APPLICATION OF SOFT SKILLS IN ARCHITECTURAL PROGRAMME IN POLYTECNICS TO MEET INDUSTRIAL REQUIREMENTS

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ABSTRACT

The emphasis on soft skills according to the field of study is important in order to helping students understand and apply soft skills in the workplace. Mismatch between soft skills possessed by graduates and the skills required by the industry being one of the causes for graduates being incompetent and not qualified. Thus, these issues increase the level of unemployment especially among polytechnic graduates. This study was conducted to identify the element of soft skills that possessed by students, applied by lecturers and required by construction industries. By using descriptive study in purpose survey, the samples for this study involving 335 number of architecture students and 80 number of architecture lecturers from Politeknik Primier Ungku Omar (PUO), Politeknik Sultan Abdul Halim Muadzam Shah (POLIMAS), Politeknik Sultan Haji Ahmad Shah (POLISAS), Politeknik Port Dickson (PPD), Politeknik Merlimau (PMM) and Politeknik Sultan Idris Shah (PSIS). A sample of 30 respondents involving director, executive and supervisor were randomly selected from construction companies in Malaysia. This study conducted by questionnaire, interview and field survey using analysis of mean and variance, Spearman correlation test and ANOVA test. Researcher expecting that problem solving skill and teamwork skill are the dominant soft skills element that possessed by students, applied by lecturers and required by industry. There is statistically significantly difference between the dominant element of soft skills that possessed by students, applied by lecturers and required by industry. Based on the research analysis, a framework module will be develops as a guideline to integrate soft skills into architectural program in polytechnics.

Keywords: Soft skills, skills mismatch, architectural programme, polytechnics, Malaysia

INTRODUCTION

The increase in total number of unemployed graduates is an issue that is often debated in oreder to strengthen the quality of education. International Labour Office (ILO) reported that world unemployment rate in 2010 was about 205 million people. According to statistics released by the Ministry of Education (MOE) in 2010, there were nearly 32,000 graduates are unemployed after six months of graduation (Ministry of Human Resources, 2010). According to the report of Ministry of Higher education graduate tracer study in 2011, polytechnic graduates in technical fields accounted for 63.8% of total unemployment in Malaysia.

The contradiction between the skills required by employers and the skills possessed by graduates is one of the causes of unemployment (Shutt, Iles & Zhu, 2010 and Ismail, Rasul, Ismail, Rajudin & Rauf, 2009). According to Cox & King (2006), Gibbs (2006) and McQuick & Lindsay (2005), the current employer is not satisfied with the quality of graduates who lack of skills in fulfilling the needs of the current job market. Soft skills possessed by graduates do not meet the needs of the industry together with the requirements of their job field. (Nair, Patil & Mertova, 2009) and David, Michael & John (2008). Raftopoulas, Coetzee & Visser (2009) and

Raybould & Sheedy (2005) states that employers need employees who are capable of working under stress, ability in decision making, communication skills, teamwork, self-confident, self management skills, learning skills and technology skills of information and communication technology (ICT)

However, according to Nik Ismail (2010), John & Donna (2009), David, *et. al* (2008) and Leroux & Lafleur (2006), most of the graduates are not prepared to meet the job requirements in terms of importance of soft skills of leadership, communication, interpersonal relations, problem solving abilities, English language skills and self-confidence. Some of the skills listed by graduate as the skills needed to enter the workforce involving English communication skills, teamwork skills, career development, problem solving skills, interpersonal skills and entrepreneurship training (Pineteh, 2012 and Nair, *et. al,* 2009). This is evident through HEI graduate tracer study 2011, says many unemployed graduates stated that they needed additional training programs to enhance soft skills include English language skills, ICT skills, career development, interpersonal skills and entrepreneurial skills.

Based on the existing issues, a study on the application of soft skills in the architecture program at the polytechnic curriculum conducted to evaluate the application of soft skills among the students of architecture at the Polytechnic Malaysia and overcome the imbalance that exists between students, lecturers and employer soft skills.

SOFT SKILLS

Demand reliability market nowadays requires not only a successful graduates in the academic field, but also the knowledge and additional skills such as soft skills to produce skilled workers (Rusmin, 2010 and Hamzah, Bakar & Kazilan, 2006). Soft skills are a requirement of individual in mastering human nature and the human relationship. Nik Ismail (2010) and Knight & Yorke (2003) states that soft skills are recognized as an attitude of mind which can adapt the situation around, the needs of the individuals as well as the emotional and spiritual strength of the person to propose an appropriate action. Kamarudin, Mohd Yusof & Buntat (2006) and McQuick & Lindsay (2005) also explains that soft skills include non-technical aspects of skills was identified as a critical element in the global working world and be possessed by graduates of Higher Education Institute (HEI).

