	49	7	1	0
Designing applications Engineering Programs help to develop the ability to design new applications	90%	30	51	7	1	1
Application of Knowledge Engineering Programs help to develop your skill and apply theoretical knowledge of Mathematics, Science and Engineering practically	90%	32	49	8	1	0
Negotiation Develops your negotiation skills	90%	24	57	8	0	1

Explaination for :

a. How % of respondents who stated the criterion as either very important or important is obtained

Team work: - Improves Ability to work as a team (Team Work) and team leader = (A+B)/90*100
=(35+51)/90*100 = 86/90*100 = 96%

Problem solving :- Engineering Programs help to develop your ability for problem solving = (A+B)/90*100
=(34+51)/90*100 = 85/90*100 =94%

Employability : - Improves employability prospects= (A+B)/90*100
= (33+51)/90*100 =84/90*100 = 93%

Plan and Organize Engineering programs help to develop your planning and organizing skills=(A+B)/90*100
=(34+49)/90*100 =82/90*100 =91%

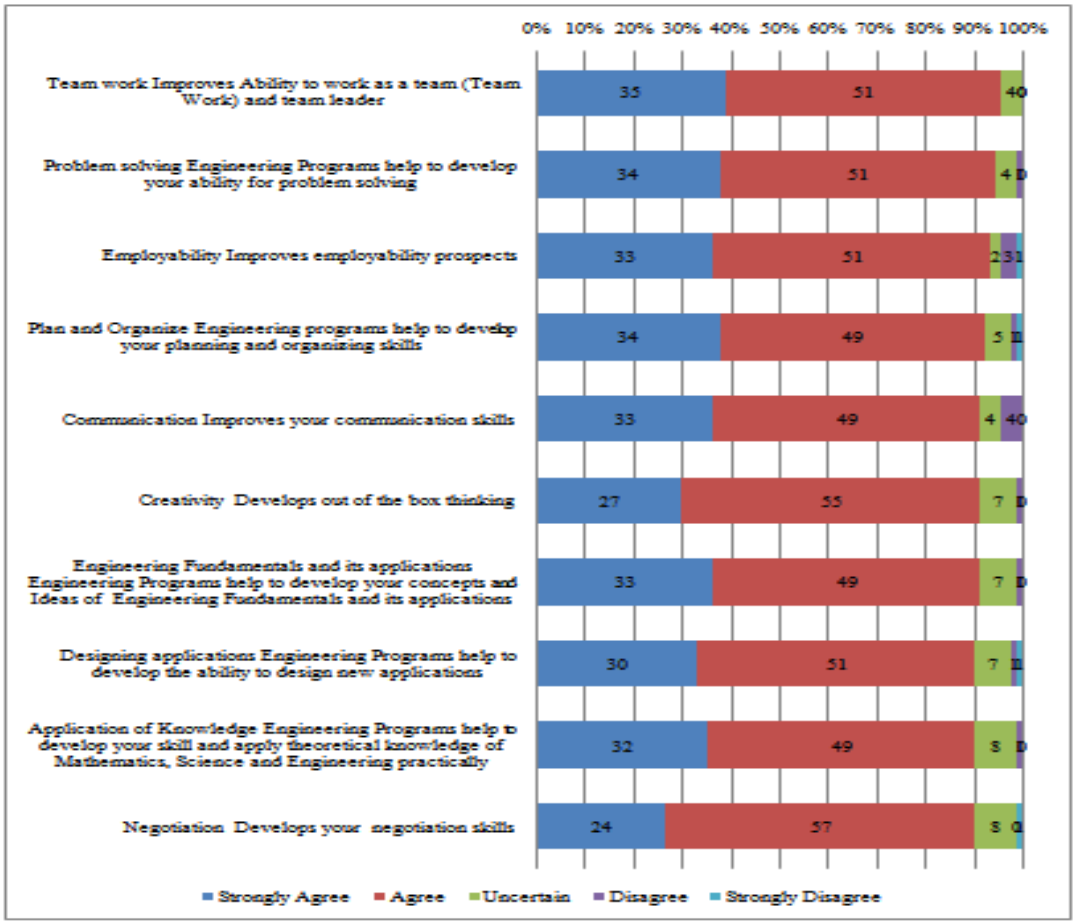
Communication :- Improves your communication skills =(A+B)/90*100
=(33+49)/90*100 =82/90*100 =91%

