APPLICATIONS OF SOFT SKILLS IN ENGINEERING PROGRAMME AT POLYTECHNIC MALAYSIA

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Abstract

Rapid global economic development demands a more competitive workforce. Employers nowadays prefer prospective employees who have high soft skills in professionalism and sociology aspects. This study has been conducted to identify the level of communication skills, lifelong learning, entrepreneurship skills and moral and professional ethics that has been applied by engineering students and lecturers at the polytechnics. The research design that was used was a descriptive survey type for research samples. The samples involved 195 students and 106 lecturers of civil engineering at the Malaysian Polytechnics. Research was conducted using a questionnaire and analysis using the Statistical Package for the Social Sciences (SPSS) version 17.0. The results showed the level of communication skills, lifelong learning, entrepreneurship skills and moral and professional ethics to be moderate. The results also showed that no statistically significant differences were found between students and lecturers in the application of soft skills. In conclusion, this study suggests that lecturers use a variety of approaches to improve the level of soft skills among students in civil engineering.

Keywords: Communication skills, lifelong learning, entrepreneurship, moral and professional ethics, civil engineering programmes, polytechnic.

1. Introduction

Soft skills are the skills needed to reduce the total number of unemployed graduates. According to a graduate tracer study in 2011, 31.50% of unemployment in Malaysia comes from technical graduates and more than half of these are polytechnic graduates. Previous researchers noted that most engineering graduates have good technical skills but not soft skills. This is due to the lack of skills related to moral values and ethics, communication and technology skills, confidence level and also ability to adapt in the workplace (Beckton, 2009; McIntosh, 2008; Elsen, Jaginowski & Kleinert, 2005; Leroux & Lafleur, 2006).

As the number of highly qualified graduates has increased recently, employers prefer their employees to possess additional skills including high professionalism and sociological aspects. According to Raftopoulas, Coetze & Visser (2009) and Raybould & Sheedy (2005), employers nowadays are not only looking for workers who are good at technical skills but they need workers with additional skills such as communication skills, both verbal and written, self-discipline, interpersonal skills, group work skills, problem-solving skills, thinking skills, technology skills, continuous learning and a positive work ethic. Non-technical skills such as
generic skills have become a major element that is needed by employers, and graduates must take this into account in order to embark on any career (Hinchliffe & Jolly, 2011; McQuick & Lindsay, 2005). This was proved when many unemployed graduates stated that they needed additional training programmes to enhance soft skills including lifelong learning skills, professional ethics and morality, English language skills, ICT skills, career development, interpersonal skills and entrepreneurial skills (Pineteh, 2012 & Hussain, 2010).

Roughly, it can be concluded that soft skills are among the skills that are necessary in improving the performance of self-employment graduates to meet the needs not only in Malaysia but also globally. The increase in the total number of unemployed graduates is one of the issues that arise due to the lack of dominancy regarding soft skills elements. Thus, it is necessary to tackle this matter seriously.

2. Review of Literature

Along with the rapid development of the country in particular, graduates need to be successful academically as well as proficient in the elements of soft skills to compete in the world of work (Hinchliffe & Jolly, 2011). This employability demand nowadays requires graduates not only to be successful academically, but also to have additional skills such as soft skills to enhance professionalism. Soft skills are the requirement of individual competence in dominating the nature of sociological relationships. There are various terms used to explain the meaning of employability skills, and these are generic skills, key skills, core skills, life skills, essential skills, key competencies, necessary skills and transferable skills (Cleary, Flynn, Thomasson, Alexander & McDonald, 2007; NCVER, 2004). Nik Ismail (2010) and Knight & Yorke (2003) state that soft skills are recognized as an attitude of mind which can adapt to any surrounding situation, the needs of individuals and both the emotional and spiritual strength of any person to suggest appropriate action. Soft skills are one of the critical elements in the global working environment and should be possessed by the graduates of the Institute of Higher Education (HEIs) (McQuick & Lindsay, 2005; Curtis, 2004).

Communication skills, lifelong learning, entrepreneurship skills and moral and professional ethics are some of the skills needed by graduates to improve their employability (Pineteh, 2012; Koprowska, 2006; Evans, 2006). Most of the graduates’ apparent weaknesses are in communication skills, attitude on how to carry themselves in the community, lack of work ethic and an immature ability to be rational (Elsen, Jaginowski & Kleinert, 2005; Raybould & Sheedy, 2005). The application of soft skills in the engineering curriculum is important in reducing the number of unemployed in Malaysia. According to Koprowska (2006), employees need to learn the aspects of sociology and professionalism in interpersonal communication and analytical skills other than ICT skills, leadership and work ethics which are among the preferred aspects of getting any jobs in industry. Soft skill applications not only improve students’ soft skills, but they expose them to the working environment (Zepke & Leach, 2010; Nachiappan, Kamaruddin, Abd. Shukor, Jantan, Mustapha & Hamzah, 2009; Syakir, 2009).

