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# The role of employability skills training programs in the workforce of Malaysia

Mohd Hazwan Mohd Puad  
*Purdue University*

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The Role of Employability Skills Training Programs in the Workforce of Malaysia

For the degree of Doctor of Philosophy



Is approved by the final examining committee:

Dr. James P. Greenan

Chair

Dr. James M. Brown

Dr. Aman Yadav

Dr. Donald D. Buskirk

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Head of the Departmental Graduate Program

Date



THE ROLE OF EMPLOYABILITY SKILLS TRAINING PROGRAMS IN THE  
WORKFORCE OF MALAYSIA

A Dissertation

Submitted to the Faculty

of

Purdue University

by

Mohd Hazwan Mohd Puad

In Partial Fulfillment of the  
Requirements for the Degree  
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Doctor of Philosophy

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*“All the praises and thanks be to Allah, the Lord of the ‘Alamin (mankind, jinns, and all that exists).  
The Most Beneficent, the Most Merciful.” [The Opening: 2-3]*

This dissertation is lovingly dedicated to those people,  
who inspired and encouraged me throughout my life,  
especially  
my wife, my children, my parents, my siblings,  
my relatives, my neighbors, my friends, my colleagues, and  
my Muslim brothers and sisters.

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## ABSTRACT

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Employability skills training programs are an essential strategy to improve the skills of the workforce and minimize unemployment in Malaysia. However, there has been a lack of assessment and evaluation studies regarding local employability skills training programs. Existing local studies are focused more on the identification of the skills that allow a person to be employable. Due to the lack of assessment and evaluation studies, stakeholders seem perplexed about the direction of training programs. Therefore, the purpose of this study was to examine the perceptions of educators, employers, and recent graduates regarding the role of employability skills training programs in the workforce of Malaysia. The study also identified those factors that facilitate and improve training programs. The theoretical framework for this descriptive study was based on Human Capital Theory (Becker, 1993; Schultz, 1961). All participants for this study were from the central economic region of the west coast of peninsular Malaysia. The first population was engineering, technical, and vocational educators in public higher education institutions. The second population was employers in the manufacturing sector. The third population was recent graduates who were enrolled in employability skills training

programs in higher education institutions and training centers. A questionnaire was adapted to gather perceptions from the respondents. The findings of this study revealed the importance of training programs for improving the skills, minimizing unemployment, and developing the workforce of Malaysia. Educators and recent graduates agreed about the positive impact of such programs on trainee skills. However, employers perceived that employability skills training programs neither ensure improvement in the skills, minimize unemployment, nor develop the workforce. The factors that facilitate the involvement of recent graduates in training programs and recommendations were also identified. Additionally, the findings revealed that employability skills training programs are relevant for recent graduates and workers in the labor force. Further, the findings identified the most integral skills that recent graduates should possess to obtain employment in the competitive job market as perceived by educators, employers, and recent graduates, including discipline and integrity, interpersonal skills, and professionalism, creativity and innovation, teamwork, lifelong learning, ability to apply knowledge, and knowledge in specific engineering disciplines.

## CHAPTER 1: INTRODUCTION

### Nature of the Problem

Malaysia, located in Southeast Asia, is a nation of about 30.1 million people. The country covers an area of about 127, 723 square miles, consisting of 11 states in peninsular Malaysia, two states on the island of Borneo, and the Federal Territories of Kuala Lumpur, Putrajaya, and Labuan (Tourism Malaysia, 2014). Peninsular Malaysia and the Borneo Island regions, separated by the South China Sea, are nearly similar in size. Malaysia's land borders are shared with Thailand in the north of the Peninsula; Indonesia and Brunei in the Borneo Island; and maritime borders exist with Singapore, Vietnam, and the Philippines (Appendix A). Malaysia lies entirely in the equatorial zone and the average daily temperature varies from 70°F to 95°F year round. Malaysia is a multi-ethnic country. The principal ethnic groups are Malay, Chinese, Indian, and the other significant group, the indigenous peoples (Tourism Malaysia, 2014). Malaysia, once a British colony that became independent in 1957, practices a system of Parliamentary democracy with a constitutional monarchy (Singh & Mukherjee, 1993, p. 1; The Economic Planning Unit, 2010; Tourism Malaysia, 2014).

The diversified economy in Malaysia has been fueled not only by its natural resources, such as crude oil, natural gas, tin, timber, rubber, palm oil, lumber, spices, and other agricultural and mining products, but also in the expanding sectors of science and



technology, petrochemicals, textiles, manufacturing, transportation, pharmaceutical products, tourism, commerce, and services (Buskirk & Emshousen, 1996). The country is currently one of the world's largest exporters of semiconductor devices, electrical devices, and information technology and communication products (The Economic Planning Unit, 2010, p. 131). Today, as a rapidly-growing middle-income country, Malaysia has transformed itself from a producer of raw materials into an emerging multi-sector economy in order to fit in and adopt the current economic flow and globalization (Mustapha, 1999a). Since independence, Malaysia has had one of the best economic records in Asia, with a promising Gross Domestic Product (GDP), an average of 6.5% annually for almost 50 years (Bank Negara Malaysia, 2014). From 2011 to 2013, despite being in the midst of a weaker external environment and global recovery, the Malaysian economy expanded by 5.1%, 5.6%, and 4.7%, respectively (Bank Negara Malaysia, 2014). Driven by continuing strong growth in domestic demand, the Malaysian economy continues to expand and develop. Under the current government, Malaysia is attempting to achieve high-income country status by the year 2020 and to progress the value-added production chain by attracting investments in multi-economy areas (The Economic Planning Unit, 2010, p. iii).

During the Asian Financial Crisis in 1997, the Malaysian economy plummeted. With the increasing local labor force, the unemployment rate skyrocketed for a few years, reaching an all-time high of 4.5% in 1999 (The World Bank, 2014; Trading Economics, 2014). However, the pattern changed in the mid-2000s. With strategic economic transformation and a recovery plan introduced by the nation's leaders and local economists, the nation began reducing the unemployment rate and increasing in full

employment among workers. By following the current economic growth, the unemployment rate is estimated to be maintained at 3.1% in 2014 and 2015 (The Economic Planning Unit, 2010).

According to the Department of Statistics Malaysia (2014), the majority of unemployed Malaysian laborers are between 20 and 29 years old, including graduates from postsecondary and tertiary learning institutions. One of the unemployment problems among recent graduates is a lack of employability skills. Research has indicated that industrial employers report that students lack employability skills, such as people management skills, communication skills, interpersonal skills, teamwork, professionalism, knowledge and principles, problem-solving skills, and decision-making skills (The Ministry of Higher Education Malaysia, 2012; Tong, 2003). Due to a lack of employability skills among graduates, many recent graduates feel it is very difficult to find a job, especially in the globally competitive market and the fast-changing working environment of today. A lack of these skills makes it difficult for them to fulfill the current work demands and professional expectations (Bakar & Hanafi, 2007; Mai, Simkin, & Cartledge, 2010; Martin, Maytham, Case, & Fraser, 2005; Shah, 2008). Studies by Mohammad, Nor, Omar, and Mohammed (2004) and Salleh, Othman, Esa, Sulaiman, and Othman (2007) have also supported that recent graduates are having difficulties in securing employment within six months after graduation from higher education institutions and training centers.

Due to a lack of employability skills among graduates, the Malaysian government has initiated comprehensive employability skills training programs to improve skills and retrain the existing workforce, with the goal of minimizing unemployment. Such an

agenda has been a priority in national economic plans, the Tenth Malaysia Plan 2011-2015, and the National Graduate Employability Blueprint 2012-2017 (The Economic Planning Unit, 2010; The Ministry of Higher Education Malaysia, 2012). Through the national economic plans, the government has initiated diverse employability skills training programs. One of them is the Industrial Skills Enhancement Program (INSEP). The objectives of the INSEP are to: (a) reduce the gap between unemployed recent graduates and the skills required by the job market; (b) increase the confidence level among unemployed recent graduates in communication, especially in English; (c) improve participants' personality in the aspects of disciplines, time management, creativity, and innovation; and (d) enhance graduates' knowledge and skills according to the market needs (Baba, Misdi, & Kaprawi, 2010). Funded by the federal government, this is a collaborative training program between the government and Malaysian industries that involves local and international expertise.

The Graduate Employability Management Scheme (GEMS) is another employability skills training program under the Tenth Malaysia Plan 2011-2015. The GEMS has started to enhance the employability of recent graduates who are still searching for jobs. The objectives of the program include: (a) facilitate job-matching between recent graduates and employers; (b) equip participants with the most commercially relevant knowledge, skills, and attitudes for targeted job positions; and (c) help in the assimilation and integration of recent graduates into the workplace. Additionally, the employability skills training program under the Tenth Malaysia Plan 2011-2015, the Recognition of Prior Learning program (RPL), aims to enhance the career prospects of the workforce by conferring the Malaysian Skills Certificate on workers who have no formal certification,

but who have obtained relevant knowledge, experience, and skills in the workplace (The Economic Planning Unit, 2010).

Recently, the government has initiated new multiple training programs to strengthen the employability skills of graduates to help them in obtaining a job, such as Graduate Entrepreneurship Scheme, Graduate Entrepreneurship Loan, 1Malaysia Training Scheme, Technology Specialist in Specific Domain Expertise, Train and Place Scheme, and Apprentice Graduate Program (Department of Labour Peninsular Malaysia, 2013; Perbadanan Usahawan Nasional Berhad, 2013; Talent Corporation Malaysia Berhad, 2013; The National Institute of Entrepreneurship, 2011). The graduates' training programs are unique because they target different groups of job seekers and develop specific skills. Simultaneously, the government encourages and intensifies the involvement of the private sector to establish accredited in-house training programs and extend these programs beyond their employees. The benefits of in-house training programs are that the private sector produces qualified, skilled workers who are prepared to fulfill their increasing demands and are not only employable in their work settings, but across similar industries (The Economic Planning Unit, 2013).

Employability skills training programs are an essential strategy to improve and retrain the workforce of Malaysia. The programs assist to minimize unemployment by equipping recent graduates with up-to-date industrial skills in the workplace. However, the lack of assessment and evaluation studies concerning employability skills training programs in Malaysia presents a problem. This scenario raises a concern about whether employability skills training programs are effective in preparing recent graduates to acquire the necessary skills demanded by industries and to secure jobs later. Therefore,

there is a critical need to continuously assess and evaluate the role of employability skills training programs in the workforce of Malaysia.

### Statement of the Problem

Malaysia is confronted with an unemployment issue among university graduates. By initiating employability skills training programs, the government has attempted to strengthen graduates' skills so they are able to secure professional positions. However, there is a lack of assessment and evaluation studies with respect to local employability skills training programs for helping unemployed university graduates. The accountability, capability, and efficacy of training programs have not been fully investigated. To date, there is a limited number of studies regarding employability skills training programs in Malaysia such as training program effectiveness, perceptions of stakeholders regarding training programs, standards and quality of training programs, and methods used in training programs. Additionally, there is a concern regarding the progress and impact of employability skills training programs to improve the skills of the workforce and minimize unemployment. The need for research in this area is imperative not only for contributing to the field of knowledge, but also developing human resources and the workforce of Malaysia.

Existing local research and studies are focused mainly on the identification of the components of employability skills rather than assessment and evaluation studies on local employability skills training programs. For example, Zaharim, Yusoff, Omar, and Basri (2009) have conducted research in the development of the Malaysian Engineering Employability Skills (MEES) framework in 2009 and it is still in progress (Appendix B).

They proposed a framework that can be utilized to develop employability skills, especially among engineering students, before entering the workforce. Other researchers, such as Bakar and Hanafi (2007) and Omar, Bakar, and Mat Rashid (2012), conducted a study on employability skills elements of technical and vocational students in the Malaysian technical training institutes. The studies assessed the level of employability skills of students, the acquisition of employability skills, and the differences in employability skills level by gender and students' majors. Other studies, conducted by Yusof et al., (2004) and Othman, Sulaiman, Masrom, and Buntat (2009), assessed employability skills components, such as problem-solving and decision-making skills. Yusof et al., (2004) assessed the problem-based learning method as a viable option of instructional method for engineering students. Such research has revealed the importance of employability skills and its components to assist recent graduates secure employment. However, they did not conduct empirical studies with respect to employability skills training programs. There is a gap of studies that address employability skills training programs to prepare recent graduates with essential knowledge and skills before entering the job market and securing a job.

In the world of work, policy makers, educators, parents, employers, and recent graduates seem perplexed about the direction for employability skills training programs. They are concerned about the effectiveness of employability skills training programs in producing high skilled workers who are equipped with the most commercially relevant knowledge, skills, and attitudes for targeted job positions. Further, they are concerned about the challenges graduates face in the global job market if training programs did not fulfill their objectives and expectations to improve the skills of the workforce and

minimize unemployment. There is a critical need, therefore, to investigate the perceptions of educators, employers, and recent graduates regarding the role of employability skills training programs in the workforce of Malaysia.

### Purpose and Objectives of the Study

The purpose of this study was to identify the perceptions of educators, employers, and recent graduates regarding the role of employability skills training programs in the workforce of Malaysia. Accordingly, the objectives of the study included:

1. Identify the perceptions of educators regarding the role of employability skills training programs.
2. Identify the perceptions of employers regarding the role of employability skills training programs.
3. Identify the perceptions of recent graduates regarding the role of employability skills training programs.
4. Identify the factors that facilitate and improve employability skills training programs.

### Research Questions

Based on the purpose and objectives of the study, the following research questions were posited:

1. What are the perceptions of educators, employers, and recent graduates regarding the contribution of employability skills training programs for improving the skills of recent graduates?

2. What are the perceptions of educators, employers, and recent graduates regarding the contribution of employability skills training programs in minimizing unemployment in the workforce of Malaysia?
3. Do educators, employers, and recent graduates believe employability skills training programs contribute to workforce development in Malaysia?
4. What are the factors that facilitate the involvement of recent graduates in employability skills training programs?
5. What are the recommendations of educators, employers, and recent graduates for improving employability skills training programs?

#### Significance of the Study

This study assisted in identifying the role of employability skills training programs in the workforce of Malaysia. The results can provide policy makers, educators, future students, parents, employers, and the current workforce valuable data about the accountability, capability, efficacy, and effectiveness of employability skills training programs as perceived by educators, employers, and recent graduates. The findings can contribute to program improvement and the knowledge base with respect to the connection between employability skills training programs and the workforce of Malaysia. Additionally, this study can assist policy makers, educators, and employers to initiate effective policies, strategies, methods, and programs in developing and training the labor force of Malaysia.



### Delimitations of the Study

This study had several delimitations and they include:

1. Educators were limited to instructors, professors, or lecturers who were working in formal, accredited, and authorized public higher education institutions in the field of engineering and technical and vocational education (TVE).
2. Employers were limited to commercial firms, companies, and organizations in the manufacturing sector that were listed under the Malaysian Investment Development Authority (MIDA).
3. Recent graduates were limited to high school graduates, two-year degree holders, or those with a bachelor's four-year degree in engineering and technical and vocational programs who were enrolled in employability skills training programs.
4. Employability skills training programs were limited to formal and accredited training programs offered by the government through local higher education institutions and training centers.

### Assumptions of the Study

This study had several assumptions:

1. The samples selected for this study were believed to be representative of the respective populations.
2. The questionnaire would be understood clearly by the respondents; the questionnaire was prepared in English and Malay languages.

3. Educators, employers, and recent graduates would provide honest and frank responses to the questionnaire in reflecting their perceptions and attitudes.

### Definition of Terms

Employability skills: Those cognitive, affective, psychomotor, teachable, and basic skills necessary to get, keep, and succeed in a regular job along with flexible and dynamic employer demands (Mohd Puad, 2012). The skills are listed in the Malaysian Engineering Employability Skills (MEES) framework (Appendix B). There are 10 attributes or skills in the framework: (a) communication skills; (b) teamwork; (c) lifelong learning; (d) professionalism; (e) problem-solving and decision-making skills; (f) competence in application and practice; (g) knowledge of science and engineering principles; (h) knowledge of contemporary issues; (i) engineering system approaches; and (j) competence in specific engineering principles (Zaharim et al., 2010).

Training programs: Those structured and procedural activities or efforts designed to improve human performance with the process of teaching, informing, imparting, or educating people to acquire specific levels of knowledge, skills, aptitudes, or abilities and can be applied to: (a) perform a job better; (b) be qualified and proficient in a job; and (c) perform in positions of greater difficulty and responsibility (Jucius, 1975; Richey, 1992; Van Dersal, 1962). Those activities are offered formally by the Malaysian government through higher education institutions and training centers with the objective to improve the skills of existing employees and recent graduates in the workforce and to minimize unemployment.

Higher education institutions and training centers: A formal, accredited, and authorized postsecondary school that awards academic degrees, occupational degrees, certificates, or similar degrees/certificates. These schools or centers receive funding from either federal or state governments for their operations (Mohd Puad, 2012).

Workforce: Those individuals who are in the labor pool of employment, working, available to work, or not working, between 15 to 64 years old, in any companies, industries, organizations, and projects (Department of Statistics Malaysia, 2014).

Unemployment: The state of being unemployed or not having a job, but available for work and actively seeking work in the job market, including those who are waiting for a response from a job application and those persons not qualified to work (Department of Statistics Malaysia, 2014).

## CHAPTER 2: REVIEW OF THE LITERATURE

This literature review synthesizes research related to the perceptions of educators, employers, and recent graduates regarding the role of employability skills training programs in the workforce of Malaysia. Additionally, the review explores the evolution of Career and Technical Education (CTE) and current trends and issues in employability skills. Further, this chapter examines the interdisciplinary conversations regarding employability skills training programs in workforce development, Human Capital Theory, and New Growth Theory; a summary is also provided.

### Evolution of Career and Technical Education

Career and Technical Education (CTE) has evolved and adapted over time in the forefront of human history. The foundations of CTE can be traced to early forms of education, such as education for work and education for culture (Scott & Sarkees-Wircenski, 2008). In education for culture, the main idea has been to transfer knowledge through formalized instruction at home or schools. Such transfer of knowledge has been mainly through books (Scott & Sarkees-Wircenski, 2008). In contrast, education for work prioritizes learning through hands-on experience by using tools, materials, machines, and utensils at home, field, shop, store, or factory (Scott & Sarkees-Wircenski, 2008). Skills gained from practical learning can be transferred readily to work settings. This classical

concept of education for work shares a similar intention with CTE currently, which is to prepare students for the world of work (Gordon, 2008).

From the Paleolithic period through the Iron Age, the concept of education for work evolved in conjunction with invention of tools and technologies, change of culture, thinking, and lifestyle, and use of knowledge and skills. The concept of education originated when parents had the responsibility for teaching their children how to use their minds and hands to perform survival tasks with tools, to secure the basic necessities of life through hunting, trapping, and fishing; provide shelter and clothing; and to make tools (Brewer, 2010; Scott & Sarkees-Wircenski, 2008). Then, the change of environment required more skilled craftworkers and better work training systems instead of depending on father-to-son or mother-to-daughter passage of knowledge and skills. Therefore, the early apprenticeship system appeared in 2100 B.C. during King Hammurabi's governance in Mesopotamia. This education for work system required an artisan to adopt a son and teach him his handicraft skills (Scott & Sarkees-Wircenski, 2008). At the same time, the early organized schools for scribes were recorded between 2000 B.C. and 1200 B.C. This ancient education for culture system focused on helping noble and middle class students to read and write ancient literature. They learned from experienced scribes and followed their teachers' footsteps (Scott & Sarkees-Wircenski, 2008). In Sparta and Athens, schools functioned to train students to be soldiers for war with systematic physical training. Formal education for culture allowed boys to attend school and girls to receive their education at home. Later, the concept of education in Sparta and Athens concentrated less on rigorous training and more on the establishment of higher education, private schools, schools of philosophy, libraries, and laboratories by sophists.

During the Middle Ages from 300 A.D. to 1300s, merchants, skilled craftworkers, and artisans helped the evolution of the concept of education for work. These groups led to the emergence of the apprenticeship and guild systems that focused on practical experiences by using tools, materials, utensils, and machines. Such an apprenticeship system required skilled masters such as merchants, craftworkers, and artisans to teach apprentices about trade knowledge, craft skills, how to write and read, and religion, while providing basic needs such as food, clothing, and shelter (Brewer, 2010). The apprentices were bound to live with their masters and to serve diligently until the apprenticeship contract was completed (Gordon, 2008). Meanwhile, the guild system was established to protect the economic interests of merchants and artisans, control the quality and quantity of production, reduce competition, and provide thorough training for those who were accepted as apprentices to guilds (Scott & Sarkees-Wircenski, 2008). The guilds attracted attention from people at that time because they provided services such as protection and security, health, general education, and training for work to their guild members. Until the 14<sup>th</sup> century and the Renaissance Age, the apprenticeship and the guild systems flourished in producing skilled and qualified workers from the lower- and middle-classes (Scott & Sarkees-Wircenski, 2008). The systems emphasized the acquisition of a strong knowledge base and skill set, a template for general and vocational education today. The idea of combining general and vocational education was attempted during the Renaissance and led to the reformation in education in the following centuries.

Since the 16<sup>th</sup> century, educational reformers have argued about the types of education that best prepare students for the world of work. Martin Luther (1483-1546), an educational and religious reformist, recommended that schooling should be in two parts:

academic education and trade education, which includes Latin, Greek, logic, mathematics, music, history, and science (Scott & Sarkees-Wircenski, 2008). He believed that both elements of education for work and education for culture were crucial to prepare students with the necessary knowledge and skills for work. Similarly, in the 17<sup>th</sup> century, John Locke proposed an idea of a dual system of practical training that consisted of occupational training and management along with recreation (Scott & Sarkees-Wircenski, 2008). Jean-Jacques Rousseau, from 1712 to 1778, initiated manual arts that could serve as a means of mental training and paved the way for a new era in vocational education (Gordon, 2008, p. 3). Similarly, with the growth of industry in Europe from 1746 to 1827, Johann Heinrich Pestalozzi critiqued the importance of industrial education. He claimed that the principles of vocational training were in agreement with general education. Work preparation in vocational education could widen the range of factory skills, dignity, and humanity among workers (Gordon, 2008, p. 3). Even through the present, the debate about work preparation and career education continues with respect to whether students should be specialized in one area or in a variety of areas.

Other major educational reformers who significantly shaped the concept of education for culture and education for work have been Otto A. Solomon and Victor Della Vos. In the 19<sup>th</sup> century, Solomon was the founder of the Sloyd system of education. The system focused on the development of physical and mental powers, dexterity of hand, instillation of general love, and training of senses and habits through woodworking. The purpose of the Sloyd system was to enhance general education by promoting skill training and social interaction (Gordon, 2008; Scott & Sarkees-Wircenski, 2008). The system promoted both concepts, education for culture and education for work. Meanwhile, Victor

Della Vos was a prominent figure in reforming the higher education institution and a new system of industrial education, known as the Russian system of manual training. In comparison to Sloyd, the Russian system of manual training preferred the concept of education for work. Della Vos insisted that the foundation of education for technical and engineering should be based on practical training experience and hands-on instruction from “shops”. Accordingly, technical and engineering students should be instructed by technologists and specialists. Students in the system were taught about tools, material properties, basic operations by using tools, and sub-assembly of machines or object production. The Russian system of manual training became the blueprint for CTE (Cohen & Besharov, 2002; Scott & Sarkees-Wircenski, 2008).

The apprenticeship and guild system movements, Sloyd system, and Russian system of manual training influenced the foundations of the American education system centuries later. In the 1800s, the Mechanics Institute Movement was established to provide adult education, such as technical and industrial instruction, for industrial workers. The movement used both concepts of education, education for culture and education for work for its instruction. The most famous school of the Mechanics Institute Movement was the Franklin Institute of Philadelphia. However, the movement was short-lived and the institutes turned into technical schools, trade schools, and high schools (Scott & Sarkees-Wircenski, 2008). Another American education system is the Manual Labor Movement. Between 1830 and 1845, the Manual Labor Movement aimed to combine manual activity and work, to integrate regular school subjects with agriculture training, and to better prepare students for the larger social interests of life, politics, economics, and



religion (Scott & Sarkees-Wircenski, 2008). The combination of academic and practical subjects has continued in the educational system through present day.

The concepts of education for work and education for culture continued to evolve during the Manual Training Movement. This movement started at Washington University, St. Louis, Missouri and the Massachusetts Institute of Technology (MIT). It focused on the application of engineering principles and the acquisition of skills through the use of tools, machines, and materials in a program of shopwork. Manual training succeeded, expanded, and led to the formation of the cosmopolitan high school, technical school, junior high school, and comprehensive high school, reflecting the present school systems (Gordon, 2008). The Manual Training Movement contributed to the foundation of modern CTE because it prioritized the combination of hands-on experience with classroom learning.

Later, the American Sloyd system was introduced in 1888. The instruction used models of interest to students, teacher-prepared and student-prepared drawings, and group instruction to develop skills of hand tools as acquired by skilled craftworkers. American Sloyd did not endure, but it changed the way practical arts subjects were taught and used trained teachers (Scott & Sarkees-Wircenski, 2008). The Manual and Industrial Arts Movement then evolved during the 1900s. This movement focused on combining creative design with teaching tools and helping students to produce beautiful objects or products with a high value. To align with the status of America as the foremost industrial nation at that time, the name of manual arts changed to industrial arts and included general education (Scott & Sarkees-Wircenski, 2008). The American Sloyd system, Manual Arts Movement, and Industrial Movement continued the concept of combining education for

work and education for culture as the most effective method to prepare students for the world of work.

