Empowering Engineering students through employability skills

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Abstract: "Skill growth is critical in stimulating a sustainable development environment and will help to ease the transition from an informal to a formal economy," according to the International Labour Organization. In the light of globalization, it is also important to discuss the possibilities and pressures of meeting emerging demands from changing economies and modern technologies."

Management and innovation students who want to be practitioners require not only soft skills but analytical and datum, to achieve the organization's objectives.

The Indian manufacturing sector is revered globally and is one of India's most successful industries. It has made a significant contribution to India's capital formation and hence GDP. Over the years, global expertise and enabling sale situations have ensured that India continues to be one of the world's most commercial healthcare and manufacturing markets. The job process has seen a notable shift; technology affects customs and skills, and communities are becoming more global and diverse. As an effect of globalization, education systems are now also looking at the employability market. Apart from technical skills, applicants are also expected to have interpersonal skills in the current scenario. The study aimed to determine final-year engineering learners' perspectives, faculty-approved by engineering colleges and technical specialists from various professional bodies on training needs, career progression, and career apprenticeship programs.

Keywords: Career progression; Employability skills; interpersonal skills.

JEET Category—Research

1. Introduction

Around 6.35 lakh candidates take the all-India entrance test for the 19 Indian Institutes of Technology, 31 National Institutes of Technology, 18 Indian Institutes of Information Technology, as well as other technical institutes last year in India. Students should be prepared to enter the job market after completing a four-year degree program. However, students' distress and failure to find work have been exacerbated by aspirations from global corporations and increased rivalry. They must study

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administer numerous technical and non-technical jobs in a multidiscipline context, in addition to their competence. Fundamentally, the function of the engineer and industry expectations has widened and technical knowledge and skills must be altered to match these demands.

Employability is internationally impacted by the restructuring of higher education and a major industrial recession. In India, one of the primary concerns of rising unemployment among technology students is the increasing number of educational institutions offering engineering education. [1] The main aim of every engineering college is to provide competencies and characteristics. The basic goal of every engineering institution is to have the expertise to assist students in their employability and entrepreneurialism. It is the dream of every engineering graduate to get a good job after completing the degree. Nowadays, educational institutions are facing the challenge of developing the employability skills of students. Even in a dilemma to consider an acceptable solution that may have more career development approaches for students, technical education like pharmaceutical and engineering education does not identify the way and out to improve employability skills? Strong soft skills—the one thing that machines can't replace—are becoming increasingly important as automation and AI continue to reshape whole sectors, businesses, and employment. (Saira 2019).

As a result, Educational Institutes should concentrate on a rigorous education program in the current situation. Some companies employ employees merely based on skills and knowledge pertinent to a specific carrier.

Therefore, educational institutions are genuinely worried about the growth of job opportunities and are introducing the principle of an evaluation of employability to define and plug inequalities from the first year onwards.

2. Review of Literature

Employability is a word trending nowadays. Hillage and Pollard, 1998 refer to Employability as a person's capability of gaining initial employment, maintaining employment, and obtaining new employment if required.[3]

The term "employability" refers to the ability to work. Employability is defined as an individual's ability to find work, keep it, and find new work if necessary. [3] Harvey stated in 2001 about the ability of a graduate to find a fulfilling job is known as employability.[4] Pool and Sewell in 2007 mentioned that employability is having a set of skills, information, understanding, and individual characteristics that make a person more probably to select and secure professions in which they can be satisfied and successful.[5] Lankard in 1990 defined Employability skills as personal image, interpersonal skills, and good habits and attitudes. [6] According to Hillage, Employability is the potential to change self adequately within the industry to understand perspective through sustainable employment. [7]

Nevertheless, it is critical to determine the perspectives of different medical aspirants, including learners, on the competencies necessary for jobs in companies. It is also a strange fact that there are few instructional investigations to learning-based perspectives. [8] Indian learners have a deep commitment for awareness to recognize the employability skills expected by the international job sector. For this cause, the learners can't be criticized, but institutions of higher learning providing higher education would still need to take personal responsibility and redesign the programs at convenient times to meet the industry needs. [9] According to Scott et al study, there is a sense of momentum to understand learners' sensitivity to knowledge and skills to ensure what is being delivered is appropriate. As a result, the objective of this research is to assess how different medicines professionals view the competence disparity across companies and academics.[10] Bansal Ajit (2018) had concluded in his study that to offer world-class education to management students, the institutions of higher education should improve upon their syllabi and introduce innovative, industry-specific teaching pedagogy. [11]

3. Material and Methods

i) Rationale and objectives of the study:

The present research is conducted to ascertain the training needs for employability in the manufacturing sector. The following are objectives of study under question:

1. Interpretation of experts and researchers in the industry of skill deficiencies and boot camps.

2. Interpretation of research and professionals representatives regarding discrepancies that influence the success of learners.