HEIs are still taking for granted the issue of soft skill application among students and are not ready to produce quality products (Stevenson & Bell, 2009). Students today need not only knowledge, but the employability skills required by employers. This has been proven through a number of past studies on the level of soft skills among students majoring in technical and vocational education. Leroux & Lafleur (2006) state that the application of soft skills among students nowadays is at the intermediate level. Kamarudin (2005) states that communication skills among engineering students are still at a moderate level. This is also supported by
Koprowska (2006) who states that most workers lack skills, particularly communication skills, which are skills in approaching other people and also skills in making presentations.

However, Abdul Razzaq, Md. Yunus, Hashim & Sawah (2010), through their study on the adoption and mastery of soft skills in the teaching and learning process, state that the application of soft skills in the process of teaching and learning is high. The statement was supported by Mohd Razali, Sikor, Hassan & Madar (2010) who stated that the level of soft skills among university students is high. Sikor, Mohd Ariff, Zainal Abidin & Idris (2010) in their study stated that there is a conflict between the perceptions of students and lecturers in assessing the level of soft skills. Students stated that their communication proficiency is high; lecturers classified the level of communication skills of students at a moderate level.

Implementation of educational curricula in HEIs should always be up to date to ensure that graduates not only possess knowledge but also mastery of soft skills in the face of globalization today (Stevenson & Bell, 2009). According to John & Donna (2009), Nair, Patil & Mertova (2009) and David, Michael & John (2008), HEIs only emphasize learning technical aspects and underestimate the importance of soft skills. Crawford (2009), Abu, Kamsah & Razzaly (2008) stated that the lack of knowledge and skills to adapt and evaluate soft skills in the process of teaching and learning is one of the problems faced by lecturers, apart from the constraints of time and lack of reference materials and documents that can help them implement activities in the process of teaching and learning, whether in class or at a workshop.

According to Zepke & Leach (2010) and Syakir (2009), entrepreneurial skills as well as moral and professional ethics can enhance the ability of students by encouraging them to take risks, identify the effective methods of business and prepare them to take all the opportunities available, as well as increase awareness of sensitivity and integrity among students. Therefore, this study was conducted to identify the level of soft skill applications in civil engineering programmes at polytechnics in Malaysia and hence to observe the differences that exist in the perspectives of students and lecturers.

3. Methodology

This study used a descriptive survey method which aimed to involve 196 diploma civil engineering students and 106 lecturers of civil engineering courses at six selected polytechnics. Selection was performed randomly on polytechnics representing north, central, south, east and west Malaysia. A descriptive method was used to describe the application of soft skills among students of civil engineering as described by Jackson (2008), Tan (2007) and Devlin (2006). The study involves four elements of soft skills: communication skills, lifelong learning, entrepreneurship skills and moral and professional ethics. These skills are reviewed together with the current needs of graduates in enhancing their employability as stated in the graduates’ tracer study 2011. Survey instruments were used in collecting data in this study. Data from the questionnaires were analysed by means of descriptive statistics and inferential statistics using SPSS 17.

4. Results and Discussion

a. Research question 1: What is the level of application of elements of soft skills in the civil engineering curriculum in polytechnics?
From the analysis of the mean scores, it can be concluded that the application of soft skills in the civil engineering programme at polytechnics was at a moderate level (students = 3.46, lecturers = 3.43). Results showed less application of the elements of communication skills, lifelong learning, entrepreneurship skills and moral and professional ethics by the students.

<table>
<thead>
<tr>
<th>Soft skills</th>
<th>Students Mean score</th>
<th>Students Level</th>
<th>Lecturers Mean score</th>
<th>Lecturers Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication skills</td>
<td>3.51</td>
<td>Moderate</td>
<td>3.45</td>
<td>Moderate</td>
</tr>
<tr>
<td>Lifelong learning</td>
<td>3.41</td>
<td>Moderate</td>
<td>3.31</td>
<td>Moderate</td>
</tr>
<tr>
<td>Entrepreneurship skills</td>
<td>3.43</td>
<td>Moderate</td>
<td>3.45</td>
<td>Moderate</td>
</tr>
<tr>
<td>Moral and professional ethics</td>
<td>3.49</td>
<td>Moderate</td>
<td>3.50</td>
<td>Moderate</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>3.46</strong></td>
<td><strong>Moderate</strong></td>
<td><strong>3.43</strong></td>
<td><strong>Moderate</strong></td>
</tr>
</tbody>
</table>

Results showed that students were not really applying the element of soft skills, which are communication skills, lifelong learning, entrepreneurship skills and also moral and professional ethics. This statement is agreed with by several previous researchers such as Leroux & Lafleur (2006), who state that the soft skills of engineering students are still unsatisfactory. According to Pineteh (2012), Koprowska (2006) and Evans (2006), skills required by graduates in enhancing their additional skills involving communication skills, lifelong learning, entrepreneurship skills and moral and professional ethics. However, this study differs from the findings of studies conducted by Abdul Razzaq et al (2010).