The combination of education for work and education for culture in America continued to be discussed by progressive education reformer, John Dewey. He was critical about liberal education at that time and advocated for vocational education. He favored instruction and practical activities to nurture natural traits, such as solving problems, while stressing the importance of meaningful and practical outcomes from learning activities. Dewey believed that the main idea of vocational education was to gain life and adaptability skills (Gordon, 2008). Dewey's philosophies regarding education continue to affect and shape the foundation of CTE. Meanwhile, Charles Prosser emphasized the importance of meeting the needs of industry and the need for sequential learning in vocational education. Prosser claimed that successful vocational education required the integration of practicing, thinking, and doing. He introduced the 16 theorems of vocational education that emerged in the Smith-Hughes Act of 1917 (Gordon, 2008; Scott & Sarkees-Wircenski, 2008).

The Smith-Hughes National Vocational Act of 1917, the first vocational education act, provided federal aid to vocational education with respect to teacher preparation and certification, students, and curriculum (Gordon, 2008). Following multiple reauthorizations, the Smith-Hughes Act eventually led to the Carl D. Perkins Vocational and Technical Education Act in 1984. The name of Vocational and Technical Education changed to Career and Technical Education (CTE) in 2006; it remained committed to prepare students with knowledge and skills for work. The Perkins Act of 2006 continued to provide an increased focus on the academic achievement of CTE students, strengthen

the connections between secondary and postsecondary education, and improve state and local accountability (Association of Career and Technical Education, 2014). While Career and Technical Education (CTE) is a formal term used in the United States, other nations frequently use different names, such as Technical and Vocational Education (TVE), Technical and Vocational Education and Training (TVET), Vocational Education and Technology (VET), Vocational Technical Education (VTE), and Technical Education (TE).

Career and Technical Education is currently an important component in the American education system and aims to provide learning experiences, explore career areas, and prepare youth and adults for a wide range of high-wage, high-skill, and high demand occupations and independent living. Career and Technical Education also provides opportunities to students in Science, Technology, Engineering, and Mathematics (STEM) to meet the needs of the workforce. In addition, CTE offers a way to reduce poverty in communities, recover local economies, and sustain economic development. Knowledge and skills gained from CTE are vital for high school students, college students, adults, business, and the economy. Career and Technical Education will likely continue to improve and evolve regarding the preparation of students for the workplace, fulfilling business and industry demands, and applying the concept of education for work and education for culture.

### Employability Skills

In the changing global environment, more people, particularly laid-off workers and students who are preparing to enter the labor market consider employment, the workforce,

and the job market around the world. Previous studies have shown that they have voiced their concerns about their chances of obtaining a job in the future (Shamsuddin et al., 2013). The job market is becoming more competitive and challenging for graduates; a large number of job candidates are competing for a limited number of vacancies. Due to such competition, employers are not only considering applicants with excellent academic degrees, certificates, and technical skills, but also seeking candidates with employability skills. Accordingly, employability skills are increasingly necessary for recent graduates to secure employment in the global labor market.

There is no definitive interpretation and definition of employability skills that may be used in all situations (Brown, Hesketh, & Williams, 2003; Fallows & Steven, 2000a; Harvey, 2001). However, scholars have related employability skills to personal capabilities. Robinson (2000) defined employability skills as those “basic skills necessary for getting, keeping, and doing well on a job” (p. 1). These skills, attitudes, and actions enable workers to get along with their fellow workers and supervisors. Moreover, Robinson contended that employability skills are teachable in both schools and employment settings. Hillage and Pollard (1998) observed that employability skills are individual capabilities that assist in gaining initial employment, maintaining current employment, and seeking new job opportunities, if necessary.

Similarly, Evers, Rush, and Bedrow (1998) identified essential employability skills and specific personal competencies: autonomy, communication, management, and the ability to mobilize innovation. The Department for Employment and Learning of Northern Ireland (2004) stated that employability skills were “the capability to move into and within labor markets and to realize potential through sustainable and accessible

employment” (p. 5). Employability skills also have been described by the Department of Education, Science and Training of Australia (2002) as “non-technical skills and competencies which play a significant part in contributing to an individual’s effective and successful participation in the workplace” (p. 5). These definitions infer that employability skills are highly connected to individual skills and attributes.

Some scholars have related employability skills to the abilities that are needed to meet demands and requirements. For example, Fallows and Steven (2000b) described employability skills as “skills necessary for employment and for life as a responsible citizen” (p. 8). They clearly stated that employability skills are required and universal in numerous situations; they can be transferred into a variety of contexts. Bhaerman and Spill (1988) defined employability skills as those transferable skills necessary for particular occupational environments. Correspondingly, Civelli (1998) viewed employability skills as a series of necessary competencies and knowledge in new or different settings used by an individual or a group of people.

There are interpretations that have delineated employability skills as abilities that are highly required within flexible and dynamic occupational demands and for success in a career. For instance, Harvey (2001) described employability skills as “the possession of basic core skills, or extended set of generic attributes, or attributes that a type of employer specifies” (p. 98). Meanwhile, the Confederation of British Industry (1999) stated that employability skills are the “possession by an individual of the qualities and competencies required to meet the changing needs of employers and customers” (p. 1). Similarly, McQuaid and Lindsay (2005) claimed employability skills were “specific types of demand that may vary across space, time, and employers referring to the individual’s relationship

with a single job” (p. 214). These interpretations suggest that employability skills are valued by employers.

Employability skills have also been explained as a set of skills, understandings, and personal attributes that make a job seeker more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, community, and economy (Yorke, 2004). Moreover, employability skills are “transferable core skill groups that represent essential functional and enabling knowledge, skills, and attitudes required by the 21st century workplace” (Overtoom, 2000, p. 1). These skills are necessary for career success at all levels of employment and for all levels of education. These definitions suggest that employability skills are developed in school and throughout one’s career.

Furthermore, the term employability skills has been viewed from numerous perspectives. From the employer perspective, employability skills are appropriate skills and attributes that may help potential job seekers become employed (Curtis & McKenzie, 2002). They also mention that unemployed persons perceive employability skills as enabling support or a contract for accepting a specific job. However, this perception may be varied and changing depending on the situation. Meanwhile, student and lecturer definitions of employability skills are different. Graduates identify employability skills as higher order thinking skills in coordination with affective skills and traits required to obtain a job (Wickramasinghe & Perera, 2010). Moreover, from the student perspective, employability skills are basic core skills that help employees to complete their tasks successfully. Therefore, there is no exclusively descriptive definition of employability skills since the term can be applied to multiple situations and contexts. Employability

skills are accepted as particular types of demands or attributes, or personal abilities that may vary across environment, time, culture, purpose, and the workplace (McQuaid & Lindsay, 2005).

Employability skills have been identified with various terms based on the context. Employability skills are broadly known as generic skills and attributes in many studies. It is believed that these skills or attributes are common and applicable across occupations (Fallows & Steven, 2000a). The term employability skills has referred to non-technical, soft skills, and non-cognitive skills. These skills are value-added competencies in combination with academic knowledge and skills in a specific major or area (Zaharim et al., 2010). They have also been known as core or key skills for anyone to possess before entering the workplace (Department of Education, Science and Training of Australia, 2002). Moreover, employability skills are related to job readiness skills because they are required for individuals in their preparation for employment (Zaharim et al., 2009). Additionally, generalizable skills have been used in CTE to identify employability skills (Greenan, 1986). Generalizable skills have shared some components and characteristics with employability skills and have similar applications. Employability skills will continue to evolve with respect to their needs, contexts, situations, and applications.

The current trend in Malaysia reveals the lack of employability skills among recent graduates (The Ministry of Higher Education Malaysia, 2012; Tong, 2003; Zaharim et al., 2009). Employers have found that graduates are good technically, but they are weak in non-technical aspects. They can generate engineering solutions to technical problems, but they are unable to present recommended solutions effectively, fail in managing people or human resources, lack confidence in making decisions for an organization, and are unable

to communicate well with customers (Bakar & Hanafi, 2007; Kazilan, Hamzah, & Bakar, 2009; Tong, 2003). To bridge the gaps, employers have to expend more resources in retraining employees to support their employability (Juhdi, Pa'Wan, Othman, & Moxsin, 2010). Employers also may consider hiring professional assistance to complete tasks and jobs caused by incompetent graduates. Such extra cost likely contributes to the dissatisfaction with the quality of graduates among employers.

There is not only an impact on the employer side, but also the lack of employability skills impedes graduates' short- and long-term career progress (Gurcharan Singh & Garib Singh, 2008). In the short term, graduates may not receive promotions and career advancement. They may take more time to develop their personal skills, personal attributes, and knowledge in the workplace. In the long term, workers who are lacking employability skills may underperform, lack motivation, and be demoralized in their career lives, resulting in leaving challenging jobs and lacking confidence and self-efficacy (Kahn, Abdo, Hewes, McNeil, & Norman, 2011).

The concept of employability skills is broad; it can be adapted and applied to any disciplinary area such as engineering. Based on a proposed perspective from Malaysia, engineering employability skills are abilities to perform engineering-related skills, knowledge, and personal attributes to gain and maintain employment, as well as succeed in the field of engineering (Yusoff et al., 2009; Zaharim, Omar, Basri, Muhamad, & Isa, 2009). These skills are important for engineers, technicians, and technologists in applying a basic understanding of general engineering principles and technical skills. Currently, Yusoff et al. (2012) proposes that Malaysian Engineering Employability Skills (MEES) be accepted as a formal national framework for engineering-related programs (Appendix B).



The MEES framework is continuing to develop and open for discussion. The proposed framework may provide a guideline to generate skilled engineers, technicians, and technologists ready for Malaysian industrial practice. It may assist curriculum developers and researchers to focus crucial factors in preparing high engineering employability skills programs in the future. Moreover, the MEES framework can be used as a quality benchmark for engineering students' achievement in higher education institutions and training centers. Malaysian engineering workers could utilize the proposed MEES framework to upgrade their career growth potential.

The proposed MEES framework is grounded by three components: (a) personal attributes, (b) personal skills, and (c) knowledge. These primary components are the integration of 10 individual attributes or skills: communication skills, teamwork, lifelong learning, professionalism, problem-solving and decision-making skills, competence in application and practice, knowledge of science and engineering principles, knowledge of contemporary issues, engineering system approaches, and competence in specific engineering principles (Yusoff et al., 2012). These skills are derived from extensive studies, accreditation criteria, and standards by scholars in TVE and engineering education areas.

The personal attributes component that influences employability skills is expressed as the integration of five proposed skills: (a) communication skills, (b) teamwork, (c) lifelong learning, (d) professionalism, and (e) problem-solving and decision-making skills. These five personal attributes enable an individual to work effectively with others in the engineering workplace and society at-large (Zaharim et al., 2010). Meanwhile, the personal skills component is comprised of six integrated skills: (a) communication skills,

(b) teamwork, (c) problem-solving and decision-making skills, (d) competence in application and practice, (e) engineering system approaches, and (f) competence in specific engineering principles. The personal skills reflect individual abilities to get, keep, and succeed in a regular engineering position (Zaharim et al., 2009). Further, the knowledge component that influences employability skills is outlined as the integration of five proposed skills: (a) lifelong learning, (b) problem-solving and decision-making skills, (c) knowledge of science and engineering principles, (d) knowledge of contemporary issues, and (e) engineering system approaches. These key skills reflect the necessary understanding of scientific and technological principles in the field of engineering (Yusoff et al., 2012).

#### Employability Skills Training Programs in Workforce Development

In response to rapid changes in technology and the economy, programs and strategies have been initiated to increase knowledge and skills of the workforce. One of the strategies is an employability skills training program, a crucial plan to develop a knowledgeable and highly skilled workforce. Training programs are also initiated to minimize unemployment in, improve the skills of, and retrain the existing workforce. For these reasons, it is imperative to review conversations about the role of employability skills training programs in the workforce, the perceptions regarding employability skills training programs, and the assessment and evaluation of employability skills training programs in Malaysia.

The role of employability skills training programs is vast. One of the roles is the professional advancement of the labor force. Hedges (2011) disclosed that employability

skills training programs are an integral part of professional advancement and development. By enrolling in such training programs, employees and recent graduates can acquire knowledge and skills that are related to their professions, job responsibilities, and work environment. Employees can gain a higher level of knowledge and skills from training programs. As a result, they can be qualified for career advancement and promotion. Further, employers acquire better prepared workers through continuous employability skills training programs (Dawe, 2004; Johnson, 2014). Additionally, employees are developed in terms of their aptitudes, disciplines, and performance-management skills. Consequently, these workers can adapt to challenges and difficulties in the workplace. Employability skills training programs also play a crucial role in developing professionalism of the workforce (Dawe, 2004; Hedges, 2011; Johnson, 2014).

The role of employability skills training programs continues as a medium for knowledge and skills transfer in the workforce (Laker & Powell, 2012). By implementing training programs, knowledge and skills can be shared between employers or industrial experts and employees. Knowledge and skills related to the workplace are varied and wide-ranging, such as technical information, safety and health guidelines, quality specifications, and market demands. Successful transfer of job-related knowledge and skills leads to the development of the competency of workers; therefore, it develops their knowledge in a high-skilled workforce (Leong, 2011). Johnson (2014) and Mustapha and Rahmat (2013) claimed that the transfer of knowledge and skills including, but not limited to organization, management, and operation, prepares employees to be competitive in the challenging job market.

Although Laker and Powell (2012) claimed that training programs are less significant to transfer skills in comparison to technical knowledge, Robinson (2000) contended that employability skills are teachable. The transfer of employability skills through training programs improves an employee's basic skills. The transfer can be more effective if training programs resemble a real workplace environment. Skills and knowledge gained from training programs can be implemented directly to work settings.

Dawe (2004) and Dutton (2012) discussed the role of employability skills training programs as a preparation or an introduction for recent graduates and employees to work in industry. Employability skills training programs serve as a platform to expose trainees or new graduates to challenging careers in growing and emerging industries. Recent graduates and employees gain valuable experience and exposure to real work environments. Further, organized employability skills training programs give workers support and knowledge of job responsibilities. Experience and knowledge gained from training programs assist recent graduates and employees to face the challenges and demands of the workplace. They can use their experiences and knowledge as a reference point before solving problems and making decisions.

The role of employability skills training programs is to address employees' and recent graduates' weaknesses and limitations. Employee weaknesses hinder them from giving the best services to their companies. Therefore, employability skills training programs play an important role in assisting workers in eliminating these weaknesses. By enrolling in training programs, employees have opportunities to strengthen their skills, especially in areas in which they need the most improvement (Social Research Center, 2014). Employability skills training programs also assist other employees in gaining

similar skills and knowledge. Instead of only benefitting the individual employee, training programs also address the weaknesses of employee groups and bring them together to a higher and uniform level of performance.

Another purpose of employability skills training programs is to enhance organizational productivity, efficiency, and effectiveness (ABC Life Literacy Canada, 2014; Bhatti & Kaur, 2010). Through training programs, employees and recent graduates acquire new knowledge and skills related to job tasks in the workplace. The acquisition of additional knowledge and skills, such as communication, teamwork, lifelong learning, problem-solving, and decision-making skills, elevates the ability of employees and recent graduates to (a) work across job functions, (b) apply knowledge and skills, (c) think critically, and (d) act logically. They will understand more about their job demands and procedures, responsibilities, and opportunities for advancement (Johnson, 2014). Hence, they can perform jobs at a faster rate and adapt to change in today's global economy. Consequently, workers enhance their overall performance. Johnson also emphasized the importance of employability skills training programs regarding the increase of job satisfaction among employees; training programs in the workplace can also increase the loyalty of employees. Engaged and motivated employees are more likely to remain in their jobs and be loyal to their employers. Moreover, training programs raise worker satisfaction with their roles in organizations. As a result, the company realizes improvements in production, service, and output.

Training programs function to expand employment opportunities and increase competitiveness for job-seeking individuals, especially recent graduates (ABC Life Literacy Canada, 2014). Some recent graduates are uncertain in regards to what they

should do in the transition stage between school and work. They may be lacking knowledge and skills to obtain a professional position in the challenging market. Employability skills training programs offer necessary information, knowledge, and skills including how to secure employment. With improved knowledge and skills from training programs, they can increase their employment opportunities and competitiveness in the job market.

Curran (2010) and Garavan (1997) viewed an in-house training program as a vital strategy for employers to increase motivation among their employees. This strategy can be seen in many company policies. After working for a long period, employees may seek external support, protection, or guidance to stimulate their motivation to work. Employers can utilize training programs to increase the level of motivation among workers. At the same time, employees may develop a friendly relationship among themselves through training programs, which can influence their overall efficiency and performance.

Based on scholarly reviews, employability skills training programs also improve the occupational safety and health of the workforce. The ABC Life Literacy Canada (2014) claimed that employability skills training programs can lead to fewer injuries and health risks. Employees gain more understanding of safety regulations and standard procedures in operating tools, machines, and instruments in the workplace. This promotes the culture of occupational safety and health as well as mitigates injuries and health risks among workers. The decreased number of injuries and accidents reduces insurance costs and employee downtime as well.

Skills development has been viewed by the International Labour Organization (ILO) as an essential element in improving the quality of life and reducing poverty. Skills

training, such as employability skills training programs, enable the working poor and vulnerable groups in the workforce, including minorities, rural communities, and special needs populations to escape from the vicious circle of inadequate education and training (International Labour Organization, 2014). People in these groups who face difficulties in accessing quality job training can benefit from employability skills training programs by obtaining better employment. Training improves their necessary knowledge and skills as well as secures employment. Consequently, this secures their earnings and lowers the likelihood of unemployment and poverty.

The role of employability skills training programs is expansive. Employability skills training programs are crucial in developing the skills of the workforce as well as minimizing unemployment. However, there is a lack of research studies regarding the effectiveness of employability skills training programs and the perceptions of stakeholders. Such a gap also applies to assessment and evaluation studies of employability skills training programs. Researchers have not assessed and evaluated training programs to any significant extent. Instead, they have focused more on the identification of the components and criteria of employability skills and the perceptions toward skills.

Research has been conducted pertaining to the development of employability skills of the Malaysian Engineering Employability Skills (MEES) framework. The MEES framework proposed by Yusoff et al. (2012) and Zaharim et al. (2010) can be utilized in developing employability skills, especially among engineering students before they enter the workforce (Appendix B). The components and elements of the proposed framework were developed from extensive research, accreditation criteria, standards, and employer

feedback. The researchers outlined three major components: (a) personal attributes, (b) personal skills, and (c) knowledge. Such a framework can be a guide for stakeholders in developing the employability skills of the engineering workforce. However, the study did not involve assessment and evaluation of training programs.

Bakar and Hanafi (2007) conducted a study concerning the elements of employability skills of technical and vocational students in Malaysian technical training institutes. The study assessed students' level of employability skills and differences by gender and program major. The researchers adapted the instrument from the Secretary's Commission on Achieving Necessary Skills (SCANS) model. The instrument assessed seven constructs of employability skills that were guided by the SCANS model: (a) basic skills, (b) thinking skills, (c) resource management skills, (d) informational skills, (e) interpersonal skills, (f) system and technology skills, and (g) personal quality skills. The findings indicated that the overall level of employability skills of technical and vocational students was high. However, the study did not include assessment and evaluation of technical training institutes in Malaysia. Also, the study did not focus on important employability skills, such as communication skills, teamwork, lifelong learning, and professionalism.

Yet, there have been studies that examined the elements of employability skills in Malaysia. These studies, conducted by Yusof et al. (2004) and Othman et al. (2009), identified critical thinking, problem-solving, cooperation and teamwork, self-confidence, and lifelong learning as important skills that assist students to succeed in the job market; such skills are crucial for students to obtain employment. These studies, however, did not include assessment and evaluation of employability skills training programs. Overall,



there has been a lack of research and academic studies regarding assessment and evaluation of employability skills training programs in Malaysia. Accordingly, identification of the components, criteria, and level of employability skills are needed as well as research regarding assessment and evaluation of training programs. Assessment and evaluation research can help promote the progress and determine the effectiveness of employability skills training programs. Therefore, it is imperative to investigate the effectiveness and role of employability skills training programs in the workforce of Malaysia.

#### Human Capital Theory

The introduction of human capital and economic development dates back to 1954 when William Arthur Lewis posited the impact of the neo-classical model of labor supply affiliated with the socio-economic productivity of a nation (Lewis, 1954). To maintain the marginal productivity of labor and to propel economic development in a nation forward, Lewis asserted that the relative number of workers is important to local natural resources. He proposed the imperative of grooming the local unskilled workforce seriously so they can obtain a higher standard of living and benefit from increased efficiency and improved wages. Mincer (1958) extended the concept of human capital by asserting the theoretical model of income distributions among individual differences. He highlighted the need for income distribution in human capital investment through a theoretical model connected to training. Mincer recommended that training should constitute higher annual pay for laborers and retirement benefits. His perspective heightened awareness about the importance of workforce education and training.

Schultz (1961) contributed significantly to the knowledge base of research in human capital development by critically explaining Human Capital Theory. He viewed knowledge and skills as vital elements in developing human resources. Through education and training, people acquire useful knowledge and skills as a form of capital. Schultz also believed that schooling expands the range of job opportunities available in the workforce, enhances wages, improves social and economic progress, and increases productivity. Education elevates the quality of consumption of workers throughout their careers. Schultz highlighted the notion that education and training are investments that yield returns in the development of the workforce.

Consequently, Mincer (1962) and Bowman (1969) shared human capital as a form of investment in education or training. They believed that education and training activities contribute to economic growth, improve the quality of the workforce, and raise private and social returns. They expanded the concept of Human Capital Theory by viewing human resources as similar to physical properties in production, including factories and machines, that one can invest in through education, training, schooling, social services, and health. Outputs from investments can yield private or general returns. Private returns benefit an individual, such as additional earnings, higher skills, and higher academic degrees. Additionally, general returns benefit society, such as productivity, income tax collections, health awareness, and trust within communities.

Equally, Blaug (1976) suggested that people take advantage of all available resources, including formal schooling and on-the-job-training. Both resources increase individuals' knowledge and skills. Improved knowledge and skills related to jobs enhance earning potential and future commercial and non-commercial returns. He posited that

schools and training institutes are investments rather than consumptions in developing the workforce. Blaug contended that education provides students with the necessary general education and specific training for transferring knowledge and skills to the workplace.

Since the beginning of Human Capital Theory, scholars have maintained that education and training are highly instrumental in improving productivity and enhancing the capabilities of a population. Almendarez (2011), Mustapha (1999b), and Xiao (2002) reaffirmed the crucial factor of education and training in imparting knowledge and skills for private and social benefits. According to their research, individuals who acquire knowledge and skills enhance their abilities to deal with disequilibria in changing economic conditions. Knowledgeable and skilled workers improve their abilities to expand opportunities for salary increments during their careers. At the same time, education is important for transferring knowledge and skills to the workforce. Investments in education and training increase potential employment among job seekers, allowing people to benefit from pecuniary and non-pecuniary returns, and giving workers opportunities for job mobility across industries and nations (Nafukho, Hairston, & Brooks, 2004; Olaniyan & Okemakinde, 2008).

Furthermore, Fitzsimons (1999) reformulated the concept of investment in education and training. He claimed that education and training in the workforce is a key strategy to survive in the new global economy. In the global economic environment, the economic market is fueled directly by a knowledgeable and skilled workforce (Organisation for Economic Co-operation and Development, 1996). This type of workforce drives research activities within a nation. Research activities lead to product invention and the discovery of new technologies, therefore, developing a country's

economy. This evidence can be seen in the economic performance report published by the Organisation for Economic Co-operation and Development (OECD) countries. Such countries are growing based on their knowledge and learning capabilities. A knowledgeable and skilled workforce contributes to the growth of employment opportunities. Employers prefer to hire trained laborers for their organizations rather than insufficiently skilled new graduates. Employers have to expand more resources to retrain employees to support their knowledge and skills (Juhdi et al., 2010). Such employees are a cutting-edge advantage for industries that want to remain competitive in the global market.

The concept of Human Capital Theory can be implemented at any level of society, including an individual, organization, community, and country. Human capital is also essential to sustain a competitive advantage in society (Bianco, 2014). For example, an individual's expertise is referred to as his or her intellectual capital, which may include skills, knowledge, experiences, thinking, and opinions. Although intellectual capital can be difficult to assess, individuals and companies benefit from intellectual capital in private and social returns. Qualities and capabilities possessed by workers are valuable and important assets to their employers to survive in today's global economic environment.

Despite the benefits of Human Capital Theory, there are several arguments in dispute concerning the concept. Schultz (1961) expressed his concern with respect to the assessment of investments and benefits for human resources. It is difficult to measure expenses and returns exactly due to both quantitative and qualitative dimensions in human resources. For example, social factors are vast and it is difficult to quantify them. Furthermore, Schultz recommended five major categories that should be included in the

theory: (a) health facilities and services, (b) on-the-job training, (c) formally organized education at the elementary, secondary, and higher education levels, (d) study programs, and (e) migration of individuals and families. These factors are germane to overcome barriers in measurement and improve human capabilities. However, it is complex to accurately measure these factors exactly because their definitions and interpretations are subjective. Other scholars, such as Blaug (1976), Jamil (2004), Mincer (1962), Olaniyan and Okemakinde (2008), Psacharopoulos and Patrinos (2004), and Steinberg (1985) shared similar concerns, too. The problem in quantifying human resource factors has become a barrier and discrepancy for Human Capital Theory.

Researchers and economists have been able to demonstrate a direct statistical relationship between investment in education and training with earnings; however, they have not been able to show a cause and effect relationship (Bianco, 2014; Jamil, 2004). There is no apparent study reporting that investment in education and training is a causative factor for higher earnings and productivity. There are also explained and unexplained non-educational factors that influence career earnings. One of the factors is individual ability. Highly-educated individuals are likely to possess personal ability, competency, self-discipline, and motivation to succeed and gain higher salaries. Therefore, high income and career success are not solely because of education gained; they are also influenced by personal attributes.

Another critique of Human Capital Theory is the screening hypothesis or skepticism of higher education. Accordingly, theoretically, higher education serves to grade and label students in the workforce. In reality, a higher level of education and training does not necessarily ensure individuals to become more productive in their

careers and lives. The education they gain may yield credentials that are associated with higher-paying jobs. They may secure professional positions associated with high salaries because of degrees and reputations from particular schools and institutions. Therefore, the reason they succeed is not solely because of investment in education and training; it may be due to academic degrees and credentials.

