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Gearing up engineers for the global employability pursuit

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ABSTRACT

We are all aware of this perplexing, wave which is driving the global professional scenario towards a multifarious warfare arena. The saddest part now which today's youth faces is that all the players are not actually equipped with the ammunition of skills, equitable, comparable, or even commensurably parallel in proximity. The result is horrendous, bewildering, crisscross, display of ammunition, unworthy of any determinative accomplishments. Satisfaction is improbable, unimaginable, and impossible for entities on both the sides of the table. India is a country with one of the largest tertiary age population. Under such circumstances, where the country has a huge youth power, which can be used to convert the economy of the country into a booming one. Yet we are at such a juncture there is a huge gap in the skill sets offered by job contenders and that expected by employers. The result of which is the rise of professionally qualified yet unemployed youth. Extensive research and brainstorming on a massive scale is being carried out at all levels, both by the government and non-government organizations, to decide the requisite parameters, a well-defined paradigm and obviously means to precisely define the set of employability skills. What exactly are these employability skills and how they are to be developed and implemented is the most pertinent question? Can a curriculum be accurately designed for employability skills? In bits and pieces through the information is disseminated, nevertheless, the "what" and "how" of the concept is still far from the general comprehension of the majority of today's youth looking out to be employed. This paper discusses what these employability skills are, how they affect the employability status of today's youth. Especially from the point of view of engineers, it's important how best skills can be integrated with their academic regime, to improve the employability status. The imperative task lays ahead and questions are like how best to gear up the education system to meet the growing demand of the industry. We still have a long way to go, but one thing is certain a robust partnership between the industry and the universities, – the two crucial stakeholders, to chalk our strategies foreseeing the future only, can lead us to the destination we are all dreaming of!

Keywords: *Employability, Skill sets, Life skills, Transformation, Communication, Aptitude, Parameters, Interpersonal skills, Personality, Internship*

1. INTRODUCTION

We are all aware of this perplexing, wave which is driving the global professional scenario towards a multifarious warfare arena. The saddest part now which today's youth faces is that all the players are not actually equipped with the ammunitions of skills, equitable, comparable, or even commensurably parallel in proximity. The result being horrendous, bewildering, crisscross, display of ammunition, unworthy of any determinative accomplishments. Satisfaction is improbable, unimaginable, and impossible for entities on both the sides of the table. The skill sets on display by prospective applicant or job contender is either meager in magnitude or disproportionately mismatching the requirement of the employer. Result of which is utter dissatisfaction, loss of both resources and man hours, leading to futile outcomes. Now who, or probably which genre of the professional, intellectual populace is prepared to shoulder the onus of such turbulence of dissatisfaction in the society. Extensive research and brainstorming on a massive scale is being carried out at all levels, both by government and non-government organizations, to decide the requisite parameters, a well-defined paradigm and obviously means to precisely define the set of employability skills. All this converging to arrange the interlocking and tessellating pieces for fitting and completing this nefarious zig saw puzzle, to bring about an embalming effect for all quarters of the society.

2. THE UPCOMING CHALLENGE

The prevalent demographic trend that our country is trailing might as well, soon leave behind China in population. Most importantly now it has been marked by the British Council[1] that by 2020, India will be the world's third largest economy, with a correspondingly rapid growth in the size of its middle classes. Currently, over 50% of India's population is under 25 years old; by 2020 India will outpace China as the country with the largest tertiary-age population. This surely implies potential youth power for the country which if strategically driven in the right direction could inevitably result in colossal economic leap for the country. However, all would unanimously agree on the fact that technology and human life are inter dependable and that, technology has an unquestionable

role in bringing about positive changes to steer the society towards a better tomorrow. The role of engineers for societal architecture is hence imperative. Undoubtedly this clan of the education system should be carefully devised to bring about the blue print of success. How well this change can be brought about depends on how we perceive or acknowledge the importance of equipping our budding engineers with the skills, so imperative to help them grab a job and then help them maintain the same, in the broader sense aid the growth and development of our nation.

