SOFT SKILL REQUIREMENT FOR EMPLOYABILITY IN MECHANICAL ENGINEERING INDUSTRY

Rajes K.M.Rajan

Mechanical Engineering Department
Polytechnic Melaka
E-mail: rajes2311@polimelaka.edu.my

ABSTRACT

Polytechnic transformation is launched to give new "facelift" for education in polytechnic and quality of their graduates. According to the transformation, polytechnic graduates are expected to be high enterprising and posses employability skills. Employability skills or better known as soft skill required for employability vary according to industry. The aim of this study is to identify the required soft skills for employability in mechanical engineering industry. Six soft skills and sub skills were focused in this study. A descriptive quantitative research was conducted at Senawang Industrial Park. Data from respondents were analyzed in SPSS 16.0. SPSS 16.0 was the "backbone" instrument to analyze the data. Finding shows that mechanical industry require the highest mean value in almost all the sections. Finding of this study is believed to be beneficiary to the educators and learners to correlate to polish soft skills among learners.

Keywords*: soft skills, employability, engineering, industry, mechanical, requirement.*

1.0 INTRODUCTION

Soft skills are capabilities that can be learned, and enable people to perform effectively in work situations. Currently, soft skills are the most demanding requirement by employers for recruitment. Over the past few years there have been many speculations about unemployed graduates. For our amazement, now days employers do not recruit employee with neither CGPA 4.0 nor straight A's any longer. They only recruit an employee who posses soft skills to work full force for their company.

According to Zakaria Kasa (2008) in his "Personnel Development" article, generic skills are:

> *"Those skills which can be used across large numbers of different occupations. They include what are defined as key skills- communication,*

> *problem solving, team working, IT skills, application of number and an ability to improve personal learning and performance. They also include reasoning skills, scheduling work and diagnosing work problems, work process management skills, visualizing output, working backwards for forward planning purposes and sequencing operations."*

Every employer is looking for a specific set of skills from job-seekers that match the skills necessary to perform a particular job. But beyond these job-specific technical skills, certain skills are nearly universally sought by employers. The good news is that most job-seekers possess these skills to some extent. The better news is that job-seekers with weaknesses in these areas can improve their skills through training, professional development, or obtaining coaching/mentoring from someone who understands these skills. The best news is that once you understand the skills and characteristics that most employer seek, you can tailor your job-search communication, your resume, cover letter, and interview language to showcase how well your background aligns with common employer requirements. Numerous studies have identified these critical employability skills, sometimes referred to as "soft skills." We've distilled the skills from these many studies into this list of skills most frequently mentioned. We've also included sample verbiage describing each skill; job-seekers can adapt this verbiage to their own resumes, cover letters, and interview talking points (Randall Hansen & Hansen, 2010).

In the budget 2010, Prime Minister Datuk Seri Najib Razak has said high quality human capital is a prerequisite to support the national development agenda. Therefore, the Government will ensure that development carried out a comprehensive human capital, including efforts to increase skills and knowledge. In addition, steps will be taken to establish the individual intellect in science and technology, groom and nurture entrepreneurial capabilities of positive values and progressive (Budget 2010, section: high quality human capital, issue 59). Continuous efforts will be made to train and improve the workforce in order to meet market demand. The quality of the workforce will be enhanced with appropriate education and training .For this purpose government will provide 1.3 billion dollars to finance management and upgrading of polytechnics and community colleges as well as provide education loan fund for 32 thousands students (Budget 2010, section: polish workforce skills, issue 68).

Polytechnic is an institute under Higher Education Ministry. Ever since the first polytechnic, Polytechnic Ungku Omar was launched in Malaysia, polytechnic graduates have established themselves in

various manufacturing industries and construction. Polytechnic is well know for "hands on" teaching method whereby students are exposed to more practical. Polytechnics also able to produce graduates with skills that enable them to think entrepreneurial and prepare them as future leaders who can capable of dealing with more complex problems. Polytechnic need to keep moving to improve the quality of the star rating system such as rating of programs for accreditation by the Malaysian Qualification Agency (MQA). Thus, transformation is needed to upgrade the education in polytechnic and quality of graduates.