Although there have been discrepancies surrounding Human Capital Theory, there is no doubt the returns of education and training to individuals, firms, and economies are important. Individuals spend some portion of their income on education in return for increased future earnings. Employers fund training of workers with the expectation of gaining returns in productivity, creativity, innovation, competitiveness, and more profit for the business. By using a similar standard economic model, the benefits of education and training influence the gains in the economy as a whole.

The general concept of Human Capital Theory is that additional investment yields additional output. Education and training are assets of investment, while outputs result in economic gains for individuals, businesses, society, and nations. The process of education and training is able to assist the workforce in securing employment and compete in the global market. Education and training are pivotal investments in developing human resources and generating economic growth.

### New Growth Theory

Similar to Human Capital Theory, New Growth Theory creates economic growth as a result of endogenous forces. The theory emphasizes economic growth from increasing returns associated with new knowledge. Cortright (2001) defined New Growth

Theory as the ability to develop the economy through investment in increased knowledge and information rather than through physical work or capital, providing boundless opportunities for economic growth. He viewed knowledge as the key driver to generate the economy of a nation without being subject to diminishing returns. With increasing knowledge and information, the potential and capital of a nation are endless (Mihm-Herold, 2010). In addition to growing knowledge and information, Romer (1990) emphasized the importance of ideas and innovation for national economic development.

According to Cortright (2001), there are two key perspectives in New Growth Theory: (a) technological progress as a product of economic activity, and (b) knowledge and technology as increasing returns. The former allows the incorporation of technology into a model regarding how the market works. A high level of technological involvement accelerates the economic growth of a nation. This evidence can be seen by the environments of developing and modern nations that benefit and flourish from the progress of technology, such as Japan, the United States, Germany, and Sweden. These countries optimize the increasing use of technology, research, and innovation to propel their economic growth. The latter drives the process of economic growth because knowledge and ideas can be shared, reused, and evolved infinitely, generating economic growth for a community and nation.

The Organisation for Economic Co-operation and Development (OECD) continues to explore possible methods to directly incorporate more knowledge and technology into an economic development model. A recent OECD report mentioned that the economic trends of OECD countries today are centered on the production, distribution, and use of knowledge and information (Organisation for Economic Co-operation and Development,

1996). Through investments in research and development, education, training, or as in new managerial work, Human Capital Theory attempts to understand the role of knowledge and technology in leading productivity and economic development. In OECD nations, there are large investments in high-technology industries and a significant amount of skilled and knowledgeable laborers.

According to Cortright (2001), further implications of New Growth Theory include the change of perspectives about the importance of history in shaping development trajectories, role of institutions in providing a framework for growth, and importance of place to revive economic interests in different locations within a nation. This change in understanding guides the economic development of knowledge-based countries. In addition, the theory stresses that governments need to invest in expanding knowledge and culture. Local authorities should invest in human capital management, education, skills, and training development. Further, they should support research and development efforts in the private sector to encourage investment, thereby stimulating new knowledge and products.

The notion of New Growth Theory corresponds with the concept of Human Capital Theory. New Growth Theory emphasizes investments in human resources for economic growth, particularly in the creation of knowledge. Knowledge and information can be in the form of education, innovation, and training that are not subject to the law of diminishing returns. By having innovation in technology and capital growth, the productivity curve shifts upward. The more resources that are expended for education and training, the more knowledge and innovation can be created, resulting in a high and positive productivity curve.



### Summary

The history of CTE started in the early beginning of humankind; the concepts of education for work and education for culture are the historical foundations of CTE and general education. The earliest organized schools for scribes promoted the concept of education for culture by focusing on reading and writing ancient literature. Meanwhile, the apprenticeship and guild systems introduced the concept of education for work through hands-on learning and skill experiences. Then, the Reformation and movements in education from the 15<sup>th</sup> to 18<sup>th</sup> centuries emphasized the needs for integration, development, and advancement of the concept of education for work and culture. The Smith-Hughes Act of 1917, the Carl D. Perkins Career and Technical Education Act of 2006, and other federal legislation and funding provided support for the integration of academic and technical education. Career and Technical Education has focused on offering integrated learning experiences, exploration of career pathways, providing STEM-based job opportunities, and preparing students for high-wage, high-skill, and high-demand occupations. The ideal concept of education to best prepare students for the world of work continues to evolve over time, commensurate with business and industry requirements, and the needs in local contexts.

There is no single definition of employability skills that can be applied in all situations and contexts; it is a broad and universal concept. Employability skills are strongly related to important individual capabilities required by employers. The skills are also embedded in curriculum, defined by achievements and transferable core skill groups across careers and occupations. Employers, students, and educators may perceive employability skills differently, but they tend to agree on the benefit of possessing these

skills; they assist job seekers to obtain employment and succeed on the job. Further, recent research indicates that graduates and job seekers are having difficulty fulfilling work requirements and professional expectations because of their lack of employability skills.

Human Capital Theory suggests that additional investment yields additional output. Investment is in the form of education and training; human resources are the assets of investment. Output is in economic gains for individuals, businesses, society, and nations. Additionally, the process of education and training is able to assist people to secure employment in the global market. Hence, education and training are pivotal investments in developing human resources. This view is shared by New Growth Theory that focuses on the progress of technology as a product of economic activity, and knowledge as a factor to obtain significant future returns. Consistent with both theories, employability skills training programs represent an essential strategy and critical investment in improving the skills of the workforce and minimizing unemployment. Therefore, it is important to support and protect the investment. Accordingly, it is imperative to investigate the role of employability skills training programs in the workforce of Malaysia.

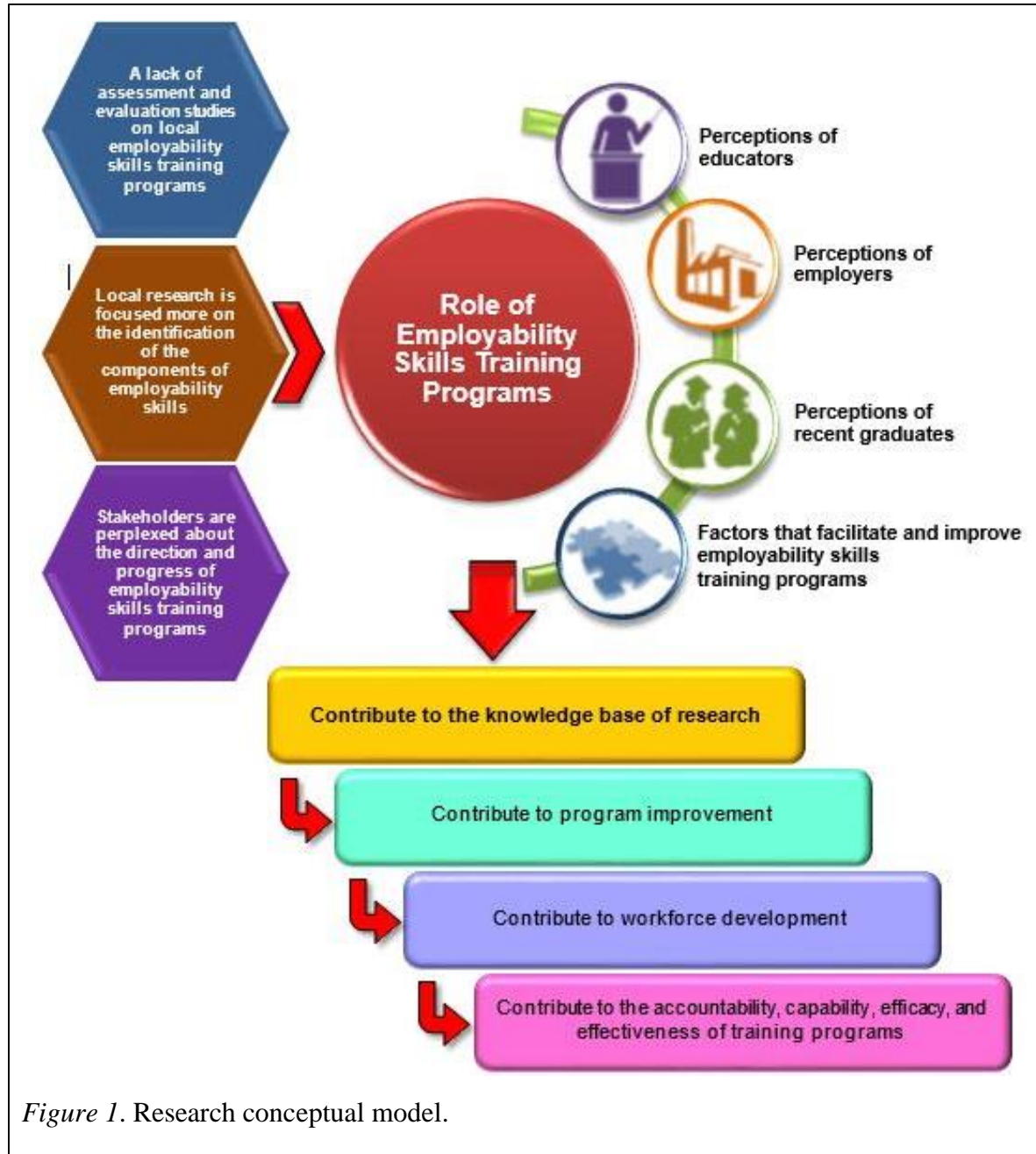
## CHAPTER 3: METHODOLOGY

The main purpose of this study was to determine the perceptions of educators, employers, and recent graduates regarding the role of employability skills training programs in the workforce of Malaysia. Additionally, this study examined the involvement of recent graduates in training programs. Further, this study sought to identify recommendations for program improvement. This chapter includes methodology with respect to the rationale, theoretical framework, research design, population and sample, instrumentation, pilot study, data collection, and data analysis.

### Rationale

Due to a gap in studies about training programs and stakeholders seeking direction for training programs, this research study aimed to investigate the perceptions of educators, employers, and recent graduates regarding the role of employability skills training programs in the workforce of Malaysia. This was a descriptive study; it reflected the naturally occurring behaviors, attitudes, or other characteristics of educators, employers, and recent graduates. Moreover, this research study used a survey to examine the role of employability skills training programs and observe factors that facilitate and improve employability skills training programs. The descriptive survey design reflected

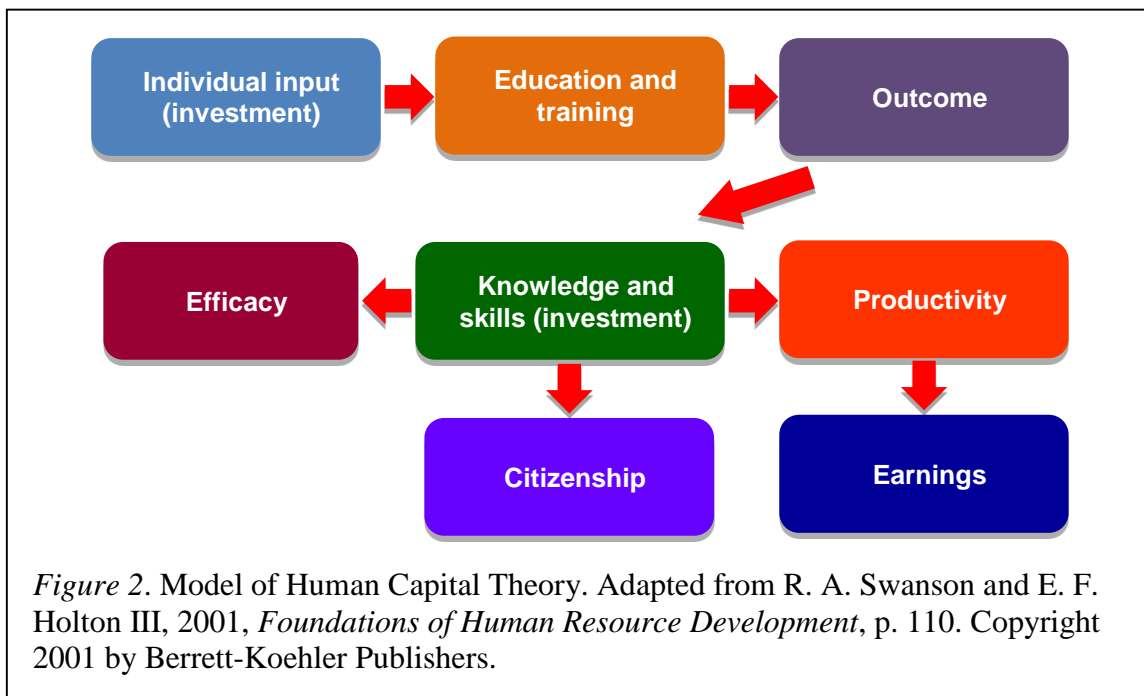
the perceptions of a large scale population. The conceptual model for this study is presented in Figure 1.



### Theoretical Framework

The theoretical framework for this study was based on Human Capital Theory. As a developing country, it is increasingly important for Malaysia to focus on human resource development by strengthening a skilled labor pool for the nation. A sufficient number of highly skilled workers are required to enhance the country's productivity and growth. Skills and knowledge provide a competitive edge in a knowledge-based economy and increase global competition from human resource-rich countries.

Human Capital Theory is an investment that yields additional output. Investment is in the form of education and training. Human resources are assets of the investment, while output is in economic gains for an individual, business, society, and nation. The process of education and training is able to assist persons to secure employment and deal with the global market. Hence, education and training are pivotal investments in developing human resources. A model of Human Capital Theory is illustrated in Figure 2.



Employability skills training programs represent an essential strategy and crucial investment to improve the skills of the workforce and minimize unemployment in Malaysia. It is important to maintain such an investment. Due to an apparent lack of assessment and evaluation studies and the concern of stakeholders about the direction of training programs, it is critical to investigate the role of employability skills training programs in the workforce of Malaysia.

### Research Design

This study examined the perceptions of educators, employers, and recent graduates regarding the role of employability skills training programs in Malaysia. This was a descriptive and quantitative study. A survey was used with a sample drawn from a population of educators, employers, and recent graduates. It collected the perceptions of educators, employers, and recent graduates.

The survey research design was important for this type of study. According to Fraenkel and Wallen (2006), the implementation of a survey research design can describe the characteristics of a given population. It also reports the beliefs, opinions, behaviors, and attitudes of the respondents of a given population (Ary, Jacobs, & Sorensen, 2010). Therefore, the survey design depicted the perceptions of educators, employers, and recent graduates regarding the role of employability skills training programs in the workforce of Malaysia.

### Population and Sample

There were three population groups for this study. All the population groups were from the central economic region of the west coast of peninsular Malaysia. This location consists of three states: Selangor, Kuala Lumpur, and Negeri Sembilan. The central economic region of the west coast of peninsular Malaysia was selected because the region was the most developed area in the country and there were many industries in this location (Appendix C).

The first population was engineering, technical, and vocational educators in public higher education institutions. The directory of educators was obtained from the website of higher education institutions (Appendix D). The website included 920 full-time educators in the research location. Cohen's Power Analysis was conducted on the 920 educators. As a result, 272 educators were selected randomly and composed the sample for this study.

The second population consisted of employers in the manufacturing sector. The employers were in firms, companies, and organizations in the manufacturing sector registered under the Malaysian Investment Development Authority (MIDA). The MIDA is the government's principal agency for promotion of the manufacturing and services sectors in Malaysia. This employer category was chosen based on the assumption that most university graduates who majored in engineering, technical, and vocational education programs were working in the manufacturing sector. Management personnel, such as supervisors, human resource managers, directors, and heads of departments represented employer perspectives. The list of manufacturing employers was obtained from the MIDA. The researcher sent messages through e-mail to the MIDA to request the

directory of manufacturing employers. There were 359 manufacturing employers in the research location. Cohen's Power Analysis was conducted on the 359 employers. A total of 186 employers were selected randomly and composed the sample for this study.

The third population included recent graduates who were enrolled in employability skills training programs. The researcher limited this study to employability skills training programs that were offered in higher education institutions and training centers in the research location (Appendix E). Only three programs were involved in this study: (a) Industrial Skills Enhancement Program (INSEP), (b) Workers Technical Transformation Program (WTTP), and (c) Graduate Enhancement Skills Programme (GEMS). The directory of recent graduates in the programs was provided by training centers. A total of 284 recent graduates were enrolled in the three training programs. All recent graduates were selected and included in the sample because it was difficult and impractical to select subjects randomly from this population.

### Instrumentation

The Employability Skills Training Program Survey was used to assess the perceptions of educators, employers, and recent graduates regarding the role of employability skills training programs in the workforce of Malaysia. Items in the survey were adapted with permission from Yusoff et al. (2012) (Appendix F), developed from the review of literature regarding Human Capital Theory, and from the researcher's knowledge and experiences with respect to education, training, and the workforce in Malaysia. Items were adapted because this study included parts similar to Yusoff et al.'s



(2012) study. Additionally, following an extensive review, there was no established, reliable, and valid instrument available to use in this study.

The survey consists of three parts: Part A, Part B, and Part C (Appendix G). For the introduction, the survey provides respondents with a purpose statement. Part A contains five-point Likert-type scale items: Strongly Disagree (SD)=1, Disagree (D)=2, Undecided (U)=3, Agree (A)=4, and Strongly Agree (SA)=5. Respondents were asked to indicate and rate their perceptions about the role of employability skills training programs. In Part B, participants were asked to rank-order and list issues, barriers, facilitators, and recommendations related to employability skills training programs in Malaysia. Part C requested demographic information including gender, age, ethnicity, highest level of education, and program major.

The detailed development of the survey is explained in Appendix H. In Part A, there is a total of 65 items. Items 1 through 42 address Research Question 1 that assesses the perceptions of educators, employers, and recent graduates about the contribution of employability skills training programs toward improvement of the skills of the Malaysian workforce. These items were adapted from the Malaysian Engineering Employability Skills (MEES) framework by Yusoff et al. (2012). There are 10 individual attributes or skills in the MEES framework: (a) communication skills, (b) teamwork, (c) lifelong learning, (d) professionalism, (e) problem-solving and decision-making skills, (f) competence in application and practices, (g) knowledge of science and engineering principles, (h) knowledge of contemporary issues, (i) engineering system approaches, and (j) competence in specific engineering principles. These 10 skills were adapted to construct the survey items. The MEES framework was adapted because it was practical in

assisting engineering graduates to develop their skills before entering the workforce. It was developed by using standards and requirements from local industries and educational systems. Table 1 presents the survey items and their relationships with the skills in the MEES framework.

Table 1

*Perceptions of educators, employers, and recent graduates regarding the contribution of employability skills training programs for improving the skills of recent graduates*

Item in Part A	Skill
1, 2, 3, 4	Communication skills
5, 6, 7, 8, 9	Teamwork
10, 11, 12	Lifelong learning
13, 14, 15, 16, 17	Professionalism
18, 19, 20, 21	Problem-solving and decision-making skills
22, 23, 24	Competence in application and practices
25, 26, 27, 28	Knowledge of science and engineering principles
29, 30, 31, 32	Knowledge of contemporary issues
33, 34, 35	Engineering system approaches
36, 37, 38	Competence in specific engineering disciplines

Table 2 illustrates items 39 through 45 that address Research Question 2 which focuses on the perceptions of educators, employers, and recent graduates regarding the contribution of employability skills training programs for minimizing unemployment in the workforce of Malaysia. These items were developed and derived from Human Capital Theory and the review of literature in education and training. Items 39 and 40 include statements about the role of training programs to assist participants in obtaining employment and preparing trainees to enter the competitive workforce. These statements were included in the survey because they were the major principles in Human Capital

Theory and the reason training programs were initiated (ABC Life Literacy Canada, 2014; Schultz, 1961; The Economic Planning Unit, 2010). Meanwhile, Curran (2010), Garavan (1997), and the Social Research Center (2014) supported the importance of training programs in motivating graduates to work in challenging industries and in addressing the weaknesses of program participants. Training programs can also provide credential qualifications to work, facilitate job-matching between graduates and employers, and improve the assimilation and integration of graduates into the workplace. These benefits are perceived to assist in minimizing unemployment. These roles were included in items 41 through 45.

Table 2

*Perceptions of educators, employers, and recent graduates regarding the contribution of employability skills training programs in minimizing unemployment in the workforce of Malaysia*

Item in Part A	Role of training program
39	Help participants to get employment
40	Prepare graduates for the workforce
41	Address graduates' weaknesses
42	Provide credential qualifications
43	Facilitate job-matching
44	Improve assimilation and integration
45	Motivate graduates to work

Table 3 presents items 46 through 54 addressed by Research Question 3 that focuses on the contribution of employability skills training programs in developing the workforce of Malaysia. Items related to the contribution of training programs to the social and economic development of the country were included because Schultz (1961) and

Table 3

*Beliefs of educators, employers, and recent graduates regarding the contribution of employability skills training programs to workforce development in Malaysia*

Item in Part A	Role of training program
46	Contribute to social development
47	Transfer knowledge and skills
48	Serve as professional development
49	Increase productivity and efficiency
50	Give valuable experiences
51	Contribute to economic development
52	Increase job satisfaction
53	Improve occupational safety and health
54	Respond to changing skills and technology

Bianco (2014) suggested that they are among the most important in Human Capital Theory. The role of training programs is significant to the development of the workforce. For example, Johnson (2014), Laker and Powell (2012), and Mustapha and Rahmat (2013) agreed that training programs allow for the transfer of knowledge and skills. Dawe (2004) and Hedges (2011) noted that training programs serve as continuous professional development for the workforce. Additionally, the role of training programs is to increase productivity and efficiency of the workforce (ABC Life Literacy Canada, 2014; Bhatti & Kaur, 2010). Dawe (2004) and Dutton (2012) believed that valuable experiences can be gained from training programs. Further, Johnson (2014) supported the claim that training programs increase job satisfaction of employees. Mustapha (1999b) indicated the need of TVE to respond to the changing nature of skills and new technology. This is one of the crucial roles for TVE and training programs. These perspectives were reflected in items 46 through 54 in the survey, suggesting that training programs can contribute to the development of the workforce in Malaysia.

Items 55 through 61 address the factors that facilitate the involvement of recent graduates in employability skills training programs in Research Question 4. These items were derived from the review of literature and the researcher's knowledge and experiences with respect to education, training, and the workforce in Malaysia (Table 4). Items 55, 56, and 57 were constructed from the findings of research studies. Research had reported that the lack of skills and work experiences and the mismatch of skills and job requirements are among the main issues and problems in the local workforce (The Ministry of Higher Education Malaysia, 2012; Tong, 2003; Zaharim et al., 2009). Specifically, there have been strong views about the downsizing of industries and negative perceptions of new graduates by employers. Training programs can provide better job opportunities; they are the last option for recent graduates. Therefore, these elements were adapted in survey items 58 through 61 to assess those factors that facilitate the involvement of recent graduates in employability skills training programs.

Table 4

*Factors that facilitate the involvement of recent graduates in employability skills training programs*

Item in Part A	Factor
55	Lack of employability skills among recent graduates
56	Mismatch between employer requirements and skills of
57	Lack of work experiences among recent graduates
58	Downsizing of industry
59	Industries have negative perceptions of recent graduates
60	Training programs provide better job opportunities
61	Training programs are the last option for recent graduates

In Part B, there is a total of five items. Items 1 through 5 address Research Question 5 that assesses the recommendations of educators, employers, and recent graduates for improving employability skills training programs (Table 5). These items were adapted from the review of literature and the researcher's knowledge and experiences about education, training, and the workforce in Malaysia. Items 1 and 2 yield responses about issues and barriers related to employability skills training programs in Malaysia. Items 3 and 4 ask for respondents' perspectives regarding the facilitators of training programs and the most important skills for graduates to obtain employment. The findings in Part B assisted the researcher to investigate methods for improving employability skills training programs.

Table 5

*Recommendations of educators, employers, and recent graduates for improving employability skills training programs*

Item in Part B	Recommendation
1	Issues related to training programs
2	Barriers to training programs
3	Facilitators to improve training programs
4	Most important skills for recent graduates

The demographic information section in Part C was developed based on the researcher's knowledge of and experiences with the population groups. There are 14 demographic information items for educators, 15 items for employers, and 17 items for recent graduates. These items describe the characteristics of engineering, technical, and

vocational educators, manufacturing employers, and recent graduates who participated in this study. Table 6 presents the development of Part C of the survey.

Table 6

*Items in the demographic information section of the survey*

Demographic information	Item in Part C
Gender	1
Age	2
Ethnicity/ Race	3
Highest level of education	4
Respondent group	5
Program major (educator)	6A
Present position (educator)	7A
Total years of teaching experience	8A
Total years of administrative experience	9A
Educator involvement in training programs	10A
Present position (employer)	6B
Total years of management and administrative experience	7B
Company size	8B
Type of ownership	9B
Employer involvement in training programs	10B
Products of the company	11B
Program major (recent graduates)	6C
Duration of industrial training	7C
Cumulative Grade Point Average (CGPA)	8C
Year of graduation	9C
Work experience	10C
Relevance of work experiences	11C
Current training program	12C
Recent involvement by graduates in extracurricular activities	13C

### Pilot Study

A pilot test was conducted prior to collecting the data in this study. The pilot test was intended to confirm the reliability and validity of the instrument. The test also aimed

to improve the Employability Skills Training Program Survey. The pilot test sample consisted of 8 educators, 10 employers, and 48 recent graduates. The participants were given ample time to respond to all items and provide comments on the survey. The pilot sample groups did not participate in the field survey. Their data, therefore, were not applied in the data analysis of the study. However, the data did estimate the reliability and validity of the instrument and refine the administration procedures for conducting the field study. In terms of face and content validity, the comments and critiques from the pilot test sample were used to revise, refine, and improve the survey. Additionally, the survey was examined by professors who majored in the field of TVE and human resource development to further enhance its content validity. The instrument was then judged to possess an adequate degree of content and face validity.