3. EMPLOYABILITY SKILLS- THE CRUCIAL PRACTICAL INTERFACE

We come to hear about employability skills more often than ever these days. The prerequisites have been churned out to produce numerous definitions. Bianca K & Peter F.[2] defined engineering as 'Engineering is a profession directed towards the skilled application of a distinctive body of knowledge based on mathematics, science and technology, integrated with business and management, which is acquired through education and professional formation in a particular engineering discipline. Engineering is directed to developing, providing, and maintaining infrastructure, goods and services for industry and the community.' At the same time a study elaborates Employability[3] as a critical requirement for enabling both sustained competitive advantage at the firm level and career success at the individual level. All this is instrumental in scientific HRM activities elaborating job and career assessments, recruitment, staffing, career mobility, and development practices. In a report of "Employers' perceptions of the employability skills of new graduates"[4] the authors enumerated that, Employers expect graduates to have technical and discipline competences from their degrees but require graduates also to demonstrate a range of broader skills and attributes that include team-working, communication, leadership, critical thinking, problem solving and managerial abilities. It has been made evident by various intellectual groups amongst employers, that nowadays emphasis is prominently extended to employability skills even in the technical sectors and the lack of which was the major cause for significant increase in unemployment among engineering graduates. A study carried out for Asian countries like Malaysia, Japan, Singapore and Hong Kong, concluded that that the engineering graduates should acquire and demonstrate a set of generic skills such as communication skills, problem solving and interpersonal skills[5].

Not only in the Indian subcontinent or the developing countries of the world but this phenomenon of mismatch of skill sets of graduates and employers expectations have been observed in most of the developed nations as well. A paper [6] elaborates on the missing links between engineering graduate attributes and employers' expectations. In their research on student-learning outcomes they mentioned that university graduates do not possess important skills required by employers, such as communication, decision-making, problem-solving, leadership, emotional intelligence, social ethics skills as well as the ability to work with people of different backgrounds. Moreover, it has been largely encountered that technical graduates perform better when they possess some basic cognition of the other domains too, this provides them with an additional ability to create an interdisciplinary connect helpful in superior performance. The findings of a study on engineering graduates[7] suggest that students lack both the ability to connect interdisciplinary subjects to their own more narrowly defined fields of expertise and fail to identify and value the contributions of multiple fields to complex problems. A study which calls it Work Integrated Learning, [8] states that "for developing graduate employability it was essential to enhance skill outcomes, such as team-work, communication, self-management and problem solving, employment prospects and student understanding of the world-of-work". The various skills within the frame work of employability skills must be made clear to lecturers, careers advisors, trainers, employers, and any other practitioners, this has been established in a report [9] where they specify that the framework can be used to explain the concept of employability to those new to the subject, particularly to engineering students, for local and global employer expectation. The employability skills are a must to bridge the gap or shorten the leap a fresher must take while his transformation from student to employee takes place. For this the various associates in this conglomerate- the student, the academicians and the employer's thoughts must be aligned. The results of a study[10] suggests that to progress significant curriculum development in support of employability, a greater consensus of stakeholder views is needed with a deeper sympathy towards the integration of academic learning and employability. Groups across the globe have carried out work about the perceptions of stakeholders regarding what skills, how to be facilitated and integrated probability into the system.

A study[11] investigated how well chemical engineering graduates perceive they were prepared for work in industry. They perceived their strengths to be their technical background, problem solving skills, formal communication skills and life-long learning abilities. The following areas of weakness were also identified: work in multi-disciplinary teams, leadership, practical preparation, and management skills. One such study [12] outlines and scrutinizes the various aspects of employability skills required by engineers, they further go on to state that in countries like United states, UK, Australia, Japan and The European Union, the employability skills are decided and framed by the industry and employers.

A paper of World Bank [13] reported that "Skill shortage remains one of the major constraints to continued growth of the Indian economy". Their findings suggest that engineering education institutions should: (i) seek to improve the skill set of graduates; (ii) recognize the importance of Soft Skills, (iii) refocus the assessments, teaching-learning process, and curricula away from lower-order thinking skills, such as remembering and understanding, toward higher-order skills, such as analyzing and solving engineering problems, as well as creativity; and (iv) interact more with employers to understand the particular demand for skills in that region and sector. Talking about the global education scenario [14], encouraging skills development is a key part of the UK Government's strategy. This emphasis on skills has led to changes in Higher Education, where there is an increasing recognition of the need to enhance students' employability.