Creativity : - develops out of the box thinking=(A+B)/90*100
=(27+55)/90*100 =82/90*100 =91%

Engineering Fundamentals and its applications : - Engineering Programs help to develop your concepts and Ideas of Engineering Fundamentals and its applications
=(A+B)/90*100 =(33+49)/90*100 =82/90*100 =91%

Designing applications: ;--Engineering Programs help to develop the ability to design new applications
=(A+B)/90*100 =(30+51)/90*100 =81/90*100 =90%
Application of Knowledge :- Engineering Programs help to develop your skill and apply theoretical knowledge of Mathematics, Science and Engineering practically
=(A+B)/90*100 =(32+49)/90*100 =81/90*100 =90%
Negotiation :- Develops your negotiation skills
=(A+B)/90*100 = (24+57)/90*100 =81/90*100 =90%

V B Graphical Representation



V C Here the null and alternative hypothesis is as follows

H_0:P= 0.5	H_1 :P ≠ 0.5

Factor	P	S.D.	Z_cal	L.O.S.	Z_table	p_value	Decision
Team work Improves Ability to work as a team (Team Work) and team leader	0.96	0.02	20.97	5%	1.64	0.0000	Reject H_0 (i.e. p > 0.5)
Problem solving Engineering Programs help to develop your ability for problem solving	0.94	0.02	18.41	5%	1.64	0.0000	Reject H_0 (i.e. p > 0.5)
Employability Improves employability prospects	0.93	0.03	16.48	5%	1.64	0.0000	Reject H_0 (i.e. p > 0.5)
Plan and Organize Engineering programs help to develop your planning and organizing skills	0.92	0.03	14.96	5%	1.64	0.0000	Reject H_0 (i.e. p > 0.5)

Communication Improves your communication skills	0.91	0.03	13.70	5%	1.64	0.0000	Reject H_0 (i.e. p > 0.5)
Creativity Develops out of the box thinking	0.91	0.03	13.70	5%	1.64	0.0000	Reject H_0 (i.e. p > 0.5)
Engineering Fundamentals and its applications Engineering Programs help to develop your concepts and Ideas of Engineering Fundamentals and its applications	0.91	0.03	13.70	5%	1.64	0.0000	Reject H_0 (i.e. p > 0.5)
Designing applications Engineering Programs help to develop the ability to design new applications	0.90	0.03	12.65	5%	1.64	0.0000	Reject H_0 (i.e. p > 0.5)
Application of Knowledge Engineering Programs help to develop your skill and apply theoretical knowledge of Mathematics, Science and Engineering practically	0.90	0.03	12.65	5%	1.64	0.0000	Reject H_0 (i.e. p > 0.5)
Negotiation Develops your negotiation skills	0.90	0.03	12.65	5%	1.64	0.0000	Reject H_0 (i.e. p > 0.5)

Symbols used
P = % of respondents who stated the criterion as either very important or important
S.D = Standard Devation
Z_Cal = Z CALCUALTED
L.O.S = Level of signifance
Z_Table = Standard normal table

Here , the null hypothesis is 'The proportion of respondents who favours the positive perception among engineering students about employability skills in the engineering education is 50%' whereas the alternative hypothesis is 'The proportion of respondents who favours the positive perception among engineering students about employability skills in the engineering education is not equal to 50% (which may be less or more)' . There are various subparts of the concerned aspect mentioned in above issues which were listed in above table. All factors were rejected at 5% level of significance (p>0.5). Thus we accept the alternative hypothesis is 'The proportion of respondents who favours the positive perception among engineering students about employability skills in the engineering education is not equal to 50% (more than 50%)'

VI. SUGGESTIONS

The suggestions which can be given on the basis of the survery conducted are as follows

a. For Further Researchers:- Further in depth research can be conducted on this topic by including more skills which are required for employability.
b. For Employers :- The skills can be used as a recruitment tool by the employers for short listing the most suitable and eligible Engineers for the jobs.
c. For Students :-

The students can understand which skills they have to work hard so that they can ace the job market and be employable.

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