3. Interpretation of academia and business stakeholders on barriers to joining a boot camp.

4. Academics and business practitioners' understanding of the abilities they anticipate from boot camp.

ii) Research Design & Sampling Method:

Study design

A cross-sectional survey was conducted using self-administered questionnaires and Google forms.

Data Collection Tool:

Two questionnaires were prepared for collecting the data from the respondents. The objective of the first questionnaire was to collect information from engineering graduates and postgraduates in the final year. The second questionnaire was aimed at collecting information from teachers employed by engineering colleges and industrial experts with a minimum of 5years of experience. There were 13 multiple choice questions and one open-ended question in the first questionnaire. They concentrated on prospects in the drug companies, assessments of the technical abilities of graduates, and impressions of instruction. The research instrument consisted of nine issues related to the assessment of the creative expertise of learners, the evaluation of the course, and the interpretation of instruction. Inquiries with a seigniorage of item content <0.75 eradicated from the checklist. The value obtained from the material credibility scale 0.93.

iii) Sample Size

The data set was determined using the formula. N = Z al2 x p (1-p)/d2. The data set measured was 325 for students, 100 for university professors, and 75 for experts in the industry. Where Z = normal standard varies (Z = 1.96 when the confidence interval is 95%), P = population outcome ratio (based on pilot study) and d is the accuracy (0.05) [10].

4. Data Analysis

The information collated from the survey method

Table 1: Interpretation of experts and researchers in the industry of skill deficiencies and boot camps

No	Concerns	Engg Exp	SA	A	N	DA	SDA	P Val
1	Grads have ample technical competence	Res	4 (4)	19 (19)	11 (11)	58 (58)	8 (8)	
		Exp	7 (9)	28 (37)	16 (21)	13 (17	11 (15)	0
2	Without training, engineering grads may achieve practical knowledge.	Res	3(3)	9(9)	2(2)	60(6 0)	26 (26)	
		Exp	4(5)	15 (20)	6 (8)	34 (45)	16 (25)	0.04
3	The syllabi of Engg grads are as per ind expect.	Res	2(2)	11 (11)	9 (9)	58 (58)	20 (20)	0.01
		Exp	5(7)	13 (17)	16 (21)	32 (43)	9 (12)	
4	Academe and Industry disparity	Res	55 (55)	33 (33)	2(25)	6(6)	4(4)	0.77
		Exp	22 (29)	42 (56)	5 (7)	4(5)	2(3)	
5	Engg learners require training to achieve their objectives.	Res	48 (48)	37 (37)	6(6)	2(2)	7(7)	0.05
		Exp	25(3 3)	35(4 7)	4(5)	7(9)	4(5)	
6	Training raises the level of trust of learners	Res	59(5 9)	31 (31)	0	3(3)	7(7)	0.7
		Exp	39(5 2)	31(4 1)	4(5)	1(1)	0	

slip has been translated into quantitative coding from symbol coding. Quantitative variables were calculated by using SPPS 20 by descriptive statistics. To find a correlation between categorical variables, a Chi-square test was carried out.

5. Results and Discussion

Engineering Student Outcomes

A total of 325 administered survey returns were obtained from respondents. Only those who are involved in participating in this study are given a questionnaire. Most students (67.5%) are conscious of the possibilities in engineering fields, such as mechanical engineering, computer science engineering, electrical and marine engineering, etc.

It is evident from Table No 1 that most of the researchers (88%) and experts (89%) are of the view that there is a great disparity between academia and industry. The Mann- Whitney technique was done to see whether there was a difference of opinion between

the two sides. P=0.765 has been discovered which means the views of both groups are identical. According to the research, there is still a misalignment between the entire curriculum delivered and the profession's expectations.

Although it was fascinating to learn that the majority of respondents believe that additional training programs are needed for undergrads to achieve their goals. Mitashree Tripathy (2017) had find out that engineering learners must have a wide range of employability skills, which renders them more competent and employable. Employability skills, in addition to technical skills, must be taught at engineering schools through theory and practice [12] .

Over 92% of the respondents believed that training will raise the confidence level of learners. Moreover, respondents were of the view that the syllabus of both postgraduates well as graduate programs is not as per industry requirements and needs to be revised.

As per the survey, most of the faculty is of the view that engineering grads lack skills. Misra, R., & Priyadarshini, R. 2018, had concluded that soft skills are very much required for increasing the employability skills of engineering graduates. Hence it is critical that these skills be taught in technical courses so that engineering graduates are well-equipped with both hard and soft skills[13] .

When it came to finding gaps that directly affect student achievement, 64 percent of academics chose a dearth of comprehension and professional skills as a factor. There is no major gap in the perceptions of engineering practitioners, as Seen by p = 0.1866 (Table 2). Numerous studies support the notion that engineering graduates, from even the best schools, are still unable to match industry requirements (e.g., Lakshminarayanan, Kumar, & Ramanakumar, 2014; Radermacher & Walia, 2014) [14] [15].