4. DETERMINING THE PERFECT MISHMASH OF SKILL SETS TO TERM EMPLOYABILITY SKILLS

A crucial and compelling question faced by todays employers – what is that winning set of academic, non-academic, behavioral, personality and overall skills required to outperform at all levels in the industry and can a curriculum be accurately designed for employability skills? In bits and pieces though information is disseminated, but nevertheless, the

"what" and "how" of the concept is still far from the general comprehension of majority of today's youth looking out to be employed. The most important fact that still lies ahead for engineers or even generally talking about others in the employability pursuit, is that only top notch or institutions in the urbanized regions create awareness about these so-called employability skills. For maximum of the candidates this blissful ignorance is the major setback when facing interviews. The employers cannot be blamed for this as the display of only the academic performance, the measure of which is the university grades in their mark sheets, isn't sufficient to meet their organizational objectives in this highly competitive chase of excellence. Hence their benchmarking standards are unquestionably on the higher side. The reasons why the students with exceptional grades always do not bag the best jobs, have their answers hidden in crucial criterion for selection. The guidelines of the "what" and "how" of these skills are laid down by the employers. But the exact combination particularly varies from employer to employer and, the nature of the job requirement. The basic employability skills like communication skills, interpersonal skills, presentation skills, teamwork, time management, and attitude are sometime not just enough. Certain positions with greater responsibility requires added thinking skills like creative thinking, decision-making, problem solving, reasoning, leadership, and a high level of emotional intelligence. The personal attributes which include responsibility, self-esteem, being sociable, self-management, integrity and honesty are obviously set as a mandatory basic yardstick.

A pertinent question that still needs to be answered on a massive level is, how many of the students registered in the academic programs of average institutions are fully aware of the fact that only the marks awarded would not be sufficient for them to obtain the job of their choice. Though this isn't anymore an individual's problem and hence needs to be addressed at the institutional level by the authorities. But more importantly while studying this complex situation worldwide it has been felt that an integration of these skills in the curriculum could resolve the issue and shorten the gap between the employer's expectations and the skills sets possessed by the prospective candidates in this rat race. Though especially talking about the Indian Education system, per say engineering program- the academicians engaged in the formation and updating the syllabi are too hard pressed. In this competitive age and to balance learning process with the technological advances, the dilemma of the situation is inclusion and exclusion of learning topics. To top it all when we talk about these additional human skills or soft skills or even certain technical skills, or interdisciplinary skills required to be learned as per the demand of certain industry, all are simply baffled.

With this extensively fast change in technology every moment, the requirement of engineers is also being advanced. Though the employers especially in sound structured companies shoulder a responsibility of training the freshers they hire, but an added basket of knowledge and skills is always an added edge. Due to this arising exigency, parallel training institutes are mushrooming all over which offer technical programs not inclusive in the university curriculum. More over personality development and soft-skill training institutes are gaining significance. All this means time and obviously resources from the student's point of view. When we talk about an average student from a middle-class background of India, who has already spent a fortune to acquire the degree, it's quite unfortunate that he or she still does not qualify the set employability standards. How much is sufficient is now the question which haunts the job contenders. On the other hand, for additional assistance for companies there are organizations like Wheebox is India's leading online talent assessment Company that partners' corporations for finding and retaining best talent using validated, reliable, and standardized test for pre-hiring and learning needs assessments. Wheebox benchmarks over 1.5 million users annually across 21 countries globally. Wheebox research & development teams have created a battery of over 100 validated tests, spanning areas in Language, Cognitive Skills, Personality, Information Technology, General abilities and core domain skills in Finance, Retail, Sales, Engineering, Automobile etc. Staying aligned to the vision of Wheebox to "Measure World's Talent", It partners over 3000 higher and vocational education campuses for conducting "Wheebox Employability Skill Test" for final year graduates to benchmark competencies that matter the most for being employable in corporations. [15]

5. UNRAVELING THE SOLUTION

All said and done, the contemplators, decision makers and important policy makers of the academic regime are all aware of this scenario. Though still more research is necessary to establish proven approaches that ensure students, young workers, and older workers learn the requisite skills in communication, discipline, teamwork, focus, ability to allocate time and other resources, and problem solving, but certain kick off strategies can be planned. The initiation could take place by first training the trainers that is the faculty of the institution. The majority of these employability skills could be smoothly integrated with the syllabi. Integration of employability skills with curriculum would imply a thorough approach of blending subject knowledge and practical approach. A curriculum balanced enough to include knowledge, practical expertise, human or professional skills along with the right attitude and moral value system. Though communication skills are a part of the curriculum in various programs, but it is felt that certain practical aspects are still not in place. Employability skills would mean, skills required to gain employment and then maintaining and growing in the job. Especially when India is at the cusp of transformation, 'professionally qualified but unemployed' members of our society pose a serious issue and the most massive road block for the progress of the nation. Moreover, it has been largely acknowledged that technical graduates fare better when they possess basic knowledge of the other domains too, this provides them with a third eye to create an interdisciplinary connect which gives them a competitive edge. A country with this massive youth power and more than 50% population in the tertiary age group, any kind of progress to commandeering a revered position in the global economic scenario could be absolutely possible.