The reliability of the Employability Skills Training Program Survey was determined by using the internal consistency method using SAS 9.4 statistical software. Cronbach's Coefficient Alpha  $\alpha=0.70$  was considered as the minimum value for acceptable reliability (Cronbach, 1951; Lance, Butts, & Michels, 2006). The pilot test results for educators, employers, and recent graduates sample groups were  $\alpha=0.96$ ,  $\alpha=0.97$ , and  $\alpha=0.89$ , respectively. The overall pilot test result was Cronbach's Coefficient Alpha  $\alpha=0.95$ , suggesting that the survey instrument was measuring a uniform construct with precision. Therefore, the Employability Skills Training Program Survey was judged to possess an adequate degree of internal consistency reliability.



### Data Collection

Prior to collecting data, permission was requested to conduct research on human subjects from the Research Promotion and Co-ordination Committee, Economic Planning Unit, Prime Minister's Department, Malaysia and the Institutional Review Board (IRB) at Purdue University. The IRB at Purdue University and the Research Promotion and Co-ordination Committee, Economic Planning Unit, Prime Minister's Department, Malaysia approved the procedures and protocols for this study; they granted permission to conduct this study.

A consultant was hired to distribute the Employability Skills Training Program Survey to the sample of 272 educators, 186 employers, and 284 recent graduates. The consultant contacted the prospective respondents using both Malay and English languages. Face-to-face conversations, telephone calls, and e-mail messages were conducted in Malay and English languages during data collection. The respondents were asked for their preference of language in completing the survey and the consultant provided them with the appropriate survey.

The use of telephone calls and e-mails accelerated the process designed to yield a high response rate. The consultant distributed the surveys by hand to the sample and collected the completed surveys on the same day. The consultant reminded the respondents by sending e-mails and making telephone contacts. These reminders were sent at least one week before the consultant collected data. If the selected respondents were not present on the data collection day, the consultant delivered the surveys to the respondents' administrative offices. The respondents completed the surveys later and mailed them to the consultant. Follow-up e-mails were sent and follow-up telephone calls

were made at one-week, two-week, and three-week intervals after initial data collection. The data were coded from the surveys in preparation for analysis.

The coded and analyzed data from the surveys were saved in the Purdue University Research Repository (PURR) database, a secured database provided by the Purdue Libraries. The database is password protected and maintained by the Information Technology Department at Purdue University. Only the researcher has access to the data sets in the database. The data are maintained for at least 10 years after the research is completed. After 10 years, the data sets are curated by the Purdue Libraries. The IRB at Purdue University requires data sets be kept at least three years after completion of the research.

### Data Analysis

Part A responses of the survey were analyzed using descriptive and inferential statistical methods. Means and standard deviations for the Likert-type scale items were represented to convey measures of central tendency and variability. The scale ranges in Table 7 and Table 8 were used to interpret central tendency and variability of the responses; they were adapted from a previously related study (Mustapha, 1999b). The mean represented respondents' agreement regarding statements and items in the survey. Meanwhile, the standard deviation represented dispersion of responses.

For items 1 through 38, following analysis of means and standard deviations, a one-way Analysis of Variance (ANOVA) was performed to compare the skill differences of the means among educators, employers, and recent graduates. If statistically significant results were revealed, a post-hoc test was conducted to determine where the significance

exists. The researcher used the Tukey adjustment post-hoc test, appropriate for exploratory studies and comparing three groups at a time. For items 39 through 61, analysis of means and standard deviations was performed, only because items were not related to each other.

Table 7

*Scale ranges for the mean*

Scale	Interpretation
1.00 – 1.49	Strongly Disagree
1.50 – 2.49	Disagree
2.50 – 3.49	Undecided
3.50 – 4.49	Agree
4.50 – 5.00	Strongly Agree

Table 8

*Scale ranges for the standard deviation*

Scale	Interpretation
0.00 – 0.50	Low
0.51 – 0.75	Medium
0.76 and above	High

Part B responses of the survey were analyzed qualitatively to gather an in-depth understanding of the subjects' regarding the role of employability skills training programs and issues, barriers, facilitators, and recommendations. Written feedback from respondents was coded into different categories by the researcher. There was no limit in the number and type of categories to ensure there were no missing critical themes. The

initial categories were detailed and later cross-matched. Categories that had similarities were concluded to derive final themes for interpretation, analysis, and discussion. Then, the themes were frequency-counted and rank-ordered. The highest frequency theme ranked first, followed by second-highest, third-highest, fourth-highest, and so forth (Hunter, Dik, & Banning, 2009; Hsieh & Shannon, 2005).

In Part C of the survey, percentages for each of the demographic information variables were reported including gender, age, ethnicity, academic achievement, program major, total years of teaching experience, present position, and total years of management experience. Company size, type of ownership, year of graduation, duration of internship, current training program, and total years of work experience were also reported. The data were displayed by using tables that describe the characteristics of the sample groups.

A 95% confidence interval was determined as the significance level. The level suggested that this study captured the actual population perceptions regarding the role of employability skills training programs in 95% of all samples. The 95% confidence level is sufficiently high for practical use and accepted risk of making the incorrect decision. Previously related studies by Mustapha (1999b) and Mihm-Herold (2010) utilized the same confidence level.

The role of employability skills training programs was discussed with respect to improving the skills, minimizing unemployment, and developing the workforce in Malaysia. Additionally, involvement factors and recommendations for training programs were identified. The recommendations were considered as criteria for program improvement. The results could be adapted to initiate effective policies, strategies, methods, and programs in developing and training the workforce of Malaysia.

## CHAPTER 4: FINDINGS

The purpose of this study was to assess the perceptions of educators, employers, and recent graduates regarding the role of employability skills training programs in the workforce of Malaysia. The study also investigated the involvement factors of recent graduates in training programs and recommendations for program improvement. This chapter provides the analysis of data collected using the Employability Skills Training Program Survey. The findings are organized around the five research questions posited in this study.

The research consultant distributed the Employability Skills Training Program Survey by hand to the sample of 272 educators, 186 employers, and 284 recent graduates who were enrolled in employability skills training programs. The completed surveys were collected on the same day or the respondents mailed them to the consultant. The consultant conducted three follow-up surveys or reminders at one-week, two-week, and three-week intervals after data collection. Following the third follow-up, the researcher received surveys from 129 educators, 85 employers, and 203 recent graduates. The response rates for educators, employers, and recent graduates were 47.4%, 45.7%, and 71.5%, respectively. The total response rate was 56.2%. Based on the field study, Cronbach's Coefficient Alpha for educators, employers, and recent graduates sample

groups were  $\alpha=0.77$ ,  $\alpha=0.98$ , and  $\alpha=0.74$ , respectively. The overall field test result was  $\alpha=0.96$ .

### Demographic Data

Table 9 shows the demographic information regarding the engineering, technical, and vocational educators who participated in this study. 64.8% of educators were male and 35.2% were female. In terms of participants' ages, 33.7% were 50 years of age or older, 34.8% were 40 to 49 years old, 28.1% were 30 to 39 years old, and 2.2% were 29 years or younger. The majority of the respondents were Malay (81.8%), followed by Chinese (11.1%), and Indian (7.1%). The participants were 64.0% doctoral degree, 24.0% master's degree, and 12.0% bachelor's degree holders. With respect to program major, 45.6% of the educators majored in Electrical/ Electronic Engineering, 22.4% Civil Engineering, 20.0% Mechanical Engineering, and 10.4% Chemical Engineering. A total of 91.9% were in a professor/lecturer/instructor/teacher position compared to 8.1% in an administrative position. Furthermore, 66.7% of the educator participants had more than 10 years of teaching experience, while 61% of the respondents had at least five years of administrative experience. Almost 85.4% of educators who participated in this study had not been involved in any employability skills training programs in Malaysia.

Table 10 illustrates the demographic information of the manufacturing employers who participated in this study. The manufacturing employers were 70.0% male and 30.0% female; the majority of them were 40 years of age or older. The respondents were 52.7% Malay, 36.5% Chinese, and 10.8% Indian. Approximately 63.2% of the employers had earned at least a bachelor's degree. The respondents were 11.0% CEO/president/

Table 9

*Demographic characteristics of educators*

Demographic Variable	Educator (n=129)	Percentage
<b>Gender:</b>		
Male	81	64.8 %
Female	44	35.2 %
<b>Age:</b>		
50 years old or more	30	33.7 %
40 – 49 years old	31	34.8 %
30 – 39 years old	25	28.1 %
29 years old or less	2	2.2 %
<b>Race/ Ethnicity:</b>		
Malay	103	81.8 %
Chinese	14	11.1 %
Indian	9	7.1 %
<b>Highest Level of Education:</b>		
Bachelor's degree	12	12.0 %
Master's degree	24	24.0 %
Doctoral degree	64	64.0 %
<b>Program Major:</b>		
Mechanical Engineering	25	20.0 %
Chemical Engineering	13	10.4 %
Electrical/ Electronic Engineering	57	45.6 %
Civil Engineering	28	22.4 %
Others	2	1.6 %
<b>Present Position:</b>		
Professor/ Lecturer/ Instructor/ Teacher	91	91.9 %
Administrator	8	8.1 %
<b>Teaching Experience:</b>		
20 years or more	3	3.4 %
10 – 19 years	57	63.3 %
9 years or less	30	33.3 %
<b>Administrative Experience:</b>		
10 years or more	6	7.3 %
5 – 9 years	44	53.7 %
4 years or less	32	39.0 %
<b>Involvement in Employability Skills Training</b>		
Yes	14	14.6 %
No	82	85.4 %

Table 10

*Demographic characteristics of employers*

Demographic Variable	Employer (n=85)	Percentage
<b>Gender:</b>		
Male	56	70.0 %
Female	24	30.0 %
<b>Age:</b>		
50 years old or more	5	6.3 %
40 – 49 years old	38	47.4 %
30 – 39 years old	28	35.0 %
29 years old or less	9	11.3 %
<b>Race/ Ethnicity:</b>		
Malay	39	52.7 %
Chinese	27	36.5 %
Indian	8	10.8 %
<b>Highest Level of Education:</b>		
Diploma	28	36.8 %
Bachelor's degree	39	51.4 %
Master's degree	9	11.8 %
<b>Present Position:</b>		
CEO/ President/ Director	9	11.0 %
Manager/ Head of Department	47	57.3 %
Supervisor	26	31.7 %
<b>Management and Administrative Experience:</b>		
10 years or more	37	55.2 %
9 years or less	30	44.8 %
<b>Company Size:</b>		
Large (more than 500 employees)	22	26.2 %
Medium (100 - 499 employees)	17	20.2 %
Small (less than 100 employees)	45	53.6 %
<b>Type of Ownership:</b>		
Local	51	60.7 %
International corporation	20	23.8 %
Joint venture (international and local)	13	15.5 %
<b>Involvement in Employability Skills Training</b>		
Yes	10	12.0 %
No	73	88.0 %



director, 57.3% manager/head of a department, and 31.7% supervisor. Additionally, 55.2% of the participants had more than 10 years of experience in management and administration. The manufacturing employers were from companies of 53.6% small-sized, 26.2% large-sized, and 20.2% medium-sized. A total of 60.7% of the companies were locally owned, 23.8% were international corporately owned, and 15.5% were joint-venture ownership. Nearly all employers who participated in the survey were not involved in any employability skills training programs in Malaysia.

Table 11 illustrates the demographic information of recent graduates who participated in this study. Recent graduates were 69.5% male and 30.5% female. Approximately 89.0% of the participants were 24 years of age or younger and 11.0% were 25 years of age or older. The respondents were 80.6% Malay, 6.5% Chinese, and 12.9% Indian. The respondents consisted of 63.6% bachelor's degree, 12.8% diploma (two-year degree), and 23.6% SPM/ SPMV/ STPM (secondary school) holders. In terms of program major, the percentages of the participants who majored in Electrical/ Electronic Engineering, Civil Engineering, Chemical Engineering, and Mechanical Engineering were 52.6%, 22.1%, 10.4%, and 7.1%, respectively. The participants had less than 6 months of internship experience. A total of 87.7% of the trainees had graduated from higher education institutions less than three years ago. Approximately 71.8% of the recent graduates had less than 12 months work experience. A total of 58.9% of recent graduates believed that their work experiences were not relevant to their program majors. The majority of recent graduates who participated in this study enrolled in the Industrial Skills Enhancement Program (INSEP).

Table 11

*Demographic characteristics of recent graduates*

Demographic Variable	Graduate (n=203)	Percentage
<b>Gender:</b>		
Male	139	69.5 %
Female	61	30.5 %
<b>Age:</b>		
25 years old or more	22	11.0 %
20 – 24 years old	143	71.5 %
19 years old or less	35	17.5 %
<b>Race/ Ethnicity:</b>		
Malay	162	80.6 %
Chinese	13	6.5 %
Indian	26	12.9 %
<b>Highest Level of Education:</b>		
SPM/ SPMV/ STPM	48	23.6 %
Diploma	26	12.8 %
Bachelor's degree	129	63.6 %
<b>Program Major:</b>		
Mechanical Engineering	11	7.1 %
Chemical Engineering	16	10.4 %
Electrical/ Electronic Engineering	81	52.6 %
Civil Engineering	34	22.1 %
Others	12	7.8 %
<b>Duration of Industrial Training/ Internship:</b>		
0 – 3 months	112	77.8 %
4 – 6 months	32	22.2 %
<b>CGPA:</b>		
2.00 – 2.49	71	64.0 %
2.50 – 2.99	40	36.0 %
<b>Year of Graduation:</b>		
2013	76	58.5 %
2012	38	29.2 %
2011	6	4.6 %
2010	10	7.7 %
<b>Work Experience:</b>		
0 – 6 months	30	25.6 %
7 – 12 months	54	46.2 %
1 – 2 years	33	28.2 %

Table 11 (continued)

Demographic Variable	Graduate (n=203)	Percentage
Relevance of Work Experiences with Program		
Yes	58	41.1 %
No	83	58.9 %
Training Program:		
GEMS	10	4.9 %
INSEP	145	71.4 %
WTTP	48	23.7 %

### Research Question 1

**What are the perceptions of educators, employers, and recent graduates regarding the contribution of employability skills training programs for improving the skills of recent graduates?**

Table 12 presents the means and standard deviations for items 1 through 4 that addressed communication skills. For item 1, educators (M=3.90, SD=.71) and recent graduates (M=4.17, SD=.73) agreed that employability skills training programs increased recent graduates' abilities to speak in clear sentences; employers (M=2.84, SD=1.11) were undecided. The relatively high standard deviation among employers indicated that their responses were dispersed. For item 2, educators (M=3.92, SD=.69) and recent graduates (M=4.40, SD=.77) agreed that training programs improved the listening skills of trainees, while employers (M=3.24, SD=1.09) were undecided. The relatively high standard deviations revealed that the employer and recent graduate responses were largely dispersed. For item 3, educators (M=3.80, SD=.58) and recent graduates (M=4.21, SD=.81) agreed that training programs enhanced the presentation skills of recent graduates. However, employers (M=3.44, SD=1.03) were uncertain. The high standard deviation showed that employer feedback was quite dispersed. For item 4, recent

graduates (M=4.22, SD=.75) agreed that training programs enhanced recent graduates' English comprehension and communication skills. Educators (M=3.02, SD=.98) were undecided and employers (M=2.46, SD=1.17) disagreed that such programs improved recent graduates' ability to speak and understand English. There was a high variation in responses among educators, employers, and recent graduates. Overall, educators (M=3.66, SD=.41) and recent graduates (M=4.25, SD=.46) agreed about the positive impact of employability skills training programs on the communication skills of trainees; however, employers (M=2.99, SD=.95) were uncertain. Employer perceptions of the benefits of such programs regarding communication skills were dispersed.

Table 12

*Items that address communication skills*

Item	Educator		Employer		Recent Graduate	
	Mean (M)	Standard Deviation (SD)	Mean (M)	Standard Deviation (SD)	Mean (M)	Standard Deviation (SD)
1. Employability skills training programs increase recent graduates' abilities to speak in clear sentences.	3.90	.71	2.84	1.11	4.17	.73
2. Employability skills training programs improve the listening skills of recent graduates.	3.92	.69	3.24	1.09	4.40	.77
3. Employability skills training programs enhance recent graduates' abilities to present ideas confidently and effectively.	3.80	.58	3.44	1.03	4.21	.81
4. Employability skills training programs elevate recent graduates' abilities to understand and speak English.	3.02	.98	2.46	1.17	4.22	.75
Total (Items 1 to 4)	3.66	.41	2.99	.95	4.25	.46

Table 13 illustrates the means and standard deviations for items 5 through 9 that addressed teamwork. For item 5, educators ( $M=4.23$ ,  $SD=.71$ ) and recent graduates ( $M=4.37$ ,  $SD=.71$ ) agreed, while employers ( $M=2.72$ ,  $SD=1.12$ ) were uncertain that employability skills training programs increased recent graduates' independent work skills. A high standard deviation among employers indicated that their perceptions were largely dispersed. For item 6, educators ( $M=4.00$ ,  $SD=.80$ ) agreed and recent graduates ( $M=4.52$ ,  $SD=.55$ ) strongly agreed that training programs improved recent graduates' ability to understand their role in a group; however, employers ( $M=3.15$ ,  $SD=1.11$ ) were undecided. The high standard deviations for employers and educators suggested that their responses varied. For item 7, recent graduates ( $M=4.44$ ,  $SD=.66$ ) agreed, while educators ( $M=3.09$ ,  $SD=.93$ ) and employers ( $M=2.76$ ,  $SD=1.07$ ) were undecided that training programs enhanced graduates' teamwork. Educator and employer responses were widely dispersed.

For item 8, educators ( $M=4.03$ ,  $SD=.96$ ) and recent graduates ( $M=4.08$ ,  $SD=.90$ ) agreed that employability skills training programs enhanced recent graduates' leadership skills; however, employers ( $M=3.34$ ,  $SD=1.10$ ) were uncertain. The relatively high standard deviations indicated that all responses were largely dispersed. For item 9, educators ( $M=4.07$ ,  $SD=.69$ ) and recent graduates ( $M=4.28$ ,  $SD=.74$ ) agreed that training programs increased the skills of recent graduates to provide feedback in a constructive and considerate manner, but employers ( $M=3.08$ ,  $SD=.82$ ) were undecided. Employer and recent graduate responses were dispersed. Overall, educators ( $M=3.89$ ,  $SD=.40$ ) and recent graduates ( $M=4.34$ ,  $SD=.36$ ) were generally in agreement with regard to the role of employability skills training programs for improving the teamwork skills of trainees. In

contrast, employers ( $M=3.00$ ,  $SD=.89$ ) were undecided about the benefits of training programs for improving the teamwork of recent graduates. A relatively high standard deviation suggested that the employer perceptions were varied about the impact of such programs on trainee teamwork skills.

Table 13

*Items that address teamwork*

Item	Educator		Employer		Recent Graduate	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
	(M)	(SD)	(M)	(SD)	(M)	(SD)
5. Employability skills training programs increase recent graduates' abilities to work effectively as an individual.	4.23	.71	2.72	1.12	4.37	.71
6. Employability skills training programs improve recent graduates' abilities to understand their role in a group.	4.00	.80	3.15	1.11	4.52	.55
7. Employability skills training programs enhance recent graduates' abilities to work effectively as a team member in a group.	3.09	.93	2.76	1.07	4.44	.66
8. Employability skills training programs elevate recent graduates' abilities to work in a group with the capacity to be a leader.	4.03	.96	3.34	1.10	4.08	.90
9. Employability skills training programs increase recent graduates' abilities to provide feedback in a constructive and considerate manner.	4.07	.69	3.08	.82	4.28	.74
Total (Items 5 to 9)	3.89	.40	3.00	.89	4.34	.36

Table 14 reports the means and standard deviations in items 10, 11, and 12 with respect to lifelong learning. For item 10, educators ( $M=3.63$ ,  $SD=.49$ ) and recent graduates ( $M=4.07$ ,  $SD=.93$ ) agreed that employability skills training programs improved

Table 14

*Items that address lifelong learning*

Item	Educator		Employer		Recent Graduate	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
	(M)	(SD)	(M)	(SD)	(M)	(SD)
10. Employability skills training programs improve recent graduates' abilities to recognize the need to undertake lifelong learning.	3.63	.49	2.26	.97	4.07	.93
11. Employability skills training programs enhance recent graduates' abilities to acquire the capacity to undertake lifelong learning.	3.48	.87	2.05	.82	3.87	.84
12. Employability skills training programs elevate recent graduates' abilities to engage in lifelong learning.	3.56	.75	2.38	.82	3.99	1.05
Total (Items 10 to 12)	3.56	.43	2.23	.71	3.98	.60

recent graduates' abilities to recognize the need to invest in lifelong learning, but employers (M=2.26, SD=.97) disagreed. The relatively high standard deviations among employers and recent graduates indicated that their responses were dispersed. Recent graduates (M=3.87, SD=.84) agreed, educators (M=3.48, SD=.87) were undecided, and employers (M=2.05, SD=.82) disagreed that training programs enhanced recent graduates' skills to acquire the capacity to experience lifelong learning. A relatively large dispersion of perceptions were reflected in all the respondent groups. For item 12, educators (M=3.56, SD=.75) and recent graduates (M=3.99, SD=1.05) agreed that training programs elevated recent graduates' abilities to engage in lifelong learning; however, employers (M=2.38, SD=.82) disagreed. The relatively high standard deviations by educators, employers, and recent graduates suggested that their responses were varied. Overall, educators (M=3.56, SD=.43) and recent graduates (M=3.98, SD=.60) agreed regarding the

benefits of training programs related to lifelong learning. Although, employers ( $M=2.23$ ,  $SD=.71$ ) disagreed that training programs necessarily improved lifelong learning.

Table 15 exhibits the means and standard deviations for items 13 through 17 that addressed professionalism. For item 13, educators ( $M=3.76$ ,  $SD=.90$ ) and recent graduates ( $M=3.79$ ,  $SD=1.06$ ) agreed, while employers ( $M=2.68$ ,  $SD=1.21$ ) were uncertain that employability skills training programs increased the understanding of social issues among trainees. The responses of educators, employers, and recent graduates were dispersed, indicating a high standard deviation. For item 14, educators ( $M=4.00$ ,  $SD=.84$ ) and recent graduates ( $M=4.45$ ,  $SD=.66$ ) agreed that training programs improved the cultural awareness of recent graduates; employers ( $M=3.16$ ,  $SD=1.02$ ) were undecided. The relatively high standard deviations suggested that the educator and employer responses were largely different. For item 15, educators ( $M=4.25$ ,  $SD=.81$ ) and recent graduates ( $M=4.18$ ,  $SD=.88$ ) agreed that training programs enhanced the environmental awareness of recent graduates; however, employers ( $M=3.27$ ,  $SD=.97$ ) were undecided. The relatively high standard deviations indicated that the respondent groups were varied in their responses.

Moreover, for item 16, recent graduates ( $M=4.33$ ,  $SD=.78$ ) agreed that training programs elevated the professionalism of trainees, while educators ( $M=3.44$ ,  $SD=1.06$ ) and employers ( $M=2.99$ ,  $SD=1.18$ ) were undecided. Educator, employer, and recent graduate responses regarding the improvement of professionalism from such programs appeared dispersed, reflecting a high standard deviation. For item 17, educators ( $M=4.14$ ,  $SD=.86$ ) and recent graduates ( $M=4.13$ ,  $SD=.78$ ) agreed that training programs increased the accountability skills of recent graduates; employers ( $M=3.16$ ,  $SD=1.15$ ) were



Table 15

*Items that address professionalism*

Item	Educator		Employer		Recent Graduate	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
	(M)	(SD)	(M)	(SD)	(M)	(SD)
13. Employability skills training programs increase recent graduates' abilities to understand social issues.	3.76	.90	2.68	1.21	3.79	1.06
14. Employability skills training programs improve recent graduates' abilities to become aware of global issues.	4.00	.84	3.16	1.02	4.22	.84
15. Employability skills training programs enhance recent graduates' abilities to become aware of environmental issues.	4.25	.81	3.27	.97	4.18	.88
16. Employability skills training programs elevate the professionalism of recent graduates.	3.44	1.06	2.99	1.18	4.33	.78
17. Employability skills training programs increase abilities of recent graduates to be accountable for their actions.	4.14	.86	3.16	1.15	4.13	.78
Total (Items 13 to 17)	3.92	.47	3.05	.92	4.13	.38

undecided. The relatively high standard deviations revealed that educators, employers, and recent graduates had high variation in their responses. Overall, educators ( $M=3.92$ ,  $SD=.47$ ) and recent graduates ( $M=4.13$ ,  $SD=.38$ ) agreed pertaining to the positive impact of employability skills training programs on trainee professionalism. Employers ( $M=3.05$ ,  $SD=.92$ ), however, were uncertain about the capacity of training programs to improve the professionalism of recent graduates. Employer perceptions were highly dispersed with respect to the impact of such programs on professionalism.