1.1 Literature Review

In line with the concept of polytechnic transformation, graduates from polytechnic are expected to have employability skills and are very high enterprising in job market (Hala Tuju Transformasi Politeknik, 2010). Employable graduates is the second expected outcome in polytechnic transformation. Ministry of Higher Education has realized that now days industries are demanding for graduates who posses soft skills to work full force for their company. In Malaysia, more employers are searching for graduates who are balanced, with good academic achievement and possessing 'soft skills' such as communication skills, problem solving skills, interpersonal skills and the ability to be flexible (Gurvinder Kaur & Sharan Kaur, 2008). The Malaysian Government conducted a survey on Malaysian graduates and it was discovered that about 60,000 Malaysian graduates were unemployed due to lack of experience, poor English and poor communication skills (Buletin UTeM, 2009). According to a survey conducted on 3300 human resource personnel and bosses by JobStreet.com, a Malaysian employment agency, (2005), the factors relating to graduate unemployment are; weak English-56%; bad social etiquette -36%; demand too much pay- 32%; degrees not relevant-30%; fresh graduates too choosy-23%; no vacancies-14%; weak English and bad social etiquette are the top reasons for graduates being unemployed not because they are unintelligent but rather because most of them lack soft skills (Gurvinder Kaur & Sharan Kaur, 2008).

In 2007 budget speech by the Prime Minister, the number of unemployed graduates was at 31,000. This figure is considered high in view of the many job appointments advertised in the local dailies. The reason often echoed by prospective employers is that local graduates are viewed as technically proficient but lacking in communication and analytical skills. This situation is not specific to local graduates. A recent study on 12,000 students by Birrell (2006) of Monash University in Australia showed that more than one-third of foreign students in Australian Universities,

which includes 23.5% of Malaysian students, are not proficient enough in English, concluding that despite good work ethics these students are not equipped for professional level work. The study also indicated that while graduates had sufficient command of language in handling day-to-day situation, they were still incompetent to engage in an intellectual discussion which is essential in the demanding work force. Similarly a biannual survey by the Association of Graduate Recruiters in the UK reported that there is an inadequate supply of applicants as they lack in ''soft'' skills (Association of Graduate Recruiters 2006).

In Malaysia, a study of unemployment problems among graduates was conducted by the National Higher Education Research Institute (2003). The study on 561 unemployed respondents suggested that the unemployed generally overrated themselves by believing that they are well qualified and met all requirements of the regular job market, attributing their unsuccessful application on lack of connection. On a similar note, interviews with the construction industry employees in New South Wales, Australia reveals that these employees believe that people with good ''soft'' skills are born with them as such skills is part of their personal traits. However, research shows a different story, as employees had been able to improve their soft skills with experience and practice (Hager, Crowley & Garrick, 2000). Another study by Rainsbury et al. (2002) on students and graduates from a variety of business studies programs at a New Zealand tertiary institution reported that graduates perceived both hard skills and soft skills to be more important than did their student counterparts. From the perspective of employers, a study on 230 position advertisements in German newspaper during the period of January to March 2000 reveals that ability to work in teams and integration is demanded by 75% of German engineering firms (Julliard & Schwab, 2000). A number of previous articles have, however, emphasized that students should have a balance of soft and hard skills, where hard skills refer to those associated with technical aspects of how a job is undertaken (Kemper, 1999; McMuchie 1998; Spencer and Spencer, 1993), when some authors suggest that both soft skills and hard skills are essential for a successful performance (Ashton, 1994; Caudron, 1999). Given the situation described above, apart from producing graduates with academic excellence, Institutes of Higher Learning must ensure that their graduates possess the relevant personal and ethical development. Specifically, besides teaching how one can find technological solutions, students must also be taught on how to evaluate the consequences of technology and how to be personally and collectively responsible for a technique they develop (Julliard & Schwab, 2000). These elements of soft skills are not only relevant to the sales and service industry which obviously requires their prospective

employees to possess not only most of the soft skill attributes but also in highly technical based industry such as engineering, information system, and construction (Roselina Shakir, 2007).