The study of soft skills also involves other developed countries such as Australia and United Kingdom (Curtis, 2004). Gibbs (2006) and Raybould & Sheedy (2005) states that soft skills involve the attitudes of individual which is need and use based on their job proffesion. There are various terms used globally to explain the purpose of the soft skills of generic skills, key skills, core skills, life skills, essential skills, key competencies, necessary skills and transferable skills (Cleary, Flynn, Thomasson, Alexander & McDonald, 2007 and NCVER, 2004). Although the term of soft skills are different in each country, however it gives the same meaning of the skills elements which posses the same interest with technical skills required by employers (Ibrahim, Mastor, Mohd Salleh & Sulaiman, 2010).

To determine the elements of soft skills needed by architectural students in accordance with the requirements of the construction industry, researchers have compiled a list of twelve attributes of soft skills include reading skills, writing skills, math skills, communication skills, critical skills and problem solving skills, teamwork skills, continuous learning and information management, entrepreneurial skills, moral and professional ethics, leadership skills, computer skills and self management skills.

Reading Skills

Reading skills enables one to separate the important and unimportant matter, distinguish fact and opinion, and be able to interpret and evaluate the purpose of a writer (Pirozzi, Maitin & Dziewisz, 2008). Reading skills involve several important stages that could be mastered such as speed reading, use proper methods in reading, understanding, and remembering something that has been read and can make a conclusion after the reading done. In addition, the ability to read other language is an advantage to an individual (Bailey, Lughes & Moore, 2004). Mastery of reading skills in English will help a person get a job because of in most operating machinery and equipment in industry are providing manual and instructions in English.

Writing Skills

Writing skills is an important skill in an organization. Writing skills is one of the communication skills used in presenting the ideas or information to others. According to the report NCVER (2004), 90% of employers felt that writing skills are very useful and required by employers. Mazlan (2010) in his study found that the factors that cause unemployement of graduates is due to the weak writing skills in English.

Mathematical Skills

Essential skills model (2003) explains the mathematical skills as the skills that use numbers and mathematical thinking to measure and make calculations, estimations, and financial transactions such as payment and can convert a mathematical expression with normal calculation unit. In the studies of Wan Ismail (2008) also found that final year polytechnic students are not good at mathematical skills such as algebra, fractions and trigonometry that are considered important by the industry. Mathematical skills are taught in school for a long time and until now no evidence of the importance of mathematical skills but curriculum should emphasize the use of mathematics in everyday life skills such as true financial management.

Communication Skills

Cotton (2007) state communication involves verbal and non-verbal elements and the ability to use either in the form of language writing or orally. According to Che Noh (2008), employees need to learn interpersonal communication and analytical skills which are among the paramount aspect to get jobs in the field of ICT skills, leadership and working ethics. It is also supported by Koprowska (2006) which states most workers are lack of skills, particularly communication skills and approach other people and make presentation skills.

Problem Solving Skills

Nik Ismail (2010) defines problem solving skills as the ability to apply problem-solving strategies in situations that require creative thinking to solve it. Brilliant problem-solving skills can provide the present generation to face the challenges of life in the current state of high-technology and multi-cultural (Syakir, 2009). According to Nachiappan, Kamaruddin, Abd. Shukor, Jantan, Mustapha & Hamzah (2009) and Syakir (2009), problem-solving skills help students in identifying problems, developing the best problem solving strategies, carefully evaluate the responses and also think and conclude the problem solving strategies for such a long period. Through 2005 skills gap report, employers are lack of employees who posses problem-solving skills (Elsen, Jaginowski & Kleinert, 2005).

Teamwork Skills

Teamwork skills focused on team goals and make members mutually need each other. Adoption of teamwork skills not only enhance the application of soft skills in students, but also can improve students' academic performance (Storm & Storm, 2011). According to Ibrahim, *et. al* (2010), employers are currently putting teamwork skills as one of the essential skills needed from employees. Teamwork skills can be instilled in students through behavior, attitudes and beliefs of others and the ability to act as a team (Syakir, 2009). An effective teamwork can help to improve productivity, reduce costs, and improve employee engagement in the organization structure.

Livelong Learning

Lifelong learning involves the relationship between formal learning and everyday life. According to Evans (2006), learning emphasizes the development of skills, abilities and knowledge they have learned in school and the values taught since childhood. Excellent performance can be achieved through the practice of skills and knowledge for lifelong learning will train individual thought to have continuously active thinking. Graduates without soft skills and no interest in advancing to the practice of continuous learning will inevitably fluctuate in the working environment. Briedis (2001) lists four characteristics of students with learning skills and information management which involves the efficient use of information resources and

technology, understanding and exposure to professional management, awareness of the importance of knowledge and the ability to learn independently.