Table 16 depicts the means and standard deviations for items 18 through 21 that addressed problem-solving and decision-making skills. For item 18, educators ( $M=4.20$ ,

Table 16

*Items that address problem-solving and decision-making skills*

Item	Educator		Employer		Recent Graduate	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
	(M)	(SD)	(M)	(SD)	(M)	(SD)
18. Employability skills training programs improve recent graduates' abilities to identify problems in the workplace.	4.20	.94	3.20	.74	4.39	.67
19. Employability skills training programs enhance recent graduates' abilities to reflect on their experiences to solve problems.	4.00	.75	2.88	1.02	4.41	.52
20. Employability skills training programs elevate recent graduates' abilities to apply science, mathematics, or technology to solve problems.	3.37	.63	3.31	1.05	4.33	.81
21. Employability skills training programs increase the creativity and innovation of recent graduates.	3.71	.67	3.06	.76	3.87	.82
Total (Items 18 to 21)	3.82	.37	3.11	.73	4.25	.40

SD=.94) and recent graduates (M=4.39, SD=.67) agreed that employability skills training programs improved recent graduates' problem identification skills; employers (M=3.20, SD=.74) were uncertain. Educator feedback was largely dispersed. For item 19, educators (M=4.00, SD=.75) and recent graduates (M=4.41, SD=.52) agreed that training programs enhanced the skills of recent graduates to reflect their experiences to solve problems; however, employers (M=2.88, SD=1.02) were undecided. Educator and employer responses appeared to be largely dispersed. For item 20, recent graduates (M=4.33, SD=.81) agreed that training programs elevated the skills of graduates to apply science, mathematics, or technology to solve problems. Educators (M=3.37, SD=.63) and employers (M=3.31, SD=1.05) were uncertain about such programs in that regard. The responses of employers and recent graduates were varied. For item 21, recent graduates

( $M=4.33$ ,  $SD=.81$ ) agreed that employability skills training programs increased the creativity and innovation of recent graduates, while educators ( $M=3.37$ ,  $SD=.63$ ) and employers ( $M=3.31$ ,  $SD=1.05$ ) were uncertain. The relatively high standard deviations suggested that employer and recent graduate responses were highly dispersed. Overall, educators ( $M=3.82$ ,  $SD=.37$ ) and recent graduates ( $M=4.25$ ,  $SD=.40$ ) agreed with respect to the positive impact of employability skills training programs for improving problem-solving and decision-making skills. In contrast, employers ( $M=3.11$ ,  $SD=.73$ ) were undecided. A low standard deviation indicated that employers had general consensus regarding the role of such programs for improving trainee problem-solving and decision-making skills.

Table 17 reveals the means and standard deviations in items 22, 23, and 24 with respect to competence in application and practices. For item 22, educators ( $M=3.58$ ,  $SD=1.25$ ) and recent graduates ( $M=4.24$ ,  $SD=.96$ ) agreed that employability skills training programs improved recent graduates' abilities to use necessary techniques and skills for engineering practices; however, employers ( $M=3.32$ ,  $SD=.80$ ) were uncertain. The high standard deviations indicated that educator, employer, and recent graduate responses were in high variation. For item 23, educators ( $M=4.09$ ,  $SD=.75$ ) and recent graduates ( $M=4.30$ ,  $SD=.84$ ) agreed that training programs enhanced recent graduates' abilities to use modern engineering tools and software; employers ( $M=2.95$ ,  $SD=.91$ ) were undecided. The relatively high standard deviations indicated that all groups were dispersed in their responses. For item 24, recent graduates ( $M=4.24$ ,  $SD=.77$ ) agreed that training programs elevated their abilities to work towards quality standards and specifications; however, educators ( $M=2.88$ ,  $SD=.86$ ) and employers ( $M=2.99$ ,  $SD=1.12$ )

were undecided. The relatively high standard deviations indicated that all groups were dispersed in their responses. Overall, educators (M=3.51, SD=.73) and recent graduates (M=4.26, SD=.48) agreed regarding the positive role of employability skills training programs for improving the competence in application and practices of trainees; however, employers (M=3.09, SD=.80) were uncertain. The relatively high standard deviations suggested that educator and employer responses were largely dispersed.

Table 17

*Items that address competence in application and practices*

Item	Educator		Employer		Recent Graduate	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
	(M)	(SD)	(M)	(SD)	(M)	(SD)
22. Employability skills training programs improve recent graduates' abilities to use necessary techniques and skills for engineering practices.	3.58	1.25	3.32	.80	4.24	.96
23. Employability skills training programs enhance recent graduates' abilities to use modern engineering tools and software.	4.09	.75	2.95	.91	4.30	.84
24. Employability skills training programs elevate recent graduates' abilities to work towards quality standards and specifications.	2.88	.86	2.99	1.12	4.24	.77
Total (Items 22 to 24)	3.51	.73	3.09	.80	4.26	.48

Table 18 illustrates the means and standard deviations for items 25 through 28 that addressed knowledge of science and engineering principles. For item 25, educators (M=3.81, SD=.81) and recent graduates (M=4.34, SD=.84) agreed that training programs increased recent graduates' abilities to apply knowledge of science and engineering fundamentals; although, employers (M=2.54, SD=.92) were uncertain. All of the

Table 18

*Items that address knowledge of science and engineering principles*

Item	Educator		Employer		Recent Graduate	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
	(M)	(SD)	(M)	(SD)	(M)	(SD)
25. Employability skills training programs increase recent graduates' abilities to apply knowledge of engineering fundamentals.	3.81	.81	2.54	.92	4.34	.84
26. Employability skills training programs improve recent graduates' abilities to use proper tools and equipment for a particular job or task.	4.02	.78	2.89	.89	4.65	.73
27. Employability skills training programs enhance recent graduates' abilities to analyze knowledge of science and engineering fundamentals.	4.22	.57	3.13	.75	3.92	1.13
28. Employability skills training programs elevate recent graduates' abilities to understand principles of sustainable design and development.	3.62	.80	2.84	1.07	4.19	.67
Total (Items 25 to 28)	3.92	.36	2.85	.79	4.27	.48

participant groups were dispersed in their responses. For item 26, recent graduates (M=4.65, SD=.73) strongly agreed, educators (M=4.02, SD=.78) agreed, but employers (M=2.89, SD=.89) were undecided that training programs improved abilities to use proper tools and equipment. There was a large spread in responses among all respondent groups. For item 27, educators (M=4.22, SD=.57) and recent graduates (M=3.92, SD=1.13) agreed that training programs enhanced the skills of graduates to analyze knowledge of science and engineering fundamentals; employers (M=3.13, SD=.75) were undecided. Employer and recent graduate responses were widely varied regarding science and engineering analysis skills. For item 28, educators (M=3.62, SD=.80) and recent graduates (M=4.19, SD=.67) agreed that employability skills training programs increased the understanding of

sustainable design for trainees; employers ( $M=2.84$ ,  $SD=1.07$ ) were undecided. The relatively high standard deviations indicated that educator and employer responses were in high variation with regard to the capability of training programs to promote understanding of sustainable design. Overall, educators ( $M=3.92$ ,  $SD=.36$ ) and recent graduates ( $M=4.27$ ,  $SD=.48$ ) agreed with respect to the positive effects of employability skills training programs for enhancing knowledge of science and engineering principles; employers ( $M=2.84$ ,  $SD=.79$ ) were uncertain. Such data suggested that employer perceptions were relatively widely dispersed, compared to those of educators and recent graduates.

Table 19 presents the means and standard deviations for items 29 through 32 that addressed knowledge of contemporary issues. For item 29, educators ( $M=3.88$ ,  $SD=.86$ ) and recent graduates ( $M=4.57$ ,  $SD=.67$ ) agreed that training programs increased information technology skills; employers ( $M=2.91$ ,  $SD=.72$ ) were undecided. A relatively high standard deviation suggested that educator feedback was widely dispersed. For item 30, educators ( $M=3.97$ ,  $SD=.92$ ) and recent graduates ( $M=4.44$ ,  $SD=.74$ ) agreed that training programs improved the communication technology skills of recent graduates; employers ( $M=3.36$ ,  $SD=.83$ ) were uncertain. The relatively high standard deviations among educators and employers suggested that their responses were dispersed. For item 31, educators ( $M=4.15$ ,  $SD=.69$ ), employers ( $M=3.74$ ,  $SD=1.11$ ), and recent graduates ( $M=4.50$ ,  $SD=.66$ ) agreed that training programs enhanced computing technology skills. A high standard deviation indicated that employer feedback was highly dispersed. For item 32, educators ( $M=4.20$ ,  $SD=.80$ ), employers ( $M=3.53$ ,  $SD=.96$ ), and recent graduates ( $M=4.05$ ,  $SD=.84$ ) agreed that training programs enhanced the abilities of recent graduates

to learn new knowledge, skills, and technologies. The relatively high standard deviations among the three participant groups suggested that their responses were varied. Overall, educators (M=4.05, SD=.32) and recent graduates (M=4.39, SD=.41) agreed regarding the benefits of employability skills training programs related to knowledge of contemporary issues; however, employers (M=3.39, SD=.72) were uncertain. Employer responses were somewhat consistent.

Table 19

*Items that address knowledge of contemporary issues*

Item	Educator		Employer		Recent Graduate	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
	(M)	(SD)	(M)	(SD)	(M)	(SD)
29. Employability skills training programs increase recent graduates' abilities to use information technologies.	3.88	.86	2.91	.72	4.57	.67
30. Employability skills training programs improve recent graduates' abilities to use communication technologies.	3.97	.92	3.36	.83	4.44	.74
31. Employability skills training programs enhance recent graduates' abilities to use computing technologies.	4.15	.69	3.74	1.11	4.50	.66
32. Employability skills training programs elevate recent graduates' abilities to learn new knowledge.	4.20	.80	3.53	.96	4.05	.84
Total (Items 29 to 32)	4.05	.32	3.39	.72	4.39	.41

Table 20 portrays the means and standard deviations for items 33 through 35 that addressed engineering system approaches. For item 33, educators (M=4.01, SD=.70) and recent graduates (M=4.28, SD=.71) agreed that training programs increased abilities to utilize an engineering system approach. Employers (M=3.48, SD=1.01) were undecided;

their responses were dispersed. For item 34, employers (M=3.60, SD=.90) and recent graduates (M=4.39, SD=.64) agreed that training programs improved abilities to design engineering systems; however, educators (M=3.49, SD=1.00) were undecided. Both educator and employer responses were dispersed. For item 35, educators (M=3.62, SD=.58) and recent graduates (M=4.23, SD=.78) agreed that training programs enhanced engineering design analysis skills; employers (M=2.85, SD=.68) were undecided. Recent graduate responses were dispersed. Overall, educators (M=3.71, SD=.45) and recent graduates (M=4.30, SD=.45) agreed with respect to the benefits of training programs to improve skills in engineering system approaches; however, employers (M=3.31, SD=.60) were undecided.

Table 20

*Items that address engineering system approaches*

Item	Educator		Employer		Recent Graduate	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
	(M)	(SD)	(M)	(SD)	(M)	(SD)
33. Employability skills training programs increase recent graduates' abilities to utilize an engineering system approach in the workplace.	4.01	.70	3.48	1.01	4.28	.71
34. Employability skills training programs improve graduates' abilities to design engineering systems.	3.49	1.00	3.60	.90	4.39	.64
35. Employability skills training programs enhance recent graduates' abilities to analyze engineering designs.	3.62	.58	2.85	.68	4.23	.78
Total (Items 33 to 35)	3.71	.45	3.31	.60	4.30	.45



Table 21 reports the means and standard deviations in items 36, 37, and 38 related to competence in specific engineering disciplines. For item 36, educators ( $M=4.20$ ,  $SD=.74$ ) and recent graduates ( $M=4.11$ ,  $SD=.99$ ) agreed that employability skills training programs increased recent graduates' abilities to acquire in-depth technical competencies in a specific engineering discipline; employers ( $M=3.32$ ,  $SD=.97$ ) however, were undecided. The relatively high standard deviations suggested that employer and recent graduate perceptions were highly varied. For item 37, educators ( $M=4.09$ ,  $SD=1.02$ ) and recent graduates ( $M=4.15$ ,  $SD=.88$ ) agreed that training programs improved applications of technical skills in a specific engineering discipline; employers ( $M=2.73$ ,  $SD=.90$ ) were again undecided. Educator, employer, and recent graduate responses yielded high variability. For item 38, educators ( $M=4.02$ ,  $SD=.94$ ) and recent graduates ( $M=4.02$ ,  $SD=.93$ ) agreed that training programs improved applications of knowledge in multidisciplinary engineering; employers ( $M=2.60$ ,  $SD=.93$ ), however, were undecided. The relatively high standard deviations with all respondent groups indicated that their perceptions were widely dispersed.

Overall, educators ( $M=4.10$ ,  $SD=.60$ ) and recent graduates ( $M=4.09$ ,  $SD=.62$ ) agreed about the positive impact of training programs on competence in specific engineering disciplines of trainees. However, employers ( $M=2.88$ ,  $SD=.69$ ) were undecided regarding the role of such programs. All groups had relatively medium standard deviations. The data suggested that educator, employer, and recent graduate perceptions had a somewhat high level of consensus.

Table 21

*Items that address competence in specific engineering disciplines*

Item	Educator		Employer		Recent Graduate	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
	(M)	(SD)	(M)	(SD)	(M)	(SD)
36. Employability skills training programs elevate recent graduates' abilities to acquire in-depth technical competencies in a specific engineering discipline.	4.20	.74	3.32	.97	4.11	.99
37. Employability skills training programs increase recent graduates' abilities to apply technical skills in a specific engineering discipline effectively.	4.09	1.02	2.73	.90	4.15	.88
38. Employability skills training programs improve recent graduates' abilities to apply knowledge in multidisciplinary engineering.	4.02	.94	2.60	.93	4.02	.93
Total (Items 36 to 38)	4.11	.60	2.88	.69	4.09	.62

Table 22 presents the one-way ANOVA results among educators, employers, and recent graduates. Table 23 reports the Tukey post-hoc test results among groups. A one-way ANOVA between groups was conducted to compare the mean skills among the three respondent groups. There was a significant difference on communication skills at the  $p < .05$  level for the three groups [ $F(2, 414) = 145.51, p < .0001$ ]. Post-hoc comparisons using the Tukey adjustment test indicated that the means for communication skills for educators ( $M = 3.66, SD = .41$ ), employers ( $M = 2.99, SD = .95$ ), and recent graduates ( $M = 4.25, SD = .46$ ) were significantly different from each other. These findings suggested that recent graduates strongly believed, educators believed, and employers were uncertain about the impact of training programs in improving the communication skills of trainees. There was a significant difference concerning teamwork at the  $p < .05$  level for educators, employers, and recent graduates [ $F(2, 414) = 193.89, p < .0001$ ]. Post-hoc comparisons using the Tukey

Table 22

*Skills among educators, employers, and recent graduates*

Skill	Educator (n = 129)		Employer (n = 85)		Recent Graduate (n = 203)		F - value	p - value
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation		
	(M)	(SD)	(M)	(SD)	(M)	(SD)		
Communication skills	3.66	.41	2.99	.95	4.25	.46	145.51	<.0001
Teamwork	3.89	.40	3.00	.89	4.34	.36	193.89	<.0001
Lifelong learning	3.56	.43	2.23	.71	3.98	.60	277.16	<.0001
Professionalism	3.92	.47	3.05	.92	4.13	.38	113.74	<.0001
Problem-solving and decision-making skills	3.82	.37	3.11	.73	4.25	.40	171.56	<.0001
Competence in application and practices	3.51	.73	3.09	.80	4.26	.48	118.00	<.0001
Knowledge of science and engineering principles	3.92	.36	2.85	.79	4.27	.48	218.74	<.0001
Knowledge of contemporary issues	4.05	.32	3.39	.72	4.39	.41	138.92	<.0001
Engineering system approaches	3.71	.45	3.31	.60	4.30	.45	142.93	<.0001
Competence in specific engineering disciplines	4.11	.60	2.88	.69	4.09	.62	127.16	<.0001

Table 23

*P-value of the post-hoc test among educators, employers, and recent graduates*

Skill	Group Comparisons Significant at the 0.05 Level		
	Educator – Employer	Educator – Recent Graduate	Employer – Recent Graduate
Communication skills	0.67	0.59	1.26
Teamwork	0.88	0.45	1.33
Lifelong learning	1.33	0.42	1.75
Professionalism	0.86	0.21	1.08
Problem-solving and decision-making skills	0.71	0.43	1.14
Competence in application and practices	0.43	0.75	1.17
Knowledge of science and engineering principles	1.07	0.36	1.42
Knowledge of contemporary issues	0.67	0.34	1.01
Engineering system approaches	0.40	0.60	0.99
Competence in specific engineering disciplines	1.22	0.01 *	1.21

*Note.* \* P – value is not significantly different

adjustment test indicated that the means for teamwork skills for educators ( $M=3.89$ ,  $SD=.40$ ), employers ( $M=3.00$ ,  $SD=.89$ ), and recent graduates ( $M=4.34$ ,  $SD=.36$ ) were significantly different from each other. These findings indicated that recent graduates strongly believed, educators believed, and employers were uncertain about the effects of training programs in improving the teamwork skills of trainees.

Moreover, there was a significant difference on lifelong learning at the  $p<.05$  level for educators, employers, and recent graduates [ $F(2, 414)=277.16$ ,  $p<.0001$ ]. Post-hoc comparisons using the Tukey adjustment test suggested that the means for lifelong learning skills for educators ( $M=3.56$ ,  $SD=.43$ ), employers ( $M=2.23$ ,  $SD=.71$ ), and recent graduates ( $M=3.98$ ,  $SD=.60$ ) were significantly different from each other. These findings revealed that recent graduates strongly believed, educators believed, and employers were uncertain about the benefits of training programs in improving the lifelong learning skills of trainees. There was a significant difference concerning professionalism at the  $p<.05$  level for all groups [ $F(2, 414)=113.74$ ,  $p<.0001$ ]. Post-hoc comparisons using the Tukey adjustment test suggested that the means for professionalism skills for educators ( $M=3.92$ ,  $SD=.47$ ), employers ( $M=3.05$ ,  $SD=.92$ ), and recent graduates ( $M=4.13$ ,  $SD=.38$ ) were significantly different from each other. These findings indicated that recent graduates strongly believed, educators believed, and employers were uncertain with respect to the impact of training programs in improving the professionalism of trainees.

There was a significant difference concerning problem-solving and decision-making skills at the  $p<.05$  level for educators, employers, and recent graduates [ $F(2, 414)=171.56$ ,  $p<.0001$ ]. Post-hoc comparisons using the Tukey adjustment test indicated that the means for problem-solving and decision-making skills for educators ( $M=3.82$ ,

SD=.37), employers (M=3.11, SD=.73), and recent graduates (M=4.25, SD=.40) were significantly different from each other. These findings implied that recent graduates strongly believed, educators believed, and employers were uncertain regarding the benefits of training programs in improving the problem-solving and decision-making skills of trainees. There was a significant difference concerning competence in application and practices at the  $p < .05$  level for all groups [ $F(2, 414) = 118.00, p < .0001$ ]. Post-hoc comparisons using the Tukey adjustment test revealed that the means for competence in application and practices for educators (M=3.51, SD=.73), employers (M=3.09, SD=.80), and recent graduates (M=4.26, SD=.48) were significantly different from each other. These findings revealed that recent graduates strongly believed, educators believed, and employers were uncertain about the positive impact of training programs in improving the competence in applications and practices of trainees.

Furthermore, there was a significant difference concerning knowledge of science and engineering principles at the  $p < .05$  level for the respondent groups [ $F(2, 414) = 218.74, p < .0001$ ]. The Tukey adjustment post-hoc test comparisons indicated that the means for knowledge of science and engineering principles for educators (M=3.92, SD=.36), employers (M=2.85, SD=.79), and recent graduates (M=4.27, SD=.48) were significantly different from each other. These findings suggested that recent graduates strongly believed, educators believed, and employers were uncertain about the impact of training programs in improving the knowledge of science and engineering principles of trainees. There was a significant difference on knowledge of contemporary issues at the  $p < .05$  level for all groups [ $F(2, 414) = 138.92, p < .0001$ ]. Post-hoc comparisons suggested that the means for knowledge of contemporary issues for educators (M=4.05, SD=.32), employers

( $M=3.39$ ,  $SD=.72$ ), and recent graduates ( $M=4.39$ ,  $SD=.41$ ) were significantly different from each other. These findings suggested that recent graduates strongly believed, educators believed, and employers were uncertain about the benefits of training programs in improving the knowledge of contemporary issues of trainees.

There was a significant difference on engineering system approaches at the  $p<.05$  level for the three groups [ $F(2, 414)=142.93$ ,  $p<.0001$ ]. Post-hoc comparisons using the Tukey adjustment test indicated that the means for engineering system approaches for educators ( $M=3.71$ ,  $SD=.45$ ), employers ( $M=3.31$ ,  $SD=.60$ ), and recent graduates ( $M=4.30$ ,  $SD=.45$ ) were significantly different from each other. These findings suggested that recent graduates strongly believed, educators believed, and employers were uncertain about the positive effects of training programs in improving the engineering system approaches of trainees. There was a significant difference on competence in specific engineering disciplines at the  $p<.05$  level for all groups [ $F(2, 414)=127.16$ ,  $p<.0001$ ]. Post-hoc comparisons using the Tukey adjustment test indicated that the means for competence in specific engineering disciplines for educators ( $M=4.11$ ,  $SD=.60$ ) was significantly different from employers ( $M=2.88$ ,  $SD=.69$ ). However, educators did not significantly differ from recent graduates ( $M=4.09$ ,  $SD=.62$ ). These findings suggested that recent graduates and educators strongly believed in the positive impact of training programs in improving the competence in specific engineering disciplines; however, employers were uncertain

Overall, based on the one-way ANOVA and the Tukey adjustment post-hoc tests, educators, employers, and recent graduates perceived different levels of agreement in regard to the role of employability skills training programs for improving the skills of the

workforce. Educators agreed, recent graduates strongly agreed, and employers were undecided about the positive effects of training programs for most skills.

### Research Question 2

#### **What are the perceptions of educators, employers, and recent graduates regarding the contribution of employability skills training programs in minimizing unemployment in the workforce of Malaysia?**

Table 24 illustrates the means and standard deviations for items 39 through 45. These items addressed the perceptions of the respondents regarding the contribution of training programs in minimizing unemployment in the Malaysian workforce. For item 39, educators (M=4.14, SD=1.03) and recent graduates (M=4.33, SD=.70) agreed that training programs helped them in obtaining employment in the job market. In contrast, employers (M=3.07, SD=.74) were undecided whether such programs helped graduates in that regard. Educator perceptions were varied. For item 40, educators (M=3.81, SD=.80) and recent graduates (M=3.78, SD=1.17) agreed that training programs prepared graduates to enter the competitive workforce; employers (M=2.95, SD=1.23) were undecided. The relatively high standard deviations suggested that employers and recent graduates were dispersed in their responses. For item 41, educators (M=3.71, SD=.83) and recent graduates (M=3.77, SD=1.04) agreed that training programs addressed trainee weaknesses; employers (M=2.89, SD=.72) were uncertain. Recent graduate perceptions were highly dispersed. For item 42, educators (M=3.57, SD=.93) and recent graduates (M=3.88, SD=1.02) generally agreed that training programs provided credential qualifications that work for recent graduates; however, employers (M=3.08, SD=.90) were



undecided. A relatively high standard deviation showed that recent graduate responses were dispersed.

Table 24

*Contribution of employability skills training programs in minimizing unemployment in the workforce of Malaysia*

Item	Educator		Employer		Recent Graduate	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
	(M)	(SD)	(M)	(SD)	(M)	(SD)
39. Employability skills training programs help graduates get employment.	4.14	1.03	3.07	.74	4.33	.70
40. Graduates of employability skills training programs are well prepared to enter a competitive workforce.	3.81	.80	2.95	1.23	3.78	1.17
41. Employability skills training programs address recent graduates' weaknesses.	3.71	.83	2.89	.72	3.77	1.04
42. Employability skills training programs provide credential qualifications that work for recent graduates.	3.57	.93	3.08	.90	3.88	1.02
43. Employability skills training programs facilitate job-matching between recent graduates and employers.	3.91	1.02	3.08	1.21	3.79	1.04
44. Employability skills training programs improve assimilation and integration of recent graduates into the workplace.	4.13	1.00	3.39	1.11	4.00	.99
45. Employability skills training programs motivate recent graduates to work in challenging industries.	4.17	.75	3.32	.99	4.11	.80

For item 43, educators (M=3.91, SD=1.02) and recent graduates (M=3.79, SD=1.04) agreed that training programs facilitated job-matching between employers and graduates; employers (M=3.08, SD=1.21) were uncertain. The relatively high standard deviations indicated that all respondent groups were widely dispersed with their responses.

For item 44, educators ( $M=4.13$ ,  $SD=1.00$ ) and recent graduates ( $M=4.00$ ,  $SD=.99$ ) agreed that training programs improved the assimilation of graduates into the workplace; employers ( $M=3.39$ ,  $SD=1.11$ ) were again undecided. The relatively high standard deviations for recent graduates and employers revealed that they had high variation in their responses. For item 45, educators ( $M=4.17$ ,  $SD=.75$ ) and recent graduates ( $M=4.11$ ,  $SD=.80$ ) agreed that training programs motivated trainees to work in challenging industries; employers ( $M=3.32$ ,  $SD=.99$ ) were uncertain. All groups appeared to have general consensus concerning the benefits of such programs in motivating graduates to work in challenging and competitive industries. The findings suggested that educators and recent graduates agreed with respect to the effectiveness of employability skills training programs in helping graduates secure job positions. However, employers seemed uncertain about the contribution of training programs in minimizing unemployment in the Malaysian workforce. Employers were also uncertain regarding the objectives and direction of such programs.