The application of soft skills in students is essential as preparation for them for the working environment which can reduce the number of unemployed in Malaysia in particular. It is also the view of Beckton (2009), McIntosh (2008), Elsen, Jaginowski & Kleinert (2005) and Leroux & Lafleur (2006) that the elements of soft skills possessed by graduates are very important to meet the needs of industry and job specifications. The rapid growth of current industry requires prospective employees who not only have the technical skills, but also the soft skills in order to compete on a global level (Stevenson & Bell, 2009; John & Donna, 2009; Nair, Patil & Mertova, 2009; David, Michael & John, 2008). Improving the soft skills in students is necessary to enhance their employability after graduation. According to Zepke & Leach (2010), Nachiappan et al (2009), Syakir (2009) and Raybould & Sheedy (2005), the application of soft skills not only provides additional skills for students, but also increases their self-esteem for starting on any career.

In conclusion, the researcher decided that soft skills are one important element in helping graduates to meet industry requirements, thereby reducing the unemployment issue not only in Malaysia but also globally. Various parties should cooperate to ensure that engineering graduates, in particular polytechnic graduates, are competitive and own such high qualities.

b. Second research question: Is there a significant difference between students and lecturers in the application of soft skills for the civil engineering programme at the polytechnics?

To answer the second question, an independent T-test was used. Here is the null hypothesis:

H₀: There was no statistically significant difference between students and lecturers in the application of soft skills for the civil engineering programme at the polytechnics.
Having said that, the test results were not significant (t = 0.524, p > 0.05). So the null hypothesis is accepted that there is no statistically significant difference between the students and lecturers in the application of soft skills for the civil engineering programme at the polytechnics.

<table>
<thead>
<tr>
<th>T-test for mean value</th>
<th>Respondents’ mean score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T</td>
</tr>
<tr>
<td>Soft Skills</td>
<td>0.524</td>
</tr>
</tbody>
</table>

Based on this study, lecturers and civil engineering students agreed that the application of soft skills in the civil engineering programme is at a moderate level. These findings are different from studies conducted by Sikor et al (2010) and Nair, Patil & Mertova (2009) which state that there is a conflict between the perceptions of students and lecturers in assessing the level of soft skills. This research shows that civil engineering students and lecturers assess the application of soft skills from the same perspective. Both respondents agreed that the level of soft skills is moderate, as stated by Kamarudin (2005).

5. Conclusion

Most employers nowadays are looking for employees who are strong in both technical skills and soft skills to increase productivity and competitiveness. The application of soft skills among students of civil engineering is one of the important elements in producing quality graduates and meeting the needs of the industry. Furthermore, when applying the soft skills, it involves two-way communication between lecturers and students. Besides, it is a skill that cannot be practised by the students if there is a lack of encouragement from the lecturers. In creating the interaction between students and lecturers, infrastructure and teaching aids should be made available and strengthened so that the teaching and learning process goes smoothly. Thus, it is indirectly helpful to lecturers to improve the application of soft skills among students. It is hoped that this study can provide an insight into the polytechnic view to develop an appropriate curriculum in improving the soft skills of students in the polytechnics.

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c. Vot 1068

References


http://strathclyde.academia.edu/ColinLindsay/papers/207712.

UTHM. ms. 125 – 152.

Naichiappan, S., Kamaruddin, K., Abd. Shukor, A. A., Jantant, R., Mustapha, R. & Hamzah


NCVER (2004). At a glance: defining generic skills, national centre for vocational education
research. Australia: Australia National Training Authority.


Pineteh, E. A. (2012). Using virtual interactions to enhance the teaching of communication skills
to information technology students [electronic version]. British Journal of Educational

Raftopoulas, M., Coetzee, S. & Visser, D (2009). Work-readiness skills in the fasset sector. SA
Journal of Human Resource Management/SA Tydskrif vir Menslikehulpbronbestuur (7:1),
119–126.

Raybould, J. & Sheedy, V. (2005). Are graduates equipped with the right skills in the

dalam pengajaran dalam kalangan guru-guru teknikal Sekolah Menengah Teknik di negeri
Melaka. In Esa, A. & Mustafa, M. Z. (Eds), Kemahiran insaniah: kajian di Institusi-institusi

education policy. In Bell, L., Stevenson, H. & Neary, M. (Eds), The future of higher


Zepke, N. & Leach, L. (2010). Beyond hard outcomes: ‘soft’ outcomes and engagement as