Entrepreneurial Skills
Applications of entrepreneurial skills not only improve students' soft skills, but also expose them to the realities of the working platform (Nachiappan, *et. al,* 2009 and Syakir, 2009). Entrepreneurial skills involve the ability to explore opportunities and develop risk awareness, creativity and innovation in business and employment-related activities. According Zepke & Leach (2010), entrepreneurial skills can enhance the reliability students by encouraging them to take risks, to identify effective methods of business and is willing to take any chances.

Professional Work Skills
According Khawari (2008), moral and professional ethics require a graduate who has a positive attitude, punctuality and can adapt with the working environment. The emphasis on the needs of high ethical and moral by the employers resulting in promote MOHE to focus on the important of professional ethic and moral elements (Zepke & Leach, 2010 and Raybould & Sheedy, 2005). According to Syakir (2009), the surrounding elements affect the training process of professional practice by students, as well as the compassion to the sensitivity and integrity among students.

Leadership Skills
A bright student is a student who has the characteristics of strong leadership skills (Nachiappan, *et. al,* 2009). Application of leadership skills and self-esteem enhancement can be applied through active participation in extra-curricular activities, and community service association. The application of leadership skills among students can be assessed through the knowledge and skills to be a leader, an understanding of the role of leaders and members as well as the ability to be responsible for any action taken (Zepke & Leach, 2010).

Computer Skills
The roles played by computers are becoming very important in the course of human life. Employees using computers not only for word processing, but also need to be skilled in the use of software compatible with a given task. Awang, Hamzah, Ismail & Uli (2004) in their study of six of the ten states, employers will hire workers who know how to use computers to replace old techniques and follow the demands of their employers as well as providing reports using computer. Computer skills are essential as complementary and indispensable role in the workplace. It is also supported by Mohamed Ariffin & Ab Rahman (2002), which states that it is such an advantage to candidates who have skills in information and computer technology to meet the needs of companies, organizations and markets.

Self management skills
Self management skills are the skills that affect the aspects of positive attitudes and behaviors, responsibility, and skills to make adjustments. According to Wickramasinghe & Perera (2010), Mohamad Khawari (2008) and Raybould & Sheedy (2005), self management skills are the aspects that are important to the employer, lecturers and students. Self management skills covering the aspects of positive attitudes and behaviors required by employees are those who have the attitude as confident with themselves. Employers need employees who have a positive attitude, punctual and able to adapt in the workplace (NCVER, 2004).

PROBLEM STATEMENT
The accentuation on soft skills coincide according to their field of study helps students to understand and apply soft skills in the workplace. Elements of soft skills needed by every student is different according to the curriculum of the education program. The difference between soft skills possessed by graduates and the skills required by the industry is one of the causes that produce low class graduates of HEI. This then turn into the issue of unemployment among

polytechnic graduates especially, are still at disquiet level. In this study, researchers sought to identify soft skills possessed by the students, was taught by lecturers and required by the construction industry to deliver a framework model for the application of soft skills in polytechnic diploma students of architecture.

CONCEPTUAL FRAMEWORK

Conceptual framework constructed by researcher for this study are shown in Figure 1.