Singh, D. (2016) had concluded that companies anticipate students to be up to date on the current developments, yet academia is notoriously slow and focuses on the fundamentals of subjects that are frequently outdated. In the first or second year, colleges must fill the gap. Students should be taught foundational skills such as English and reasoning ability in the first or second semester through bridging courses. Regrettably, the awareness and development of these talents (also referred to as employability skills) is often overlooked in favour of the degree or

certificate. Until recently, core competencies were a largely unappreciated factor in a person's career. However, it has gradually become recognised that neither merit nor qualification assures success in any field; however, qualities that can be the antidote for a successful career are frequently overlooked [16

Table 2: Interpretation of research and professionals representatives regarding discrepancies that influence the success of learners

No.	Concerns	Engg Experts	Funda mental Profici ency	Applied Compet.	Fund Prof & App comp	P-value
1	Gaps that directly affect fresh grads performance	Exp	6(6)	30(30)	64(64)	0.19
		Res	6(8)	30(40)	39(52)	

It is evident from table no 3 that paucity of time, resources, and money are the major barriers due to which the engineering graduates are not able to join boot camps.

Table3: Interpretation of academia and business stakeholders on barriers to joining a boot

S n o	Concerns	Engg Expert	Paucity of time	Pauci ty of reso urces	Paucity of money	All of them	Ot hers	P-val ue
1	Major barriers to join boot camp	Exp	4 (4)	20 (20)	2 (2)	70 (70)	4 (4)	0.3 92
		Res	6 (8)	12 (16)	2 (2.67)	53 (71)	2 (3)	

The majority of scholars (79%) said they want instruction to include both generic information and analytical abilities, but a lot of business practitioners (72%) said analytical abilities were more essential There were no differences as indicated by p = 0.054) respondents). Gurumoorthy, T. R., Nachammai, S., & Thangam, A. had found that many obstacles faced internships, including a lack of proper direction and assistance for students throughout the internship, as well as a lack of adequate money. Internships should be planned and carried out as a valuable learning opportunity[17].

Interpretation of technical competence

They may not have sufficient qualifications and characteristics to meet technical competence, according to graduates (47.8 %). The majority of students (53.2%) stated that they lack both fundamental proficiency and applied competency (readiness to implement), as well as a few learners

Table 4: Academics and business practitioners' understanding of the abilities they anticipate from boot camp.

No	Concerns	Engg Experts	Funda mental Profici ency	Applied Compet.	Fund Prof & App comp	P-value
1	Abilities anticipate d from boot camp	Exp	1(1)	20(20)	79(79)	0.54
		Res	15(20)	54(72)	6(8)	

(35.6%), believed that practical abilities were the determining factor in everyone's performance.

Interpretation of boot Camps

A total of 53% of students indicated that they were not aware of digital boot camps at all. Any students (31.5%) do not attend any of the classes during their graduate time; educational plans correspond with their career interests.

Table 5: Learners viewpoint

No	Concerns	Learners viewpoint % (n=325)
1	Knowledge of services for online instruction	47
2	students who are not attending any boot camp	31.5
3	The paucity of time, money, and other resources are the major barriers to join a boot camp	47.8
4	Proficiencies expected from training	fundamental proficiency + applied competency- 73.6%

Time was the main obstacle to them attending the boot camp according to 21% of them. The number of learners (95.3 percent) agreed that there is still a great need for training. Only 35.9%, nevertheless, favor online rather than offline training services. This is because almost all of them are familiar with digital boot camps. In Table 5, other results are summarized.

The current research's findings are consistent with previous studies by Balakrishnan Athira et al[12], which found that the majority of respondents believe there is a difference across corporate & academics. To summarise, this study uncovered several critical aspects of technology students', educators', and industry practitioners' understanding of technical competencies, whether appropriate training is required or the program needs to be updated to meet industry standards, and also what expertise clients anticipate from learning. An even more main

observation of this research was that digital educational services were not favored by students. This may be because only a handful is aware of opportunities for virtual learning. It is also observed that 31.5% of respondents are not attending any boot camp. The paucity of time, money, and other resources are the major reasons for which students are not able to attend the boot camps.

Limitations of the study:

The low feedback of academics and corporate experts to the survey, which could contribute to nonresponsive bias, is the major flaw in this study. The study was done in the context of India only. The surveyed population may not represent the whole universe. The information was taken mainly from Primary Sources.

6. Conclusion

This study concluded that learners require training programs that prioritize realistic dimensions to accomplish their goals, as the application of theoretical principles to practical situations is unclear. The curriculum of training should be it is carried out according to the career interests or choices of students. The incorporation in the curriculum of case studies and simulation laboratories would help to provide practical experience. As a result, we can deduce that obtaining a decent job requires more than a simple degree; instead, learners must keep on developing quality to the resume in the light of general skills nowadays alluded to as employability that will make them more employable by employers in their field.

Conflict of interest:

The writers are not disclosing any conflict of interest. The writers themselves are responsible for the quality of this article and its composition.

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Ethical clearance

The survey participants were told about the study intent and their consent was obtained before being included in the survey.

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