### Research Question 3

#### **Do educators, employers, and recent graduates believe employability skills training programs contribute to the development of the workforce of Malaysia?**

Table 25 displays the means and standard deviations for items 46 through 54. These items addressed the perceptions of educators, employers, and recent graduates about the contribution of training programs in the development of the Malaysian workforce. For item 46, educators ( $M=3.81$ ,  $SD=.94$ ) and recent graduates ( $M=3.97$ ,  $SD=.81$ ) agreed that employability skills training programs contributed to the social development of the nation;

Table 25

*Contribution of employability skills training programs to the development of the workforce of Malaysia*

Item	Educator		Employer		Recent Graduate	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
	(M)	(SD)	(M)	(SD)	(M)	(SD)
46. Employability skills training programs contribute to the social development of the country.	3.81	.94	3.02	.91	3.97	.81
47. Employability skills training programs transfer knowledge and skills to the Malaysian workforce.	4.14	.95	3.16	.81	4.55	.63
48. Employability skills training programs serve as continuous professional development for the workforce.	4.03	.73	4.02	1.09	4.02	.84
49. Employability skills training programs increase the productivity and efficiency of employees.	4.41	.49	3.19	.89	3.93	1.23
50. Graduates of employability skills training programs gain valuable experiences from the programs.	4.16	.74	3.80	.91	3.85	1.02
51. Employability skills training programs contribute to the economic development of the country.	4.12	.86	4.21	.91	4.31	.68
52. Employability skills training programs increase the job satisfaction of employees.	4.29	.60	3.29	.96	3.79	1.10
53. Employability skills training programs improve occupational safety and health in the workplace.	3.88	.71	3.21	1.10	3.68	1.04
54. Employability skills training programs respond to the rapidly changing nature of skills and new technology.	3.19	.85	3.51	.98	4.20	.81

employers (M=3.02, SD=.91) were undecided. Educator, employer, and recent graduate responses were in high variation. For item 47, educators (M=4.14, SD=.95) and recent graduates (M=4.55, SD=.63) agreed that training programs transferred knowledge and

skills to the workforce; although, employers ( $M=3.16$ ,  $SD=.81$ ) were undecided. All participant groups had a high degree of variation in their responses.

For item 48, educators ( $M=4.03$ ,  $SD=.73$ ) and recent graduates ( $M=4.02$ ,  $SD=.84$ ) agreed that training programs served as continuous professional development for the workforce; employers ( $M=4.02$ ,  $SD=1.09$ ) were undecided. A relatively high standard deviation suggested that employer responses were widely dispersed regarding the role of training programs in continuous professional development. For item 49, educators ( $M=4.41$ ,  $SD=.49$ ) and recent graduates ( $M=3.93$ ,  $SD=1.23$ ) agreed that training programs increased the productivity and efficiency of employees; however, employers ( $M=3.19$ ,  $SD=.89$ ) were uncertain. Recent graduate perceptions were widely spread due to a relatively high standard deviation. For item 50, educators ( $M=4.16$ ,  $SD=.74$ ), employers ( $M=3.80$ ,  $SD=.91$ ), and recent graduates ( $M=3.85$ ,  $SD=1.02$ ) agreed that training programs provided valuable experiences to trainees; although recent graduate responses were highly dispersed. For item 51, educators ( $M=4.12$ ,  $SD=.86$ ), employers ( $M=4.21$ ,  $SD=.91$ ), and recent graduates ( $M=4.31$ ,  $SD=.68$ ) agreed that training programs contributed to the economic development of the country. There was general agreement among all respondent groups.

For item 52, educators ( $M=4.29$ ,  $SD=.60$ ) and recent graduates ( $M=3.79$ ,  $SD=1.10$ ) agreed that employability skills training programs increased job satisfaction of employees and graduates; employers ( $M=3.29$ ,  $SD=.96$ ) were undecided. A relatively high standard deviation suggested that their responses were dispersed. For item 53, educators ( $M=3.88$ ,  $SD=.71$ ) and recent graduates ( $M=3.68$ ,  $SD=1.04$ ) agreed that training programs improved occupational safety and health in the workplace; employers ( $M=3.21$ ,

SD=1.10) were undecided. The relatively high standard deviations suggested that employer and recent graduate perceptions were highly varied regarding the benefits of such programs on occupational safety and health. For item 54, employers (M=3.51, SD=.98) and recent graduates (M=4.20, SD=.81) agreed that training programs responded to rapidly changing skills and technology; educators (M=3.19, SD=.85) were uncertain. There was some general agreement among all respondent groups.

Overall, based on the findings for items 46 through 54, the educator and employer participants agreed about all contributions of training programs regarding the development of the workforce. Educators were undecided only on the capability of training programs in responding to changing skills and technology. Employers were uncertain about many contributions of training programs to workforce development, except for items 48, 50, 51, and 54. The findings indicated that educators and recent graduates agreed with respect to the positive impact of employability skills training programs for Malaysian workforce development. However, employers seemed less certain about the contribution of training programs related to the development of the Malaysian workforce.

#### Research Question 4

#### **What are the factors that facilitate the involvement of recent graduates in employability skills training programs?**

Table 26 presents the means and standard deviations for items 55 through 61. These items addressed factors that facilitate the involvement of recent graduates in employability skills training programs. For educators, the means of items 57 and 60 were relatively high in comparison to other items. This finding indicated that educators agreed

with the factors in these items. Educators perceived that graduates enrolled in employability skills training programs because they lacked work experience; therefore, such programs could provide better job opportunities for graduates.

Table 26

*Factors that facilitate the involvement of recent graduates in employability skills training programs*

Item	Educator		Employer		Recent Graduate	
	Mean (M)	Standard Deviation (SD)	Mean (M)	Standard Deviation (SD)	Mean (M)	Standard Deviation (SD)
55. Recent graduates lack employability skills so they enrolled in employability skills training programs.	3.22	.90	3.99	1.19	4.36	.70
56. The knowledge and skills of recent graduates mismatch employers' demands so recent graduates enrolled in employability skills training programs.	3.38	.87	4.33	1.06	4.19	.93
57. Recent graduates are lacking work experience so they enrolled in employability skills training programs.	4.03	.66	4.07	1.32	4.35	.82
58. Industries in Malaysia are downsizing rapidly and affecting recent graduates so they enrolled in employability skills training programs.	2.30	.83	1.75	.95	3.35	1.22
59. Industries have negative perceptions of recent graduates so recent graduates enrolled in employability skills training programs.	2.22	.81	1.64	.70	3.55	1.15
60. Employability skills training programs provide better job opportunities for recent graduates to start their careers, so they enrolled in training programs.	3.83	.93	2.65	1.19	4.20	.95
61. Employability skills training programs are the last option for recent graduates after failing to secure jobs by themselves.	2.71	1.07	3.91	1.18	3.40	1.08

For employers, there were high means on items 55, 56, 57, and 61, suggesting that employers agreed with the factors in these items. Accordingly, employers believed that recent graduates lacked employability skills and work experience. The employer respondents perceived that graduates' knowledge and skills were mismatched with industrial requirements. Additionally, employers agreed that training programs represented the last option for graduates. These were factors revealed by employers that led graduates to participate in employability skills training programs.

With respect to recent graduates, the means of items 55, 56, 57, 59, and 60 were relatively high. The data suggested that there was agreement with the factors in these items. Recent graduates perceived that there were multiple factors that led them to enroll in employability skills training programs in Malaysia. They knew they lacked employability skills and work experience. They also perceived that their current knowledge and skills were mismatched with employers' demands and requirements. Additionally, recent graduates believed that training programs provided them better job opportunities to begin their careers. These were among the factors that facilitated the involvement of recent graduates in employability skills training programs, as reported by recent graduates.

#### Research Question 5

**What are the recommendations of educators, employers, and recent graduates for improving employability skills training programs?**

Part B of the survey answered Research Question 5 and sample responses in this part shown in Appendix I. Table 27 displays a list of themes that were coded from the

Table 27

*Issues related to employability skills training programs*

Educator		Employer		Recent Graduate	
Issue	Rank (Frequency)	Issue	Rank (Frequency)	Issue	Rank (Frequency)
Recent graduates' attitudes during training programs	1 (26)	Recent graduates' attitudes during training programs	1 (19)	Insufficient facilities in training programs	1 (29)
Unclear objectives and direction of training programs and non-standardized training program models and curriculums	2 (18)	Unclear objectives and direction of training programs and non-standardized training program models and curriculums	2 (10)	Lack of skills among recent graduates	2 (13)
Lack of skills among recent graduates	3 (17)	Insufficient support from government, such as funding, monitoring, encouragement, legislation, and commitment	3 (6)	Administration and management of training programs	3 (11)
Limited and irrelevant training programs offered by the government	4 (12)	Acceptance and negative perceptions by industry/employers regarding recent graduates	4 (5)	Insufficient support from government, such as funding, monitoring, encouragement, legislation, and commitment	4 (10)
Acceptance and negative perceptions by industry/employers regarding recent graduates	5 (10)	Lack of skills among recent graduates	4 (5)	Unclear objectives and direction of training programs and non-standardized training program models and curriculums	5 (8)



respondent feedback on item 1 in Part B of the survey. The written feedback was categorized, theme-matched, frequency-counted, and rank-ordered. These themes were perceived to be the most important issues related to employability skills training programs in Malaysia, as reported by educators, employers, and recent graduates. The educator respondents ranked recent graduates' attitudes as primary during employability skills training programs. Recent graduates seemed neither interested nor committed in acquiring knowledge and skills during training programs. The educators indicated that objectives and direction of training programs were not clear. Additionally, training program models and curricula were not standardized. A lack of employability skills among recent graduates was perceived as another important issue for educators. Further, important issues that were noted included limited training programs offered by the government and negative perceptions by employers regarding recent graduates.

The employer participants identified the attitudes of recent graduates during employability skills training programs as a major issue; it was similarly perceived by educators. Employers also perceived that the objectives and direction of training programs were not clear. Additionally, program models and curricula used in training programs were not standardized by the government. Another issue was lack of support, such as funding, monitoring, legislation, and commitment, from the government to assist employability skills training programs. Other issues identified included acceptance of new graduates by employers and lack of employability skills.

The major issue identified by recent graduates was insufficient facilities in employability skills training programs. They lacked modern tools, software, machines, and equipment to assist in learning and training. The second most important issue identified by recent

graduates was lack of employability skills. Another issue was administration and management of training programs. In summary, the data suggested that recent graduates were concerned with the credibility of training programs to provide recent graduates with industrial knowledge and skills for the workplace. Lack of support from the government and lack of clarity of objectives and direction of programs were other critical issues facing training programs in Malaysia.

Table 28 displays written responses on item 2 in Part B of the survey. The responses were coded into themes. These themes addressed the perceptions of educators, employers, and recent graduates regarding barriers that could impede employability skills training programs in Malaysia. Educators ranked unclear objectives and direction of training programs as the most important barriers. There was no apparent detailed information for the public about training programs available in the workforce. The educator participants perceived negative attitudes of recent graduates during training as an important barrier. Recent graduates' personal attitudes seemed to hinder development of their knowledge and skills. Educators perceived administration and management of training programs as critical barriers. Other barriers were lack of employer involvement and lack of support from governmental agencies. Limited contributions by industries suggested that there were limited agreement and cooperation between higher education institutions and employers in the development of the Malaysian workforce. Employers ranked recent graduates' attitudes as the most critical barrier that could impede training programs. Negative attitudes hindered recent graduates' ability to acquire knowledge and skills offered by training programs. Employers perceived that the objectives and direction of training programs were not clear; ineffective administration

Table 28

*Barriers that impede the progress of employability skills training programs*

Educator		Employer		Recent Graduate	
Barrier	Rank (Frequency)	Barrier	Rank (Frequency)	Barrier	Rank (Frequency)
Unclear objectives and direction of training programs and non-standardized training program models and curriculums	1 (24)	Negative attitudes of recent graduates during training programs	1 (15)	Employers not actively involved in workforce education and training	1 (18)
Negative attitudes of recent graduates during training programs	2 (23)	Unclear objectives and direction of training programs and non-standardized training program models and curriculums	2 (10)	Administration and management of training programs	2 (12)
Administration and management of training programs	2 (23)	Administration and management of training programs	3 (9)	Negative attitudes of recent graduates during training programs	2 (12)
Employers not actively involved in workforce education and training	4 (18)	Insufficient support from government, such as funding, monitoring, encouragement, legislation, and commitment	4 (6)	Unclear objectives and direction of training programs and non-standardized training program models and curriculums	4 (10)
Insufficient support from government, such as funding, monitoring, encouragement, legislation, and commitment	5 (13)	Problems and issues in the economy affecting recent graduates	5 (5)	Problems and issues in the economy affecting recent graduates	5 (6)

and management were also problematic. Lack of government support and a stagnant economic environment were other barriers that were identified.

Recent graduates ranked lack of involvement of employers in workforce education and training as the most important barrier that impedes the progress of training programs. Malaysian employers were perceived to be generally disinterested about being responsible for education and training. The second most critical barrier was the administration and management of training programs. Poor management and lack of effective administration likely impede the progress of training programs. Other barriers included negative attitudes of recent graduates, unclear objectives and direction of programs, and poor economic conditions. The findings suggested that recent graduates were most concerned about the credibility of training programs in providing them with industrial knowledge and skills in the workplace.

Table 29 reveals the respondent feedback for item 3 in Part B of the survey. The written feedback was coded, ranked, and categorized into a list of themes. These themes identified facilitators that could improve employability skills training programs in Malaysia. Educators ranked the effectiveness of administration and management of employability skills training programs as the most important factor to improve such programs. Educators implied that the effectiveness of such programs can be improved by upgrading facilities in training centers. In the second ranking, educators perceived that industry should be involved in workforce education and training. Active participation by employers would likely impact students' and trainees' understanding about the application of knowledge learned in the classroom. The third most important facilitator was support needed from government to assist employability skills training programs: funding,

Table 29

*Facilitators to improve employability skills training programs*

Educator		Employer		Recent Graduate	
Facilitator	Rank (Frequency)	Facilitator	Rank (Frequency)	Facilitator	Rank (Frequency)
Effectiveness of administration and management of training programs and training program facilities upgrade	1 (27)	Insufficient support from government, such as funding, monitoring, encouragement, legislation, and commitment	1 (31)	Employer participation in workforce education and training	1 (26)
Employer participation in workforce education and training	2 (24)	Effectiveness of administration and management of training programs and training program facilities upgrade	2 (16)	Focus of training programs on skill improvement and unemployment minimization	2 (22)
Insufficient support from government, such as funding, monitoring, encouragement, legislation, and commitment	3 (21)	Employer participation in workforce education and training	3 (14)	Insufficient support from government, such as funding, monitoring, encouragement, legislation, and commitment	3 (21)
Instruction in training programs in response to current change of skills and technologies	4 (18)	Attitude change of recent graduates during training programs	4 (13)	Instruction in training programs in response to current change of skills and technologies	4 (20)
Attitude change of recent graduates during training programs	5 (11)	Instruction in training programs in response to current change of skills and technologies	4 (13)	Positive economic environment	5 (14)

monitoring, encouraging, enforcing legislation, and embracing commitment. Additional facilitators necessary to improve employability skills training programs were instruction and attitude change of recent graduates during training programs.

Employers ranked support from the Malaysian government as the most important factor to improve employability skills training programs. Government assistance, such as funding and monitoring, can ensure the functions of training programs. Employers also believed that by offering incentives, industries can improve their contributions to workforce development and become directly involved in employability skills training programs. The next factor identified by employers was effectiveness of administration and management of training programs. An additional factor was industrial contributions to workforce education and training. Employers also perceived that attitude change and instruction in training programs were other critical factors. The most frequently identified factor by recent graduates was employer involvement in workforce education and training to strengthen the connection between the classroom and the workplace. The second most important issue for recent graduates was the focus of training programs. Recent graduates perceived that support from the government, instruction in training programs, and economic conditions were among the most important influences. Positive responses to these facilitators could improve knowledge and skills achievement during training programs.

Table 30 illustrates a list of themes coded from the respondent feedback on item 4 in Part B of the survey. The written feedback was categorized, theme-matched,

Table 30

*Most important skills for recent graduates to obtain employment*

Educator		Employer		Recent Graduate	
Skill	Rank (Frequency)	Skill	Rank (Frequency)	Skill	Rank (Frequency)
Discipline and integrity	1 (122)	Discipline and integrity	1 (106)	Discipline and integrity	1 (84)
Interpersonal skills	2 (66)	Interpersonal skills	2 (58)	Interpersonal skills	2 (72)
Teamwork	3 (23)	Professionalism	3 (24)	Knowledge in specific engineering disciplines	3 (71)
Professionalism	4 (20)	Application of knowledge	4 (20)	Professionalism	4 (44)
Leadership	5 (19)	Creativity and innovation	4 (20)	Application of knowledge	5 (41)
Creativity and innovation	5 (19)	Problem-solving skills	6 (14)	Teamwork	6 (25)
Knowledge in specific engineering disciplines	7 (18)	Lifelong learning	6 (14)	Lifelong learning	7 (21)

frequency-counted, and rank-ordered. These themes represented the most integral skills for recent graduates to obtain employment in the competitive job market, as perceived by educators, employers, and recent graduates who participated in this study. Educators ranked discipline and integrity as the most critical skills for recent graduates. Their next most important skill was interpersonal skills followed by professionalism. Finally, leadership, creativity and innovation, and knowledge in specific engineering disciplines were other important skills.

Employers ranked discipline and integrity as most important for recent graduates to possess in obtaining employment in the competitive job market. Interpersonal skills were also essential skills identified by employers. It was evident that employers preferred job candidates with the ability to speak clearly, present ideas confidently, and understand and speak English fluently. Moreover, employers ranked professionalism, the ability to apply knowledge, creativity and innovation, and problem-solving as the next most integral skills for recent graduates. Another critical skill identified by employers for graduates to embrace before entering the workforce was lifelong learning.

Furthermore, the top-ranked qualities perceived by recent graduates were discipline and integrity, as was also the case for employers and educators. Interpersonal skills were also identified as important. The recent graduate respondents perceived that knowledge in specific engineering disciplines was a critical requirement to obtain a job. The next integral skill identified was professionalism. Other important skills perceived by recent graduates that could assist them in obtaining employment included application of knowledge, teamwork, and lifelong learning.



### Summary

According to the findings, employability skills training programs have had an impact on the performance abilities of recent graduates, as perceived by educators and recent graduates who enrolled in such programs. These abilities have included: communication, teamwork, lifelong learning, professionalism, problem-solving and decision-making skills, competence in application and practices, knowledge of science and engineering principles, knowledge of contemporary issues, engineering system approaches, and competence in specific engineering principles. Educator and recent graduate perceptions were significantly different regarding most skills, except for competence in specific engineering disciplines. In contrast, employers were undecided regarding the capability of training programs in developing those skills. There was inconsistency and a low level of consensus concerning some skills, such as communication, teamwork, professionalism, competence in application and practices, and knowledge of science and engineering principles.

Recent graduates and educators perceived that employability skills training programs contributed to minimizing unemployment in the workforce. They concurred that training programs have assisted recent graduates in obtaining employment in the competitive workforce. They agreed regarding the effectiveness of training programs in providing preparation for the job market. Preparation included motivation of trainees, addressing graduates' weaknesses, improving assimilation and integration into the workplace, providing credential qualifications to work, and facilitating job-matching between employers and recent graduates. However, employers were uncertain about the role of training programs in minimizing unemployment. Employers were highly uncertain

about the capability of training programs in addressing the weaknesses of recent graduates and preparing them for the competitive workforce; the employer responses varied.

All three respondent groups revealed similar patterns of agreement in terms of the development of the Malaysian workforce. Educators and recent graduates agreed with respect to most of the benefits of employability skills training programs in workforce development; employers agreed less. Employers were uncertain about the contributions of such programs to economic and social development; improvement of occupational safety and health; and increase of productivity, efficiency, and job satisfaction. Educators were also uncertain about the ability of such programs to respond to rapidly changing industrial environments. Overall, employers seemed less certain about training program strategies in developing the labor force.

The educator participants agreed that recent graduates lacked work experience and that training programs provided better employment opportunities to facilitate involvement of recent graduates. Employers perceived that recent graduates lacked employability skills and work experience, the primary reasons why recent graduates enrolled in such programs. Another factor was mismatched knowledge and skills of graduates with employer requirements. Employers also believed that recent graduates enrolled in training programs because they failed to secure jobs by themselves. Further, recent graduates shared similar perceptions with educators regarding the involvement factors in training programs. Additionally, recent graduates identified negative perceptions of employers about recent graduates, lack of employability skills, and mismatched knowledge and skills of graduates related to industry demands and requirements as other factors that motivated their involvement in training programs.

Educators and employers indicated that the most important issues related to training programs were the attitudes of recent graduates during training programs, objectives and direction of training programs, acceptance by and perceptions of industry regarding new graduates, and lack of employability skills among new graduates. Meanwhile, recent graduates perceived that the most important issues related to management and administration of training programs were insufficient facilities and objectives of programs. Recent graduates also perceived lack of employability skills and support from governmental agencies as important issues. In terms of barriers to impede employability skills training programs, educators and employers shared their perceptions regarding the objectives and direction of such programs. They also shared insights about the negative attitudes of new graduates, administration and management of such programs, and lack of support from the government as barriers that could obstruct training programs. Recent graduates perceived that the lack of employer participation in education and training processes was the most important barrier. Other important barriers were administration and management of training programs, negative attitudes of trainees, unclear objectives and direction of training programs, and the poor economic environment. In terms of facilitators to improve employability skills training programs, educators and employers similarly perceived that the important facilitators included efficiency of administration and management of training programs, support from governmental agencies, change of attitudes among new graduates, participation of employers in workforce education and training, and instructional improvements in programs. Recent graduates perceived employer involvement in training as the most important facilitator that could improve the programs. Other essential facilitators

recommended by recent graduates were the focus of training programs and the positive economic environment.

Additionally, all respondent groups in this study listed discipline and integrity, interpersonal skills, and professionalism as the most important skills and attributes for recent graduates to possess before entering the job market. Educators, employers, and recent graduates agreed in regard to the importance of creativity and innovation, teamwork, lifelong learning, ability to apply knowledge, and knowledge in specific engineering disciplines as the most necessary skills that could assist recent graduates in obtaining employment.

## CHAPTER 5: CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The purpose of this study was to explore the perceptions of educators, employers, and recent graduates regarding the role of employability skills training programs in the workforce of Malaysia. The involvement factors in training programs and program improvement were also investigated. This chapter includes the conclusions, implications, and recommendations based on the findings of this study.

### Conclusions

Based on the findings of this study, it was concluded that employability skills training programs are essential economic strategies for improving the skills of recent graduates and employees. Educators and recent graduates agree about the positive impact of such programs on most of the skills in the Malaysian Engineering Employability Skills (MEES) framework (Yusoff et al., 2012). Although the level of agreement among educators and recent graduates is different, they agree on the capability of training programs for improving the skills of the workforce. Both respondent groups also contend that implementation of training programs assists in minimizing unemployment and developing the Malaysian workforce. These perceptions are consistent with Human Capital Theory that explains education and training in employability skills training programs are able to help the workforce in securing employment, developing human

resources, generating economic growth, and facing the global market (Becker, 1993; Nafukho et al., 2004; Schultz, 1961). However, employers perceive the role of employability skills training programs differently. They claim that training programs neither ensure improvement in the skills, minimize unemployment, nor develop the labor force. Employers have mixed views about the effectiveness of Technical and Vocational Education and Training in Malaysia and the strategies, policies, and practices in the theory. They may perceive the role of training programs from a different perspective, such as cost-benefit analysis. It could be concluded; therefore, that employer insights are not aligned with the government's position towards workforce education and training.

In the global and competitive job market, employability skills training programs are relevant for recent graduates and workers in the labor force. Such programs also assist recent graduates address their lack of skills and work experience. Training programs offer benefits for trainees that can affect their career paths. Additionally, employability skills training programs represent practical ways to address the mismatch of knowledge and skills of recent graduates related to employer demands and requirements. These contributions are strong justification for the government to continue their policies and practices in the Tenth Malaysia Plan 2011-2015 in initiating and providing employability skills training programs to the workforce of Malaysia.

In this study, educators and recent graduates shared similar perceptions regarding the role of employability skills training programs. It is probably because they have connections with education and training activities. Educators may have been involved in training programs directly and indirectly through their institutions, experiences, or research. Meanwhile, recent graduates, who participated in this study, were enrolled in

employability skills training programs. These connections may influence educators and recent graduates regarding the positive impact of employability skills training on skill improvement, unemployment minimization, and workforce development.

The respondents viewed the administration and management of employability skills training programs, attitudes of trainees, objectives and direction of programs, and employer involvement in education and training as the most important issues and barriers. These barriers should be addressed to ensure the progress of training programs. By addressing these barriers, training programs can play their roles effectively. The respondents perceived that improvement was needed in the administration and management of training programs, including planning, implementation, and outcomes. Aligned with Stufflebeam's (1983) evaluation model, these areas need to be assessed and evaluated to determine the effectiveness of employability skills training programs. Additionally, government and employers are the primary stakeholders in workforce development. The respondents seemed convinced that increasing employer participation and government support can improve the effectiveness of program assessment, planning, implementation, and outcomes. This concept has been successfully practiced in modern and developing nations around the globe, including Germany, Japan, and Singapore (Seng, 2011). This concept should become one of the key reforms of workforce development in Malaysia (Leong, 2011).

Furthermore, as perceived by most participants in this study, the most integral abilities that could help recent graduates in obtaining employment include discipline and integrity, interpersonal skills, and professionalism. The importance of these skills among engineering and technical students is consistent with many research studies (Greenan,

1986; Idrus & Salleh, 2008; Shah, 2008; Tong, 2003). The data also indicated that graduates should acquire skills such as creativity and innovation, teamwork, lifelong learning, ability to apply knowledge, and knowledge in specific engineering disciplines before entering the job market. These skills influence the future journey and career paths of recent graduates.

There is high value in examining the perceptions of educators, employers, and recent graduates regarding the role of employability skills training programs. Knowledge can be gained with respect to the properties and elements of the environment. Perception does not only shape experience, but also allows one to act within his or her environment. Therefore, the identification of perceptions in this study provides information about the role of employability skills training programs in the workforce of Malaysia. Perceptions also affect the respondents' attitudes. Therefore, this study is beneficial and contributes to the knowledge base of research in employability skills training programs. It also can build on the current knowledge base of education and training to further explore the importance of training programs in the Malaysian workforce.

#### Implications

The findings and conclusions revealed that educators and recent graduates appear convinced regarding the role of employability skills training programs in the workforce of Malaysia: training programs can improve trainee skills. This sends positive feedback to governmental agencies and local training centers. However, employers are less certain with respect to the capability of employability skills training programs for improving the skills of recent graduates. This uncertainty may stem from their lack of involvement in



workforce education and training in schools and universities. This finding should signal governmental agencies and local training providers to engage in program improvement activities. Assessment and evaluation studies can assist in identifying key areas that are vital for program improvement.