According to Malaysia Institute of Economic Research, MIER (Skorecareer, 2010) and International Trade and Industry deputy minister Datuk Mukhriz Tun Mahatir (August 14, 2009, The Star), jobless rate might rise to 4.5% in year 2010. And most recently, economist Datuk Dr Zainal Aznan Yusof predicted that Malaysia unemployment will continue to climb at an alarming rate and at one point will hit the 6.0% mark (Skorcareer, 2010). Table 1 is the statistic rate of unemployment graduates since year 2000-2009.

Table 1: Statistic rate of unemployment graduates

Year	Unemployment rate,%
2000	3.2
2001	3.2
2002	3.7
2003	4
2004	4.1
2005	3.8
2006	3.9
2007	3.4
2008	3.2
2009	3.2

This statistic includes diploma, degree and higher qualification graduates from polytechnic, public university, and private university. Unemployment rate range from 3.2%- 4.0% for the past decade and is forecasted to rise up to 4.5% in 2010. This unemployment rate is due to various factors such as lack of English proficiency, computer skills, choosy graduates, high demand employers, economy recession lack of guidance and so on. Nevertheless, based on the conversation with Noor Hayati Othman (Statistic officer, Statistic Department of Malaysia) mostly unemployment rate rise due to lack of soft skills among graduates and graduates are too choosy. This has been constantly contributed to unemployment rate every year. A survey done by the Universiti Putra Malaysia, UPM found out that most of the employers in Malaysia place a high emphasis on English communication ability in considering fresh graduates for employment. The fact that many of them cannot converse well in English has contributed to redundancy of graduates who often finding themselves disillusioned after being rejected by employers, one after another. The issue of unemployment

among fresh graduates is not new and has been lingering around for years (www.upm.edu.my).

1.2 Soft Skills

While there are no specific skills that are listed as ''soft'' skills, the Malaysian Institute of Higher Learning interprets soft skills as incorporating aspects of generic skills which include non-academic skills such as leadership, teamwork, communication, and lifelong learning soft skills are the general skills, qualities, knowledge, abilities and traits that a person should possess to succeed in one's studies and career. Such skills enable a person to function and contribute effectively in solving problems, communicating effectively, thinking critically and creatively, and acting as effective team members at work. Soft skills are also known in other foreign universities as 'core skills', 'essential skills', 'employability skills', 'transferable skills' and 'trans-disciplinary'. Such skills, once acquired, are transferable to other areas of one's social, academic and professional life.

Soft skills can be developed through various in-class learning activities such as class discussions, group work, brainstorming sessions, presentation, role playing and apprenticeships. There will also be out-of-class activities such as project assignments, independent studies, field trips, site visits, community placements and industrial attachments. In addition to academic activities, campus and co-curriculum activities will also be organized to help students develop generic skills. Many actions were taken by higher education institution to improve students on generic skills, for instance, Polytechnic Kota Melaka has organized "Employability values" course for 452 students from 4th semester and the course was successfully conducted by My Jobnet Sdn. Bhd on 9th-11th February 2010 (Buletin Politeknik Kota Melaka, 2010).

1.3 Objective

The objective of this research is to identify the required soft skills for employability in mechanical engineering industry.

1.4 Problem Statement

In line with 10th Malaysia's Strategic Plan Direction (Hala Tuju Rancangan Malaysia Kesepuluh), polytechnic transformation was launched by Higher Education Ministry to produce creative, innovative and skilled human capital. Thus, polytechnic must ensure that manpower level of semi professional and semi executive integrates in accordance with industries requirements. The launched transformation of polytechnic

has three expected outcomes. The second expected outcome is to produce quality graduates who posses employability skills and highly enterprising. In accordance with the second expected outcome, polytechnic must implement some effective measures to make the graduates outstanding compared to graduates from other institute.