Figure 1: Conceptual framework
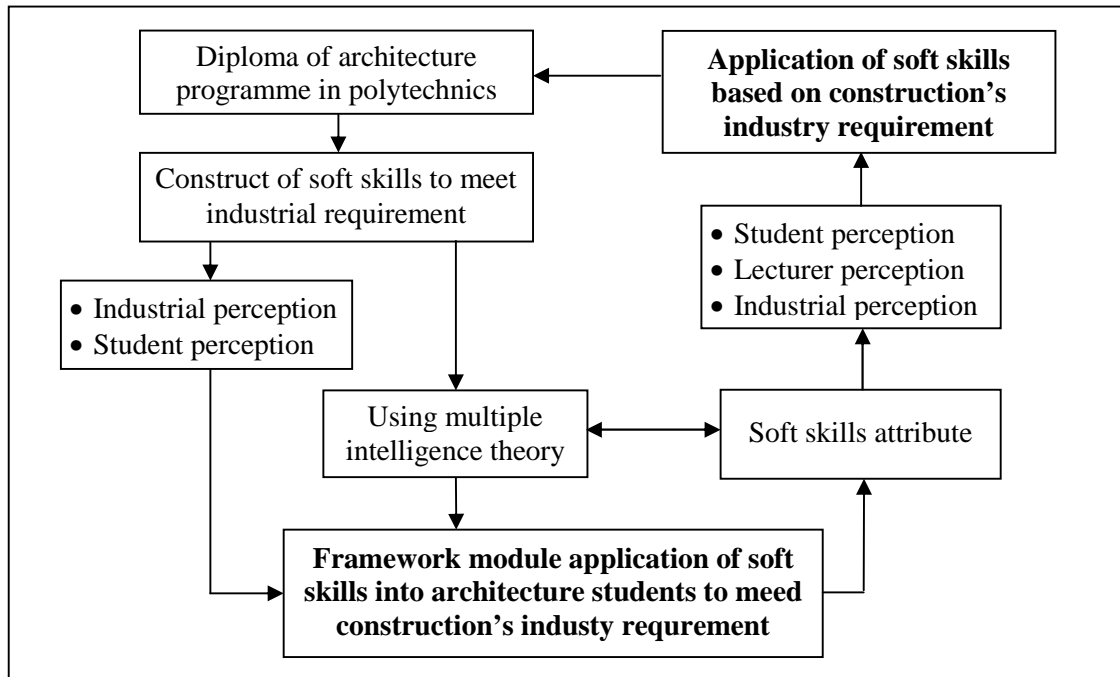
Based on Figure 1, researcher will looked at the level of application of soft skills by lecturer in architecture curriculum descriptively. Twelve soft skills attributes will be evaluated based on multiple intelligence theory in order to archieve the suitable soft skills elements that applicable for architecture students and meet industry requirement. In order to evaluate soft skills in architecture program, researcher will looked through students, lecturers and the construction industry using multiple intelligence theory. In the end of the study, researcher will produce a soft skills framework model for architecture students in polytechnic Malaysia according to industry requirements.

RESEARCH METHODOLOGY

This study will be used descriptive method with purpose survey involving students in diploma of architecture, architecture lecturers in polytechnic and related construction industrial. Based on Krejcie and Morgan (1976), total samples for this study are shown below,

Table 1: Research population & sample

Polytechnic students		Polytechnic lecturers	
Population	Sample	Population	Sample
2362	335	94	80

Based on Table 1, 335 students and 80 lecturers were selected as respondents from six polytechics that offered architecture programe involving Politeknik Primier Ungku Omar (PUO), Politeknik Sultan Abdul Halim Muadzam Shah (POLIMAS), Politeknik Sultan Haji Ahmad Shah (POLISAS), Politeknik Port Dickson (PPD), Politeknik Merlimau (PMM) and Politeknik Sultan Idris Shah (PSIS). Meanwhile, 30 respondents involving director, executive and supervisor were

randomly selected from construction companies in Malaysia. In order to collect the research data, questionnaire and semi-structural interview will be used as instruments.

Table 2: Data analysis method

No	Research objective	Instrument	Analysis method
1	To identify the dominant element of soft skills that possessed by students, applied by lecturers and required by industry.	Questionnaire & interview	Descriptive statistic (score mean & rank) & analysis of interview transcrips
2	To examine the difference between dominant elements of soft skills that possessed by students, applied by lecturers and required by industry.	Mean of objective 1 & interview	Inferential statistic (one way ANOVA test) & analysis of interview transcrips
3	To produce a framework module to integrate soft skills into architectural program in polytechnics.	Questionnaire & interview	Analysis finding of objective 1 & 2

In this research, two types of statistic approach used to answer the research question. Researcher will used descriptive analysis of score mean, standard deviation and ranking to answer the first research question. The value of score mean will be interpreted into three level of tendancy which is low, moderate and high level (Landell, 1997). Meanwhile, differences that accure between the dominant elements of soft skills that possessed by students, applied by lecturers and required by industry will be analyzed using inferential analysis method of one way ANOVA test.

RESEARCH EXPECTATION

Researcher expecting that problem solving skill and teamwork skill are the dominant soft skills element that possessed by students, applied by lecturers and required by industry. The study also found a significant difference between the dominant element of soft skills that possessed by students, applied by lecturers and required by industry. As the result of this research, a framework module will be develops as a guideline to integrate soft skills into architectural program in polytechnics.

CONCLUSION

Application of soft skills among graduates are important in producing a quality human capital. Several approaches have been implemented by Ministry Of Higher Education in applying soft skills and should be continued so that graduates are competitive on a global level. The level of soft skills being applied among students can be increase using multiple intelligence theory and implementation of planned curriculum. The ability of students to applied soft skills in the academic curriculum varies according to the level of their ability. Hence, researcher hope that this study can provide insight into the polytechnic view to develop appropriate module in applying soft skills among polytechics' students.

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