Both educators and recent graduates believe that employability skills training programs are relevant in minimizing unemployment in the Malaysian labor force, especially among recent graduates. According to the Department of Statistics Malaysia (2014), most unemployed laborers in Malaysia are recent graduates who are between 20 and 29 years old, and are from postsecondary and tertiary learning institutions. Recent graduates without a job have opportunities to enroll in training programs. The programs train graduates how to obtain a job, thereby, minimizing unemployment. The effectiveness of training programs could inspire the government to initiate future policies and methods.

The findings revealed that educators and recent graduates were convinced about the capability of training programs in developing the Malaysian labor force. This level of confidence impacts the positive perceptions of educators and recent graduates toward policy and practice in workforce education and training. Positive perceptions also assist to alleviate traditional negative perceptions by the public concerning unemployed recent graduates and employability skills training programs. In the long term, such perceptions can change and create a more positive image of workforce education and training in Malaysia.

The results identified why recent graduates enroll in employability skills training programs, including lack of skills of graduates and the poor economic environment.

These factors justify the need for training programs and can also be used to investigate program relevance. Stakeholders, such as policy makers, instructors, and future graduates could identify evidence for the rationale and relevance of training programs.

In this study, feedback on issues, barriers, and facilitators was gathered related to employability skills training programs. The responses contributed to performance measures of the programs, such as effectiveness, efficiency, productivity, and safety. Although limited to the perceptions of the respondents, the measures of training programs are important for consideration by governmental agencies and local training centers. These results become the starting point for further assessment and evaluation involving employability skills training programs. Additionally, the results revealed the most integral skills for recent graduates to obtain employment in the competitive job market. The skills contribute to the knowledge base in TVE.

### Recommendations

As is the case in most research studies, this study has several limitations, including the selection of research location and the assumptions about the subjects. The most industrially developed area on the west coast of peninsular Malaysia was selected as the primary research location. The subjects from manufacturing industries were selected based only on the assumptions that most graduates who majored in engineering, technical, and vocational programs worked in this occupational sector. Furthermore, this study did not include all employability skills training programs offered at training centers. It was limited to the Industrial Skills Enhancement Program (INSEP), Workers Technical Transformation Program (WTTP), and Graduate Enhancement Skills Programme

(GEMS). The site selections and assumptions limit the extent to which the findings and conclusions can be generalized. Additionally, engineering, technical, and vocational educators were grouped together based on the assumption that they have contributed to similar occupational sectors.

Another limitation is the relatively low response rate of educators and employers. Educators in public higher education institutions may have been too encumbered with instruction, administration, and research to have participated in the study. Educators outside training programs may have assumed that their perceptions were not important due to their lack of direct involvement in any employability skills training programs. Most training programs were conducted by local training centers, rather than public higher education institutions. Employers may have been hesitant to participate in this study because there was no clear immediate benefit for them. Similarly, they may have believed that their responses were less important due to no direct participation in any local employability skills training programs. Moreover, relying on hand-in surveys, phone calls, and e-mail to schedule appointments and forward follow-up reminders may not have been the most effective method to collect data from educators and employers. Non-response bias, therefore, may have been present due to the low response rate.

The survey instrument was limited because it did not include all possible definitions and descriptions of skill improvement, unemployment minimization, workforce development, and program enhancement. The questionnaire was assumed to be understood clearly by the respondents and the subjects were assumed to provide honest and frank responses. The actual population perceptions regarding the role of employability skills training programs were covered by a 95% confidence interval. These

limitations, however, are perceived as practical limitations and do not necessarily impede the methods used or the findings and conclusions reported.

The perceptions from three stakeholder groups in workforce education and training including educators, employers, and recent graduates may shed light on the role of employability skills training programs in the workforce of Malaysia. Moreover, the rationale, procedures, and instruments used in this study should be applicable and useful in future research. Based on the findings, conclusions, implications, and in light of the limitations of this study, therefore, the following recommendations are offered for policy, practice, and future research:

1. Governmental agencies and industry should enhance their collaboration to provide effective workforce education and training in areas such as employability skills training programs. In particular, the government along with higher education institutions and training centers should encourage employers to become more involved in training programs. Employers should be given more responsibilities in education and training since they are major stakeholders.
2. Governmental agencies should consider obtaining input and feedback continuously from its stakeholders including industries, parents, communities, foreign traders, students, academicians, and investors before formulating major policies and decisions regarding workforce education, training, and human resource development.
3. Governmental agencies should consider decentralizing employability skills training programs. Training centers should be provided the opportunity to initiate

training programs based on their analysis of the needs of the local workforce and their networking with local industry.

4. Policy makers should revise regulations and legislation in Malaysian industry to encourage participation of the private sector in local education and training institutions. Business and industry involvement is crucial in producing knowledgeable and skilled workers for the nation.
5. The federal government, local training centers, and instructors should provide stakeholders clear objectives for employability skills training programs.  
Widespread information regarding training programs can improve the perceptions of stakeholders and may remove previous and current negative perceptions about such programs.
6. Federal and local authorities should address the issue of uncertain perceptions among employers concerning employability skills training programs in Malaysia. Employers may have limited perceptions and be unwilling to share academic research since they may not receive any immediate benefits.
7. Federal and local authorities should address the issue of negative perceptions of the current economic environment in Malaysia. Comments and critiques should be channeled and addressed appropriately to better serve the nation in the future.
8. Assessment and evaluation studies of employability skills training programs should be periodically conducted to assess the effectiveness of training programs. Such studies can provide the necessary direction for training programs in the competitive workforce. Future studies can help establish and maintain quality standards in training programs.

9. A balanced and flexible approach should be emphasized concerning employability skills training program curriculum through the integration of Technical and Vocational Education (TVE), knowledge base in employability and generalizable skills, demands and requirements of business and industry, and needs of the nation.
10. Employability skills training programs should increase the content of sustainable engineering, entrepreneurship, business training, lifelong learning, professionalism, and work ethic in curriculum. Such curriculum improvements would nurture potential engineers who are responsible for their nation's needs and concerns about local, environmental, social, and global issues.
11. Engineering, technical, and vocational educators should have on-going professional development opportunities other than through their affiliations with educational institutions. Professional development may include in-service education, business networking and partnerships, industrial internships, industrial consultations, and industrial training programs.
12. Future research regarding the role of employability skills training programs should include innovative and appropriate statistical methods that can reveal factors (e.g., gender, age, educational background, and program major) that may have a significant influence on perceptions.
13. Future research should include multiple data collection methods to increase survey response rates. Additionally, consideration should be given with respect to utilizing multiple research instruments in data collection (e.g., interviews, focus groups, and other qualitative tools and methods).

14. Future research should replicate this study by using instructors from training programs and employers representative of diverse occupational sectors.

Replication studies should also consider the diverse nationwide population and subpopulations, rather than only those in the central economic region of the west coast.

15. Future research should consider investigating problems using experimental and correlational design studies. Such studies would assist to determine the effectiveness of employability skills training programs and their relationships with important variables across a variety of employment sectors.

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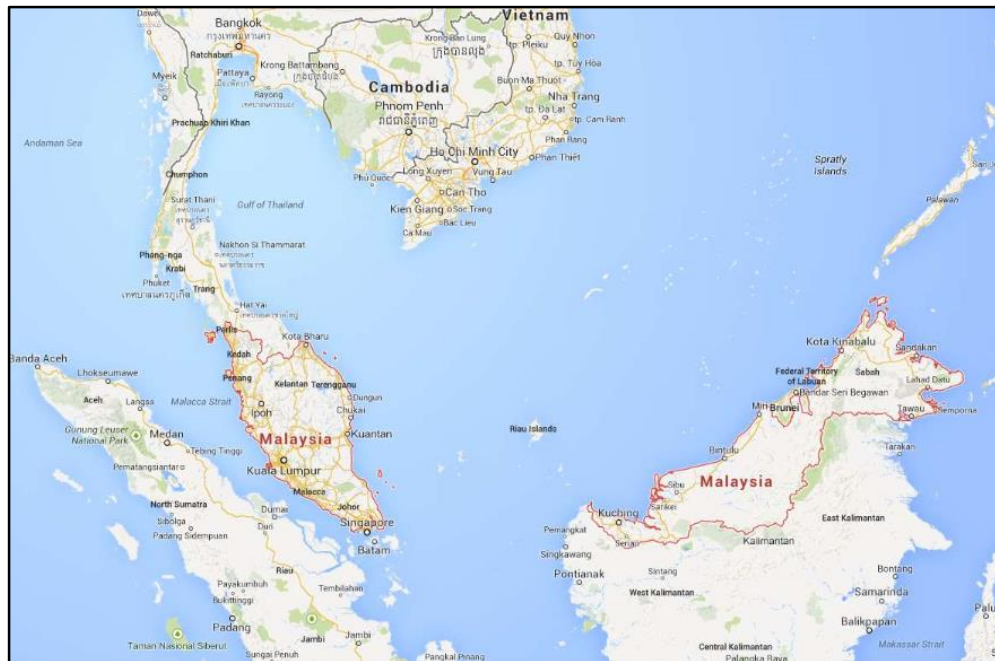
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## APPENDICES

### Appendix A: Location and Map of Malaysia

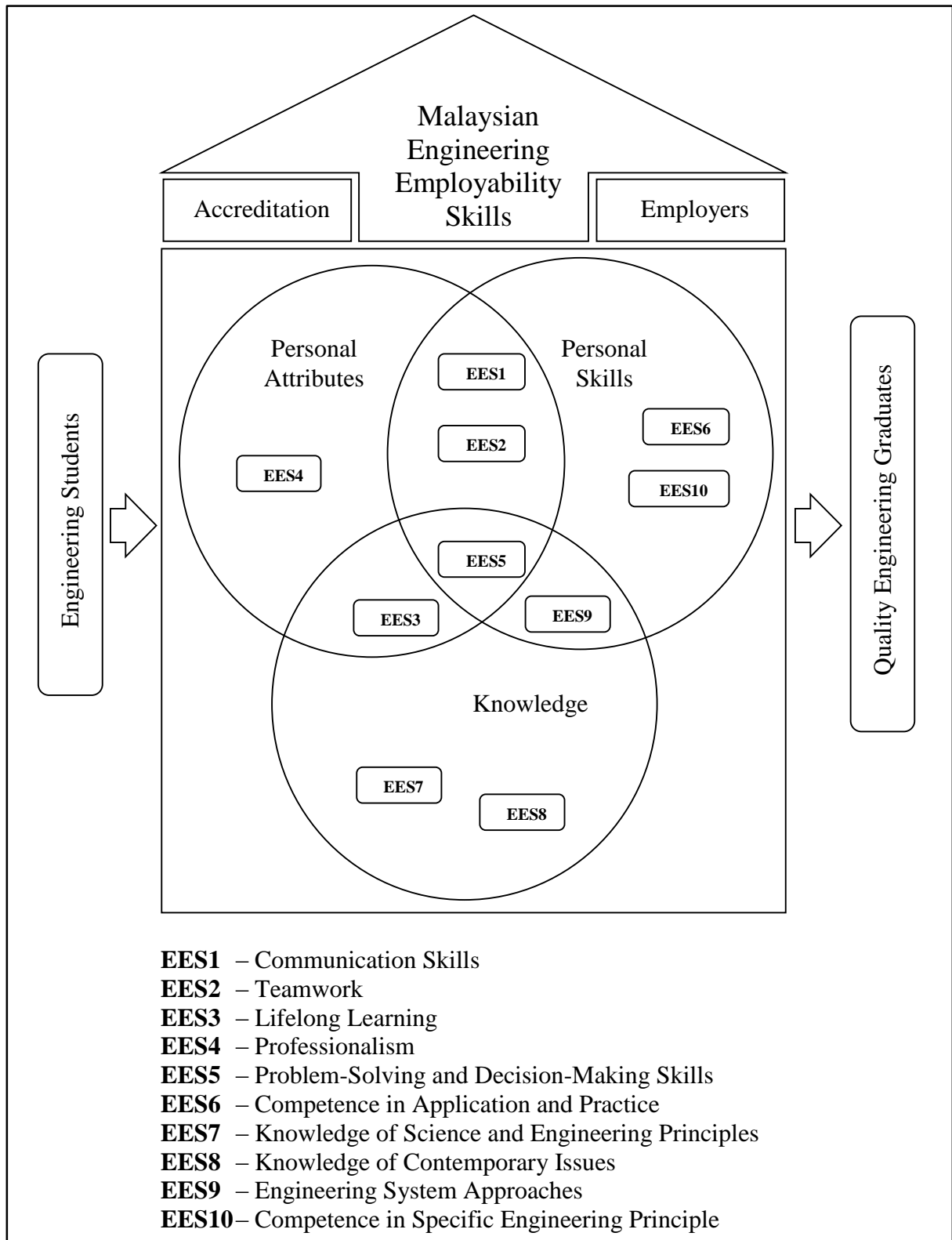


Location of Malaysia



Map of Malaysia

## Appendix B: Malaysian Engineering Employability Skills (MEES) Framework





Appendix C: Central Economic Region in the West Coast of Peninsular Malaysia



## Appendix D: List of Higher Education Institution Websites

No.	Institution	Contact
1.	Universiti Kebangsaan Malaysia (UKM)	Universiti Kebangsaan Malaysia (UKM), Jalan Reko, 43600 Bangi, Selangor, Malaysia.  Website: <a href="http://www.ukm.my">www.ukm.my</a> Tel: +60 3-8921 5555
2.	Universiti Islam Antarabangsa Malaysia (UIAM)	Universiti Islam Antarabangsa Malaysia (UIAM), Jalan Gombak, 53100 Kuala Lumpur, Selangor, Malaysia.  Website: <a href="http://www.iium.edu.my">www.iium.edu.my</a> Tel: +60 3-6196 4000
3.	Universiti Malaya (UM)	Universiti Malaya (UM), Jalan Universiti, 50603 Kuala Lumpur, Malaysia.  Website: <a href="http://www.um.edu.my">www.um.edu.my</a> Tel: +60 3-7955 2595
4.	Universiti Pertahanan Nasional Malaysia (UM)	Universiti Pertahanan Nasional Malaysia (UM), Jalan Raja, Kem Sungai Besi, 57000 Kuala Lumpur, Malaysia.  Website: <a href="http://www.upnm.edu.my">www.upnm.edu.my</a> Tel: +60 3-9051 3400
5.	Universiti Putra Malaysia (UPM)	Universiti Putra Malaysia (UPM), 43400 UPM Serdang, Selangor, Malaysia.  Website: <a href="http://www.upm.edu.my">www.upm.edu.my</a> Tel: +60 3-8946 6000
6.	Universiti Teknologi Mara (UiTM)	Universiti Teknologi Mara (UiTM), 40450 Shah Alam, Selangor, Malaysia.  Website: <a href="http://www.uitm.edu.my">www.uitm.edu.my</a> Tel: +60 3-5544 2000

## Appendix E: List of Employability Skills Training Programs

No.	Institution	Training Program	Contact
1.	Negeri Sembilan Skills Development Centre (NSSDC)	<ul style="list-style-type: none"> <li>• Industrial Skills Enhancement Program (INSEP).</li> <li>• Workers Technical Transformation Program (WTTP).</li> </ul>	<p>Negeri Sembilan Skills Development Centre (NSSDC), Batu 8 ½, Jalan Seremban-Mantin, 71700 Mantin, Negeri Sembilan.</p> <p>Website: <a href="http://www.nssdc.org.my">www.nssdc.org.my</a> Tel: +60 06-7587404</p>
2.	Selangor Human Resource Development Centre (SHRC)	<ul style="list-style-type: none"> <li>• Industrial Skills Enhancement Program (INSEP).</li> <li>• Workers Technical Transformation Program (WTTP).</li> <li>• Graduate Enhancement Skills Programme (GEMS).</li> </ul>	<p>Selangor Human Resource Development Centre (SHRDC), No. 1, Ground Floor, Block 2, Pusat Perniagaan Worldwide, Jalan Tinju 13/50, Section 13, 40100 Shah Alam, Selangor.</p> <p>Website: <a href="http://www.shrhc.org.my">http://www.shrhc.org.my</a> Tel: +60 03-55133560</p>

## Appendix F: Permission to Use Copyrighted Works

### PERMISSION TO USE COPYRIGHTED WORKS IN A PUBLICATION

Dr. Yuzainee Md. Yusoff  
 College of Engineering,  
 Universiti Tenaga Nasional,  
 Jalan IKRAM-UNITEN,  
 43009 Kajang, Selangor,  
 MALAYSIA

March 18, 2015

To Whom It May Concern:

For good consideration, as an author and designer of the Malaysian Engineering Employability Skills (MEES) instrument, I hereby grant permission to Mohd Hazwan Mohd Puad to use, reprint, and adapt my instrument for the purpose of educational research. Further, I grant permission to Mohd Hazwan Mohd Puad to use published materials in academic papers related to the MEES framework, such as but not limited to:


Yusoff, Y. M., Zaharim, A., Omar, M. Z., Mohamed, A., Muhamad, N., & Mustapha, R. (2009). Employers' selection skills in recruiting fresh engineering graduates. *2009 International Conference on Engineering Education (ICEED)*, Kuala Lumpur. 83-86.

Yusoff, Y. M., Zaharim, A., Omar, M. Z., Mohamed, A., Muhamad, N., Mustapha, R., & Rahmat, R. A. A. (2012). Engineering employability skills for Malaysian industry: Framework development. *Proceedings of the 8th WSEAS International Conference on Educational Technologies*, Porto, Portugal. 36-47.

Zaharim, A., Omar, M. Z., Basri, H., Muhamad, N., & Isa, F. L. M. (2009). A gap study between employers' perception and expectation of engineering graduates in Malaysia. *WSEAS TRANSACTIONS on ADVANCES in ENGINEERING EDUCATION*, 11(6), 409-419.

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Zaharim, A., Yusoff, Y. M., Omar, M. Z., & Basri, H. (2009). Employability skills framework for engineering graduate in Malaysia. *The 8th WSEAS International Conference on Education and Educational Technology*, Genova, Italy. 264-272.

Assignor Author  
  
 .....  
 Dr. Yuzainee Md. Yusoff  
 Senior Lecturer  
 College of Engineering,  
 Universiti Tenaga Nasional  
 (yuzainee@uniten.edu.my)

Dr. Yuzainee Md Yusoff  
 College of Engineering  
 Universiti Tenaga Nasional Malaysia  
 Tel: +603-89287243 H/P: +6016-4111054  
 email: yuzainee@uniten.edu.my  
 Official stamp

## Appendix G: Employability Skills Training Program Survey

**CONFIDENTIAL****Reference No.**

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## **EMPLOYABILITY SKILLS TRAINING PROGRAM SURVEY**

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### **QUESTIONNAIRE**

Dear prospective respondents,

I am conducting a research study entitled “The Role of the Employability Skills Training Programs in the Workforce of Malaysia.” The main objective of this survey is to examine how individuals perceive the role of employability skills training programs in the labor force of Malaysia. Your feedback and comments are highly valuable and needed for this study.

The IRB at Purdue University (IRB Protocol # 1410015298) and the Research Promotion and Co-Ordination Committee, Economic Planning Unit, Prime Minister’s Department, Malaysia (UPE:40/200/19/3175(5)) approved protocols and granted permission to the researcher to conduct this study.

If you want to be part of this study, you will be asked to complete this survey. For your information, respondents’ identities and feedback with regards to this survey are strictly confidential and will be used for research purposes only. When the researcher is done with the study, the researcher will write a dissertation. The researcher won’t use your identities in the dissertation.

If you do not want to be in this study, you can say “no” and there is no pressure whatsoever. If you say “yes” now, but you want to stop later, that is fine too.

I appreciate your willingness to participate in this research and best of luck. Thank you.

Mohd Hazwan Mohd Puad (Principal Investigator)  
hazwanzw@gmail.com

### Part A

**Directions:** Indicate and rate your perceptions regarding the role of employability skills training programs in the workforce of Malaysia for the following items. By referring to scale below, circle one appropriate answer that best matches with your response.

<b>Scale:</b>				
Strongly Disagree (SD)	Disagree (D)	Undecided (U)	Agree (A)	Strongly Agree (SA)

	Strongly Disagree (SD)	Disagree (D)	Undecided (U)	Agree (A)	Strongly Agree (SA)
1. Employability skills training programs increase recent graduates' abilities to speak in clear sentences.	SD	D	<b>U</b>	A	SA
2. Employability skills training programs transfer knowledge and skills to the workforce of Malaysia.	SD	D	U	<b>A</b>	SA

	Strongly Disagree (SD)	Disagree (D)	Undecided (U)	Agree (A)	Strongly Agree (SA)
1. Employability skills training programs increase recent graduates' abilities to speak in clear sentences.	SD	D	U	A	SA
2. Employability skills training programs improve the listening skills of recent graduates.	SD	D	U	A	SA
3. Employability skills training programs enhance recent graduates' abilities to present ideas confidently and effectively.	SD	D	U	A	SA
4. Employability skills training programs do <b>NOT</b> elevate recent graduates' abilities to understand and speak English.	SD	D	U	A	SA
5. Employability skills training programs increase recent graduates' abilities to work effectively as an individual.	SD	D	U	A	SA
6. Employability skills training programs improve recent graduates' abilities to understand their role in a group.	SD	D	U	A	SA
7. Employability skills training programs enhance recent graduates' abilities to work effectively as a team member in a group.	SD	D	U	A	SA

	Strongly Disagree (SD)	Disagree (D)	Undecided (U)	Agree (A)	Strongly Agree (SA)
8. Employability skills training programs elevate recent graduates' abilities to work in a group with the capacity to be a leader.	SD	D	U	A	SA
9. Employability skills training programs increase recent graduates' abilities to provide feedback in a constructive and considerate manner.	SD	D	U	A	SA
10. Employability skills training programs improve recent graduates' abilities to recognize the need to undertake lifelong learning.	SD	D	U	A	SA
11. Employability skills training programs enhance recent graduates' abilities to acquire the capacity to undertake lifelong learning.	SD	D	U	A	SA
12. Employability skills training programs elevate recent graduates' abilities to engage in lifelong learning.	SD	D	U	A	SA
13. Employability skills training programs increase recent graduates' abilities to understand social issues.	SD	D	U	A	SA
14. Employability skills training programs improve recent graduates' abilities to become aware of global issues.	SD	D	U	A	SA
15. Employability skills training programs enhance recent graduates' abilities to become aware of environmental issues.	SD	D	U	A	SA
16. Employability skills training programs elevate the professionalism of recent graduates.	SD	D	U	A	SA
17. Employability skills training programs increase abilities of recent graduates to be accountable for their actions.	SD	D	U	A	SA
18. Employability skills training programs improve recent graduates' abilities to identify problems in the workplace.	SD	D	U	A	SA
19. Employability skills training programs do <b>NOT</b> enhance recent graduates' abilities to reflect on their experiences to solve problems.	SD	D	U	A	SA

	Strongly Disagree (SD)	Disagree (D)	Undecided (U)	Agree (A)	Strongly Agree (SA)
20. Employability skills training programs elevate recent graduates' abilities to apply science, mathematics, or technology to solve problems.	SD	D	U	A	SA
21. Employability skills training programs do <b>NOT</b> increase the creativity and innovation of recent graduates.	SD	D	U	A	SA
22. Employability skills training programs improve recent graduates' abilities to use necessary techniques and skills for engineering practices.	SD	D	U	A	SA
23. Employability skills training programs enhance recent graduates' abilities to use modern engineering tools and software.	SD	D	U	A	SA
24. Employability skills training programs elevate recent graduates' abilities to work towards quality standards and specifications.	SD	D	U	A	SA
25. Employability skills training programs increase recent graduates' abilities to apply knowledge of engineering fundamentals.	SD	D	U	A	SA
26. Employability skills training programs improve recent graduates' abilities to use proper tools and equipment for a particular job or task.	SD	D	U	A	SA
27. Employability skills training programs enhance recent graduates' abilities to analyze knowledge of science and engineering fundamentals.	SD	D	U	A	SA
28. Employability skills training programs elevate recent graduates' abilities to understand principles of sustainable design and development.	SD	D	U	A	SA
29. Employability skills training programs increase recent graduates' abilities to use information technologies.	SD	D	U	A	SA
30. Employability skills training programs improve recent graduates' abilities to use communication technologies.	SD	D	U	A	SA



	Strongly Disagree (SD)	Disagree (D)	Undecided (U)	Agree (A)	Strongly Agree (SA)
31. Employability skills training programs enhance recent graduates' abilities to use computing technologies.	SD	D	U	A	SA
32. Employability skills training programs do <b>NOT</b> elevate recent graduates' abilities to learn new knowledge.	SD	D	U	A	SA
33. Employability skills training programs increase recent graduates' abilities to utilize an engineering system approach in the workplace.	SD	D	U	A	SA
34. Employability skills training programs improve graduates' abilities to design engineering systems.	SD	D	U	A	SA
35. Employability skills training programs enhance recent graduates' abilities to analyze engineering designs.	SD	D	U	A	SA
36. Employability skills training programs elevate recent graduates' abilities to acquire in-depth technical competencies in a specific engineering discipline.	SD	D	U	A	SA
37. Employability skills training programs increase recent graduates' abilities to apply technical skills in a specific engineering discipline effectively. (eg: highway, electronic, robotic)	SD	D	U	A	SA
38. Employability skills training programs improve recent graduates' abilities to apply knowledge in multidisciplinary engineering.	SD	D	U	A	SA
39. Employability skills training programs help graduates do <b>NOT</b> get employment.	SD	D	U	A	SA
40. Graduates of employability skills training programs are well prepared to enter a competitive workforce.	SD	D	U	A	SA
41. Employability skills training programs address recent graduates' weaknesses.	SD	D	U	A	SA
42. Employability skills training programs provide credential qualifications that work for recent graduates.	SD	D	U	A	SA

	Strongly Disagree (SD)	Disagree (D)	Undecided (U)	Agree (A)	Strongly Agree (SA)
43. Employability skills training programs facilitate job-matching between recent graduates and employers.	SD	D	U	A	SA
44. Employability skills training programs improve assimilation and integration of recent graduates into the workplace.	SD	D	U	A	SA
45. Employability skills training programs motivate recent graduates to work in challenging industries.	SD	D	U	A	SA
46. Employability skills training programs contribute to the social development of the country.	SD	D	U	A	SA
47. Employability skills training programs transfer knowledge and skills to the Malaysian workforce.	SD	D	U	A	SA
48. Employability skills training programs serve as continuous professional development for the workforce.	SD	D	U	A	SA
49. Employability skills training programs do <b>NOT</b> increase the productivity and efficiency of employees.	SD	D	U	A	SA
50. Graduates of employability skills training programs gain valuable experiences from the programs.	SD	D	U	A	SA
51. Employability skills training programs do <b>NOT</b> contribute to the economic development of the country.	SD	D	U	A	SA
52. Employability skills training programs increase the job satisfaction of employees.	SD	D	U	A	SA
53. Employability skills training programs improve occupational safety and health in the workplace.	SD	D	U	A	SA
54. Employability skills training programs respond to the rapidly changing nature of skills and new technology.	SD	D	U	A	SA
55. Recent graduates lack employability skills so they enrolled in employability skills training programs.	SD	D	U	A	SA

	Strongly Disagree (SD)	Disagree (D)	Undecided (U)	Agree (A)	Strongly Agree (SA)
56. The knowledge and skills of recent graduates mismatch employers' demands so recent graduates enrolled in employability skills training programs.	SD	D	U	A	SA
57. Recent graduates are lacking work experience so they enrolled in employability skills training programs.	SD	D	U	A	SA
58. Industries in Malaysia are downsizing rapidly and affecting recent graduates so they enrolled in employability skills training programs.	SD	D	U	A	SA
59. Industries have negative perceptions of recent graduates so recent graduates enrolled in employability skills training programs.	SD	D	U	A	SA
60. Employability skills training programs provide better job opportunities for recent graduates to start their careers, so they enrolled in training programs.	SD	D	U	A	SA
61. Employability skills training programs are the last option for recent graduates after failing to secure jobs by themselves.	SD	D	U	A	SA

**Part B**

**Directions:** Please provide your answers and recommendations regarding the following questions.

1. List the top three issues related to employability skills training programs in Malaysia.

(1) \_\_\_\_\_  
(2) \_\_\_\_\_  
(3) \_\_\_\_\_

2. List the three most important barriers that impede the progress of employability skills training programs in Malaysia.