According to Hou Kok Chung, *local graduates lacked the required soft skills to be marketable and employable* (13th March 2010, The Sun). Thus, soft skills are an important factor to produce quality graduates. In line to the factor, polytechnic must identify and implement some effective measures to polish the students' soft skills. Before making any implementation, polytechnic must identify industries' soft skill requirement for employability. As we know, different industries require different soft skills. Thus, this research is conducted to identify the most required or demanded soft skills for employability in mechanical engineering field. Indirectly, it will also help the educators to cognize the required soft skills in particular engineering field and prepare the students to face the challenges in industry.

2.0 METHODOLOGY

2.1 Instrumentation for Data Collection

Questionnaire was the tool used to collect data from employer's to identify the required soft skills to employ a graduate. The questionnaire divided into 6 sections (basic/ fundamental skills, people related skills, personal-related skills, personal skills and attributes, conceptual/ thinking skills, skills related to business world and skills related to the community). Information from the questionnaires were used to analyze data.

2.2 Instrumentation for Data Processing

SPSS stands for Statistical Package for the Social Sciences. It was developed in 1968, by three young men from disparate professional backgrounds. It is used to sort employers demographic profile and to analyze the data of the questionnaire. The analyses comprises mean value, frequency, overall mean value, and rank. Data were sorted according to industry field.

2.3 Research Procedure

The primary data was collected by distributing questionnaires to respective employers in industries at Senawang Industrial Park,

Seremban. Only human resource officers were requested to respond to the questionnaire. The number of employers who responded in the survey were 129. Data collection for this study took place in the 1st quarter on April 2010. The employability skills that were surveyed are as follows:

(i) basic skills
(ii) people related skills,
(iii) personal skills and attributes,
(iv) conceptual skills,
(v) skills related to business world, and
(vi) skills related to the community.

A four point Likert scale was employed and the respondents were required to state the extent to which they strongly agreed by giving a score of '4' or strongly disagreed by giving a score of '1' for each statement in the questionnaire. The questionnaires were personally distributed by the researcher to the industries. A follow up call was made thereafter to monitor the progress of the questionnaire. Upon completion, the researcher personally collected the questionnaires from the respective industry.

2.4 Validity and Reliability

Index reliability and validity of this instrument evaluated by the value of alpha coefficient as in the Table 2.

Table 2: Validity and reliability

Section	Coefficient alpha
Basic fundamental skills	0.73
People related skills	0.71
Personal skills and attributes	0.72
Conceptual/thinking skills	0.77
Skills related to business world	0.78
Skills related to community	0.74

Overall alpha value for each sections are considered high. Therefore, this instrument is considered has high reliability and validity.

3.0 FINDINGS

Table 3 consists the mean represented for each item in basic /fundamental skills components.

Table 3: Basic/ fundamental skills

Section E: Skills related to business world

No	Skills	Mean	Rank
1	Capacity for applying knowledge in practice.	3.68	1
2	Basic general technical knowledge of the profession of your work area	3.68	1
3	Elementary computing skills.	3.58	3
4	Capacity to learn.	3.68	1
5	Ability to use appropriate methods, tools and technology	3.63	2
Overall Mean		3.65	

Overall mean of this component was 3.65. The overall mean comprises capacity for applying knowledge in practice, 3.68; basic general technical knowledge of the profession of your work area, 3.68; capacity to learn, 3.68; ability to use appropriate methods, tools and technology, 3.63 and elementary computing skills, 3.58. It should be noted that capacity for applying knowledge in practice, basic general technical knowledge of the profession of your work area and capacity to learn have same mean value. Graph below illustrates the mean value of basic/ fundamental skills.

Table 4 consists the mean represented for each item in people related skills component.

Table 4: People related skills

Section B: People related skills

No	Skills	Mean	Rank
1	Team working	3.68	2
2	Concern of team unity	3.74	1
3	Will to share knowledge with team members	3.58	3
4	Ability to communicate with non-experts (in the field)	3.53	4
5	Ability to work in an inter disciplinary team	3.68	2
Overall Mean		3.64	

Overall mean value is 3.64. The overall mean value comprises concern of team unity, 3.74; team working, 3.68; ability to work, 3.68; will to

share knowledge with team members, 3.58 and ability to communicate with non-expert (in the field), 3.53. It should be noted that team working and ability to work in an inter disciplinary team have same mean value. Graph below illustrates the mean value of every element in people related skills.