Recently a paper presented at the university of adelaide[16], suggests that there is potential to maximize opportunities in the regular curriculum to support, "the knowledge, skills, attributes, reflective disposition and identity that graduates need to succeed in the workforce" higher education employability strategies generally encompass a range of practical and formally assessed in-curricula and co-curricular programs. These typically include Work Integrated Learning (WIL) programs, professional placements, and industry-based experiences and internships. This workshop propagated: how work skills can become an explicit element in curriculum design and in work-oriented learning experiences, Interpret the relationship between students' work skill development

and learner autonomy, demonstrate applications of the Work Skill Development framework in teaching and learning and in professional practice.

In the Indian context the AICTE in its 49th meeting of the Council held on 14th March 2017 suggested certain points to be implemented by all technical institutions to improve the standards of technical education and to provide competent technical man-power for the nation. It has been decided by AICTE to introduce mandatory internship for students to improve the employability of the students by imparting required skills and making them industry ready. It is really felt by employers that despite having excellent subject knowledge an above average student with high grades fails to excel at work due to lack of hands on, or practical experience. An internship or two done during the course tenure would have surely helped regarding the same. Another important issue is regarding accommodating all students of undergraduate programs for internship. AICTE during the year 2017-18 approved 10396 engineering institutes [17]. Every year 1.5 million engineers pass out [18], to accommodate engineers for internships seems to be a tough task. So, employment to them seems to be furthermore difficult. Though AICTE's initiative "Intershala" offers internship assistance for students. There is a glut of engineers in the country and most of them are not employable. The reasons are numerous. Though Training and Placement Departments are focusing on these training demands and trying to make facilities available to train students in employability skills, enhancing technical aptitude, and even internship programs, but a lot more needs to be done in this direction. The institution needs certain guidelines for mandates towards development of skills integrated with the curriculum, which could make students easily employable and would bridge this gap of the student's skill sets and the employer's expectation. As this issue needs to be addressed in a multifactorial way, there are certain agencies which have found recognition for conducting employability assessment surveys in India and the findings are more than startling. Aspiring Minds India's leading employability Solutions Company in its Annual Report of National Employability Report of Engineers 2016 revealed that less than 8 per cent of Indian engineers are employable in core engineering roles. Information gathered from varied sources indicate that almost 65-70% of the fresh engineers graduating in the core branches of engineering are not found 'job ready' by the industry.

6. CONCLUSION

The employability skills which generally comprises of certain life skills like Communication skills, presentation skills, Teamwork, Positive attitude, Analytical and problem-solving skills, Personal management skills, Interpersonal skills, Computer/technical literacy, Leadership/management skills, learning skills, Academic competence, Strong work values etc., are being perceived as a set of mandatory skills imbibed in the persona of a job contender. Any missing skill thus is often termed as a gap in the employer's expectation and the attributes offered by the candidate. This mismatch often results in the failure to get a dream job by a candidate even when above average in academic skills authenticated by his or her university grades. In a country like ours this situation often creates a state of chaos in the society leading to dissatisfaction, frustration, and a status of being professionally qualified but unemployed. Extensive research has been done by individual and groups to find the solution for this existing problem. The most suitable solutions seem to be integration of these skills along with academic and practical hands on expertise with all professional courses. For this we require adequate intervention and support of the government bodies. Taking an example of engineering, AICTE has taken up certain corrective measures, partnering with organizations to improve the standards of skills sets and hands on experience for engineers. The imperative task lays ahead and questions are like how best to gear up the education system to meet the growing demand of the industry. We still have a long way to go, but one thing is certain a robust partnership between the industry and the universities, – the two crucial stakeholders, to chalk our strategies foreseeing the future only, can lead us to the destination we are all dreaming of!

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