(1) \_\_\_\_\_  
(2) \_\_\_\_\_  
(3) \_\_\_\_\_

3. List the three most important facilitators that help to improve employability skills training programs in Malaysia.

(1) \_\_\_\_\_  
(2) \_\_\_\_\_  
(3) \_\_\_\_\_

4. List the five most integral skills/ knowledge/ capabilities/ qualities that recent graduates should possess to obtain employment in the competitive workforce today.

(1) \_\_\_\_\_  
(2) \_\_\_\_\_  
(3) \_\_\_\_\_  
(4) \_\_\_\_\_  
(5) \_\_\_\_\_

**Part C**

**Directions:** Indicate and choose an answer that best describes your information for the following items. For each question, please mark (✓) or state your answer in the blank box provided.

**1. Gender**

Male

Female

**2. Age**

years old (please state)

**3. Race/ ethnicity**

Malay

Indian

Chinese

Other:.....  
(please state)

**4. The highest level of education**

Malaysian Certificate of Education (SPM/ SPMV)

Advanced/ Higher Diploma

Malaysian Higher School Certificate (STPM)

Bachelor Degree

Certificate

Master's Degree

Diploma

Doctoral Degree

**5. You are a/an .....**

Educator

**Proceed to Answer Question 6A - 10A only.**

Employer

**Proceed to Answer Question 6B – 11B only.**

Recent Graduate

**Proceed to Answer Question 6C – 13C only.**

**\*\*\*\*\* QUESTIONS 6A – 10A \*\*\*\*\*  
\*\*\*\*\* EDUCATOR ONLY \*\*\*\*\***

**6A. Program major**

Mechanical Engineering

Computer Engineering

Chemical Engineering

Materials/ Mineral Resources Engineering

Electrical/ Electronic Engineering

Biosciences and Medical Engineering

Civil Engineering

Technical and Vocational Education

Aerospace Engineering

Other:.....(please state)

**7A. Present position**

Professor/ Lecturer/ Instructor/ Teacher

Administrator

**8A. Total years of teaching experience**

years old (please state)

**9A. Total years of administration experience**

years old (please state)

**10A. Are you involved in employability skills training programs?**

Yes (please describe)

No

.....  
 .....

\*\*\*\*\***QUESTIONS 6B – 11B**\*\*\*\*\*  
 \*\*\*\*\***EMPLOYER ONLY**\*\*\*\*\*

**6B. Present position**

CEO/ President/ Director

Supervisor

Manager/ Head of Department

Other:.....

(please state)

**7B. Total years of management and administration experience**

2 years or less

11 – 15 years

3 – 5 years

16 – 20 years

6 – 10 years

20 years or more

**8B. Company size**

Large (more than 500 employees)

Small (less than 100 employees)

Medium (100 – 499 employees)

**9B. Type of ownership**

International Corporation

Local Ownership

Joint-venture  
 (International and Local)

Other:.....

(please state)

**10B. Company involvement in employability skills training programs**

Yes (please describe)

No

.....  
 .....  
 .....

**11B. My company manufactures this product(s):**

.....  
 .....  
 .....

**\*\*\*\*\* QUESTIONS 6C – 13C \*\*\*\*\*  
 \*\*\*\*\* RECENT GRADUATE ONLY \*\*\*\*\***

**6C. Program major**

Mechanical Engineering

Computer Engineering

Chemical Engineering

Materials/ Mineral Resources  
 Engineering

Electrical/ Electronic  
 Engineering

Biosciences and Medical  
 Engineering

Civil Engineering

Technical and Vocational  
 Education

Aerospace Engineering

Other:.....

.....  
 (please state)

**7C. Duration of industrial training/ internship in your study program**

0 – 3 months

1 – 2 years

4 – 6 months

2 years or more

7 – 12 months

**8C. CGPA**

1.99 or less

3.00 – 3.49

2.00 – 2.49

3.50 – 4.00

2.50 – 2.99

**9C. Year of graduation**

(please state)

**10C. Working experience**

0 – 6 months	<input type="text"/>	1 – 2 years	<input type="text"/>
7 – 12 months	<input type="text"/>	2 years or more	<input type="text"/>

**11C. Relevance of working experiences with your program major**

Yes	<input type="text"/>	No	<input type="text"/>
-----	----------------------	----	----------------------

**12C. Currently training program?**

Graduate Enhancement Skills Programme (GEMS)	<input type="text"/>	Workers Technical Transformation Program (WTTP)	<input type="text"/>
Industrial Skills Enhancement Program (INSEP)	<input type="text"/>		

**13C. Indicate and rate your involvement in extracurricular activities in campus during your study program for the following items. By referring to scale below, circle one appropriate answer that best match with your response.**

<b>Scale:</b>	Never = 1	Sometimes = 2	Always = 3
---------------	-----------	---------------	------------

Extracurricular activities	Involvement Scale		
	Never	Sometimes	Always
(1) Sports club	1	2	3
(2) Student body/ organization	1	2	3
(3) Volunteering	1	2	3
(4) Community service	1	2	3
(5) Extension outreach program	1	2	3
(6) Part-time job	1	2	3
(7) Fund raising	1	2	3
(8) Religious-based activity	1	2	3
(9) Non-governmental organization (NGO)	1	2	3
(10) ..... (please state)	1	2	3
(11) ..... (please state)	1	2	3

**Thank You**  
~~~~~ End of Survey ~~~~~



## Appendix H: Development of the Employability Skills Training Program Survey

| Research Question                                                                                                                                                                                              | Survey Item                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                           | Statistical Analysis                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. What are the perceptions of educators, employers, and recent graduates regarding the contribution of employability skills training programs for improving the skills of recent graduates?</p>            | <p>Communication Skills<br/>Teamwork<br/>Lifelong Learning<br/>Professionalism<br/>Problem-Solving and Decision-Making Skills<br/>Competence in Application and Practices<br/>Knowledge of Science and Engineering Principles<br/>Knowledge of Contemporary Issues<br/>Engineering System Approaches<br/>Competence in Specific Engineering Disciplines</p> | <p style="text-align: center;"><b><u>Part A</u></b></p> <p>Item 1, 2, 3, 4<br/>Item 5, 6, 7, 8, 9<br/>Item 10, 11, 12<br/>Item 13, 14, 15, 16, 17<br/>Item 18, 19, 20, 21<br/>Item 22, 23, 24<br/>Item 25, 26, 27, 28<br/>Item 29, 30, 31, 32<br/>Item 33, 34, 35<br/>Item 36, 37, 38</p> | <p><u>Descriptive Statistics</u><br/>Mean and Standard Deviation for every skill and skill groups</p> <p><u>Inferential Statistics</u><br/>Compare Means (ANOVA) among the three sample groups</p> |
| <p>2. What are the perceptions of educators, employers, and recent graduates regarding the contribution of employability skills training programs in minimizing unemployment in the workforce of Malaysia?</p> | <p>Help participants to get employment<br/>Prepare graduates for the workforce<br/>Address graduates' weaknesses<br/>Provide credential qualifications<br/>Facilitate job-matching<br/>Improve assimilation and integration<br/>Motivate graduates to work</p>                                                                                              | <p style="text-align: center;"><b><u>Part A</u></b></p> <p>Item 39<br/>Item 40<br/>Item 41<br/>Item 42<br/>Item 43<br/>Item 44<br/>Item 45</p>                                                                                                                                            | <p><u>Descriptive Statistics</u><br/>Mean and Standard Deviation for every item</p>                                                                                                                |
| <p>3. Do educators, employers, and recent graduates believe employability skills training programs contribute to the workforce development in Malaysia?</p>                                                    | <p>Contribute to social development<br/>Transfer knowledge and skills<br/>Serve as professional development<br/>Increase productivity and efficiency</p>                                                                                                                                                                                                    | <p style="text-align: center;"><b><u>Part A</u></b></p> <p>Item 46<br/>Item 47<br/>Item 48<br/>Item 49</p>                                                                                                                                                                                | <p><u>Descriptive Statistics</u><br/>Mean and Standard Deviation for every item</p>                                                                                                                |

Appendix H (continued)

| Research Question                                                                                                                   | Survey Item                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                   | Statistical Analysis                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
|                                                                                                                                     | Give valuable experiences<br>Contribute to economic development<br>Increase job satisfaction<br>Improve occupational safety and health<br>Respond to changing skills and technology                                                                                                                                                                           | <p style="text-align: center;"><b><u>Part A</u></b></p> Item 50<br>Item 51<br>Item 52<br>Item 53<br>Item 54                       | <p><u>Descriptive Statistics</u><br/>           Mean and Standard Deviation for every item</p> |
| 4. What are the factors that facilitate the involvement of recent graduates in employability skills training programs?              | Lack of employability skills among recent graduates<br>Mismatch between employer and graduates<br>Lack of work experiences among recent graduates<br>Downsizing of industries<br>Industries have negative perceptions of recent graduates<br>Training programs provide better job opportunities<br>Training programs are the last option for recent graduates | <p style="text-align: center;"><b><u>Part A</u></b></p> Item 55<br>Item 56<br>Item 57<br>Item 58<br>Item 59<br>Item 60<br>Item 61 | <p><u>Descriptive Statistics</u><br/>           Mean and Standard Deviation for every item</p> |
| 5. What are the recommendations of educators, employers, and recent graduates for improving employability skills training programs? | Issues related to training programs<br>Barriers to training programs<br>Facilitators to improve training programs<br>Most important skills for recent graduates                                                                                                                                                                                               | <p style="text-align: center;"><b><u>Part B</u></b></p> Item 1<br>Item 2<br>Item 3<br>Item 4                                      | <p><u>Qualitative Analysis</u><br/>           Code, Categorize, and Theme the feedback</p>     |
| Demographic information                                                                                                             | Gender<br>Age<br>Ethnicity/ Race<br>Highest level of education<br>Respondent group                                                                                                                                                                                                                                                                            | <p style="text-align: center;"><b><u>Part C</u></b></p> Item 1<br>Item 2<br>Item 3<br>Item 4<br>Item 5                            | <p><u>Descriptive Statistics</u><br/>           Frequencies and Percentages</p>                |

Appendix H (continued)

| Research Question                                             | Survey Item                                             |                      | Statistical Analysis                                         |
|---------------------------------------------------------------|---------------------------------------------------------|----------------------|--------------------------------------------------------------|
| Demographic information                                       |                                                         | <b><u>Part C</u></b> | <u>Descriptive Statistics</u><br>Frequencies and Percentages |
|                                                               | Program major (educator)                                | Item 6A              |                                                              |
|                                                               | Present position (educator)                             | Item 7A              |                                                              |
|                                                               | Total years of teaching experience                      | Item 8A              |                                                              |
|                                                               | Total years of administrative experience                | Item 9A              |                                                              |
|                                                               | Educator involvement in training programs               | Item 10A             |                                                              |
|                                                               | Present position (employer)                             | Item 6B              |                                                              |
|                                                               | Total years of management and administrative experience | Item 7B              |                                                              |
|                                                               | Company size                                            | Item 8B              |                                                              |
|                                                               | Type of ownership                                       | Item 9B              |                                                              |
|                                                               | Employer involvement in training programs               | Item 10B             |                                                              |
|                                                               | Products of the company                                 | Item 11B             |                                                              |
|                                                               | Program major (recent graduates)                        | Item 6C              |                                                              |
|                                                               | Duration of industrial training                         | Item 7C              |                                                              |
|                                                               | CGPA                                                    | Item 8C              |                                                              |
|                                                               | Year of graduation                                      | Item 9C              |                                                              |
|                                                               | Work experience                                         | Item 10C             |                                                              |
| Relevance of work experiences                                 | Item 11C                                                |                      |                                                              |
| Current training program                                      | Item 12C                                                |                      |                                                              |
| Recent involvement by graduates in extracurricular activities | Item 13C                                                |                      |                                                              |

Appendix I: Sample Responses of Part B of the Survey

| Issues Related to Employability Skills Training Programs in Malaysia                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Feedback from educators                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Feedback from employers                                                                                                                                                                                                                                                                                                                                                                                           | Feedback from recent graduates                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <ul style="list-style-type: none"> <li>• No control from government</li> <li>• Not popular</li> <li>• Employers' involvement in training programs</li> <li>• Negative perception of employers on graduates</li> <li>• No promotion from training centers or training providers</li> <li>• Monitoring from government</li> <li>• Insufficient incentives from government to support programs</li> <li>• Personal skills of graduates</li> <li>• Graduates not possess skills</li> <li>• Disciplines issues among graduates</li> </ul> | <ul style="list-style-type: none"> <li>• Not effective</li> <li>• No certificate credential</li> <li>• Funding</li> <li>• Mismatch skills and demands</li> <li>• Model of training programs</li> <li>• Lack of discipline among graduates</li> <li>• No control from government</li> <li>• Discipline</li> <li>• Curriculum and instruction in training programs</li> <li>• Model of training programs</li> </ul> | <ul style="list-style-type: none"> <li>• No monitoring system from government</li> <li>• Industry not support the training programs</li> <li>• Lack of skills</li> <li>• Facilities in training centers outdate</li> <li>• No clear direction of employability skills training programs</li> <li>• Employability skills training programs are lacking of experienced instructors</li> <li>• Personal knowledge of graduates</li> <li>• Graduates not possess high skills</li> <li>• No serious help from government</li> <li>• Politics</li> </ul> |

| <b>Barriers that Impede the Progress of Employability Skills Training Programs in Malaysia</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Feedback from educators                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Feedback from employers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Feedback from recent graduates                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>• Graduates' behavior and discipline</li> <li>• More theory than practical</li> <li>• Weak management</li> <li>• Curriculum and model of training programs</li> <li>• Curriculum is not relevant with the current technology</li> <li>• No assessment studies on employability skills training programs</li> <li>• Lack of monitoring by government</li> <li>• Objectives of training programs are not clear and not disseminated to the public</li> <li>• Low participation of industry in training programs</li> <li>• Government is not serious in managing training programs</li> </ul> | <ul style="list-style-type: none"> <li>• Duration of training is too short</li> <li>• Lack of funding from the government</li> <li>• Implementation of training programs is not serious</li> <li>• Disciplinary issues</li> <li>• Economic problem</li> <li>• No promotion on training programs</li> <li>• No standard model for employability skills training programs</li> <li>• Lack of monitoring by the government</li> <li>• Poor management in employability skills training programs</li> <li>• Graduates not interested in training programs</li> </ul> | <ul style="list-style-type: none"> <li>• Disciplinary issues among recent graduates</li> <li>• Employers do not involved directly in training programs</li> <li>• Training programs limit only certain companies</li> <li>• Insufficient funding from the government on training programs</li> <li>• Graduates are not serious in enrolling training programs</li> <li>• Not enough information related to employability skills training programs for recent graduates</li> <li>• Training centers are not assisting in improving skills</li> <li>• Graduates are not interested in training programs</li> <li>• Mismatch responsibilities between universities and training centers</li> <li>• Duration of training programs is too short</li> </ul> |

| Facilitators to Improve Employability Skills Training Programs in Malaysia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Feedback from educators                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Feedback from employers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Feedback from recent graduates                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <ul style="list-style-type: none"> <li>• More practical and hands-on learning rather than theory in training programs</li> <li>• Do not implement exam-oriented training programs</li> <li>• Increase opportunities and incentives for recent graduates</li> <li>• Training programs must meet current industry demands</li> <li>• Government support</li> <li>• Government funding</li> <li>• Management of training programs</li> <li>• Facilities upgrade in training centers</li> <li>• Employer participation in education and training</li> <li>• University should collaborate with training centers</li> </ul> | <ul style="list-style-type: none"> <li>• Graduates change their attitudes and personalities to be competitive</li> <li>• Initiate appropriate training programs based on demands and needs</li> <li>• Consider technological change in business and industry</li> <li>• Government funding in training programs</li> <li>• Focus more on skills development</li> <li>• Employer involvement in training programs and education</li> <li>• Industry must recognize training programs</li> <li>• Curriculum must relevant with industrial needs</li> <li>• Focus on critical courses in training programs</li> <li>• Government must be committed in assisting employability skills training programs and minimize unemployment</li> </ul> | <ul style="list-style-type: none"> <li>• Stable economic condition</li> <li>• Focus more on practical education from training programs</li> <li>• Personality change by graduates</li> <li>• Better communication skills for graduates</li> <li>• Training programs do not entirely based on examination</li> <li>• Spread information about training programs</li> <li>• Financial assistance from the government</li> <li>• Feedback and responses from industry about training programs</li> <li>• Upgraded facilities and machines in training centers</li> <li>• Clear policies and objectives of training programs</li> </ul> |

**Most Important Skills for Recent Graduates to Obtain Employment**

| Feedback from educators                                                                                                                                                                                                                                                                                                                                                                                      | Feedback from employers                                                                                                                                                                                                                                                                                                                                                                                                                                  | Feedback from recent graduates                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Communication</li> <li>• Integrity – trustworthy</li> <li>• Leadership</li> <li>• Responsibility</li> <li>• Cooperation and collaboration</li> <li>• Discipline</li> <li>• Creativity</li> <li>• Dedication</li> <li>• Confidence</li> <li>• Knowledge in engineering</li> <li>• Time management</li> <li>• Lifelong learning</li> <li>• Professionalism</li> </ul> | <ul style="list-style-type: none"> <li>• Discipline in the workplace</li> <li>• Communication skills</li> <li>• Know how to talk business</li> <li>• Fast learner</li> <li>• Know how to apply science and engineering</li> <li>• Teamwork</li> <li>• Motivation</li> <li>• Interpersonal skills</li> <li>• Knowledge in engineering</li> <li>• Innovation</li> <li>• Respect leaders</li> <li>• Time management</li> <li>• Able to negotiate</li> </ul> | <ul style="list-style-type: none"> <li>• Leadership</li> <li>• General knowledge</li> <li>• Vision</li> <li>• Responsibility</li> <li>• Experts in the latest technology software</li> <li>• Communication skills</li> <li>• Discipline</li> <li>• Decision-making skills</li> <li>• Confidence</li> <li>• Experience in business and industry</li> <li>• Know how to deal with people</li> <li>• Fast learner</li> <li>• Teamwork</li> </ul> |

VITA



## VITA

Mohd Hazwan Mohd Puad  
 221 Arnold Drive Apartment 6 Purdue Village  
 West Lafayette 47906 Indiana USA  
 mmohdpua@purdue.edu / hazwan@upm.edu.my / hazwanzw@gmail.com  
<http://web.ics.purdue.edu/~mmohdpua/>  
<https://sites.google.com/site/mohdhazwanmohdpuad/>

### Education Background

- |                           |                                                                                        |
|---------------------------|----------------------------------------------------------------------------------------|
| <b>Degree</b>             | : Doctoral (Ph.D.).                                                                    |
| <b>Major</b>              | : Career and Technical Education.                                                      |
| <b>Institution</b>        | : Purdue University, West Lafayette 47906, Indiana, USA.                               |
| <b>Year of Study</b>      | : 2010 – 2015.                                                                         |
| <b>Dissertation Title</b> | : The Role of Employability Skills Training Programs in the Workforce of Malaysia.     |
| <b>Major Professor</b>    | : James P. Greenan                                                                     |
|                           |                                                                                        |
| <b>Degree</b>             | : Master's (M.Ed.).                                                                    |
| <b>Major</b>              | : Technical and Vocational Education.                                                  |
| <b>Institution</b>        | : Universiti Tun Hussein Onn Malaysia (UTHM), Parit Raja Batu Pahat, Johore, Malaysia. |
| <b>Year of Study</b>      | : 2005 – 2006.                                                                         |
| <b>Graduation Date</b>    | : September 2 <sup>nd</sup> , 2007.                                                    |
| <b>Dissertation Title</b> | : Safety Practices Education among Lecturers in Industrial Training Institutes.        |
| <b>Major Professor</b>    | : Asri Selamat                                                                         |
|                           |                                                                                        |
| <b>Degree</b>             | : Bachelor (B.Eng.).                                                                   |
| <b>Field of Study</b>     | : Engineering.                                                                         |
| <b>Major</b>              | : Mechanical Engineering.                                                              |
| <b>Institution</b>        | : Universiti Teknologi Malaysia (UTM), Skudai, Johore, Malaysia.                       |
| <b>Year of Study</b>      | : 1999 – 2002.                                                                         |
| <b>Graduation Date</b>    | : March 15 <sup>th</sup> , 2003.                                                       |
| <b>Dissertation Title</b> | : Design and Fabrication of Semi-Open Centrifugal Pump Impeller.                       |
| <b>Major Professor</b>    | : Abu Hasan Abdullah                                                                   |

### Professional Experience

- Position** : Tutor.  
**Organization** : Department of Science and Technical Education,  
 Faculty of Educational Studies,  
 Universiti Putra Malaysia,  
 43400 UPM Serdang, Selangor, Malaysia.
- Specialization** : Engineering Education, Technical and Vocational Education,  
 Mechanical Engineering.
- Duration** : June 2004 – March 2015.
- 
- Position** : Assistant Director.  
**Organization** : Department of Occupational Safety and Health Malaysia (DOSH),  
 Putrajaya Head Quarters, Level 2, 3 and 4,  
 Block D3, Parcel D, 62502 Putrajaya, Malaysia.
- Duration** : Aug 2003 – June 2004.
- 
- Position** : Quality Engineer.  
**Organization** : Shimano Components (M) Sdn. Bhd.,  
 Pekan Nenas, Pontian, Johore, Malaysia.
- Duration** : Jan 2003 – Aug 2003.

### Training and Internship

- Position** : Practical Lecturer.  
**Organization** : Politeknik Port Dickson (PPD),  
 Port Dickson, Negeri Sembilan, Malaysia.
- Duration** : Oct 2006 – Dec 2006.
- 
- Position** : Practical Lecturer.  
**Organization** : Politeknik Sultan Haji Ahmad Shah (POLISAS),  
 Kuantan, Pahang, Malaysia.
- Duration** : April 2006 – July 2006.
- 
- Position** : Practical Trainee Engineer.  
**Organization** : Ikhtisas Ingenieurs Sdn. Bhd.,  
 Taman Melawati, Kuala Lumpur, Malaysia.
- Duration** : March 2002 – May 2002.
- 
- Position** : Practical Trainee.  
**Organization** : Faculty of Mechanical Engineering,  
 Universiti Teknologi Malaysia, Skudai, Johore, Malaysia.
- Duration** : April 2000 – May 2000.

### Publications and Presentations

- Mohd Puad, M. H. (2013). Using post-then-pre evaluation to determine the leadership development program (LDP) seminar impact. *Proceeding of the Seminar on Research and Human Resource Development, Faculty of Educational Studies, Universiti Putra Malaysia, Serdang, Malaysia.*
- Mohd Puad, M. H. (2012). The effects of the industrial skills enhancement program (INSEP) on the acquisition of knowledge of employability skills among engineering graduates. Paper presented at the *Hawaii International Conference on Education 2012*, Honolulu, Hawaii. Retrieved from <http://www.hiceducation.org/EDU2012.pdf>
- Mohd Puad, M. H. (2009). Hubungan antara faktor pengetahuan dengan amalan pengurusan makmal dalam pengajaran dan pembelajaran di makmal kimpalan arka dan gas. In N. Zainal Abidin, S. Abdul Kadir & A. Kamis (Eds.), *Strategi memperkasa pendidikan Teknik dan Vokasional* (pp. 13-39). Serdang, Malaysia: UPM Press.
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