Table 5 consists the mean represented for each item in personal skills and attributes.

Table 5: Personal skills and attributes

Section C: Personal skills and attributes

No	Skills	Mean	Rank
1	Planning and time management	3.74	1
2	Information management skills(ability to retrieve and analyze information from different sources)	3.63	2
3	Critical and self-critical abilities	3.42	4
4	High self-esteem	3.53	3
5	Leadership	3.74	1
Overall Mean		3.61	

Overall mean value is 3.61. The overall mean value comprises planning and time management, 3.74; leadership, 3.74; information management skills, 3.63; high self-esteem, 3.53; and critical and self-critical abilities, 3.42. It should be noted that planning and time management and leadership has same mean value. Graph below illustrates the mean value of every element in personal skills and attributes.

Table 6 consists the mean value represented for each item in conceptual/ thinking skills.

Table 6: Conceptual/ thinking skills

Section D: Conceptual/ thinking skills

No	Skills	Mean	Rank
1	Capacity for generating new ideas (creativity)	3.63	3
2	Problem solving	3.84	1
3	Decision-making	3.74	2
4	Commitment to the given job	3.74	2
5	Will to succeed	3.74	2
Overall Mean		3.17	

Overall mean value for this section was 3.17. The overall mean value comprises problem solving, 3.84; decision making, 3.74; commitment

to the given job, 3.74; will to succeed, 3.74; and capacity for generating new ideas, 3.63. It should be noted that decision making, commitment to the given job, and will to succeed have same mean value.

Table 7 consists the mean value represented for each item in skills related to business world.

Table 7: Skills related to business world

Section E: Skills related to business world

No	Skills	Mean	Rank
1	Initiative and entrepreneurial spirit	3.63	1
2	International relations and collaborations	3.32	4
3	Understandings of cultures and customs of other country	3.32	4
4	Capacity for analyze situations and opportunities	3.47	3
5	High ethical standard in professional practice	3.53	2
Overall Mean		3.45	

Overall mean value is 3.45. The overall mean value comprises initiative and entrepreneurial spirit, 3.63; high ethical standard in professional practice, 3.53; capacity for analyze situations and opportunities, 3.47; international relations and collaborations, 3.32; understanding of cultures and customs of other country, 3.32. It should be noted that international relations and collaborations and understanding of cultures and customs of other country have same mean value. Graph below illustrates the mean value of every element in skills related to business world.

Table 8 consists the mean value represented for each item in skills related to community.

Table 8: Skills related to community

Section F: Skills related to community

No	Skills	Mean	Rank
1	Ability to adapt new situation	3.63	2
2	Ability to lead a team	3.32	5
3	Capacity to take up pressure	3.68	1
4	Capacity to demonstrate basic knowledge of leadership	3.47	4
5	Capacity to stay focus on task in any kind of environment	3.58	3
Overall Mean		3.54	

Overall mean value is 3.54. The overall mean value comprises capacity to take up pressure, 3.68; ability to adapt new situation, 3.63; capacity to stay focus on task in any kind of environment, 3.58; capacity to demonstrate basic knowledge of leadership, 3.47; and ability to lead a team, 3.32. Graph below illustrates the mean value of every element in skills related to community.

4.0 CONCLUSION AND RECOMMENDATION

In higher education institution soft skills should be developed through in discussion,group work, brainstorming sessions, presentation and role playing. This will also can be out –of-class activities such as independent studies, field trips, site visits and community placement. In addition, to academic activities, co-curiculum is also can be organised to help learners to develop soft skills. Finding of this research helps the educators to be aware of the required soft skills in mechanical industry and draw some measures to improve soft skills among learners. Mastery in soft skills determine quality of graduates for employment and it also build positive perception among public on education in polytechnic. It has been a tradition in Malaysia that excellent straight A's students are unemployed compared to average students. This could be possibly due to high demand for soft skills in industry. Therefore, Higher Education Ministry, polytechnics, educators, and learners must correlate in order to enhance soft skill in teaching and learning process.

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