LIFE AND CAREER SKILLS AMONG TVET STUDENTS IN POLYTECHNICS IN MALAYSIA

by

NURHANIM SAADAH BINTI ABDULLAH

Thesis submitted in fulfillment of the requirement for the degree of Doctor of Education (Educational Technology & Multimedia)

February 2016
ACKNOWLEDGEMENT

Alhamdulillah, I praise for the greatness of ALLAH s.w.t that never stop helping me through my journey. He is the Almighty that gives me this journey and grant me to walk through this journey with His bless and generosity.

First of all, I would like to express my greatest gratitude to my beloved supervisor Associate Professor Dr. Azidah bt Abu Ziden for her support, inspiration and knowledge sharing throughout my journey. She never gave up upon me and always positive in educating and providing opportunities for developing my personality as a real educator. I would never gone this far without her help and support. Her constructive comments have made me understand the way to write a better piece of intellectual writing until today. Thank you Allah for choosing her to be my supervisor. I will always respect her wholeheartedly.

I am very grateful to have known Associate Professor Dr. Nordin Abdul Razak, who is always passionate in teaching me statistics until I thoroughly understand the concept in choosing appropriate statistical approach in a specific research. Thank you again for your never ending support in helping me in many ways that only Allah can repay your kindness. I am very lucky to have known you throughout this journey. Not forgetting Dr. Rozniza Zaharudin for her time and constructive comments as a wonderful panel in helping making my writing clearer and precise. Thank you very much for your constructive comments. Thank you again for taking the responsibility to be my panel throughout this journey.
Thank you also to Ministry of Higher Education Malaysia and University Tun Hussein Onn Malaysia for supporting me getting my way to the highest level of education for me that I cannot imagine how big the support is. Thank you also to Department of Polytechnic Education Malaysia for giving the approval to conduct the study in polytechnics throughout Malaysia.

There is no word to express my love and gratitude to my beloved family especially to my husband, Mohd Ismail bin Abd Aziz, my parents, Haji Abdullah bin Abdul Rahman and Hjh Ruhanah binti Abdul Ghani and my whole family for sharing my ups and downs through this journey. You are the best gift that Allah have given me. Thank you for not giving up on me and all your prayers for me, I really cannot repay them back my whole life.

Finally, without my dearest friends support, I would not be here too. Thank you to all my friends. Thank you for everything you have done to me.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENT</td>
<td>ii</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>iv</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>ix</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xiii</td>
</tr>
<tr>
<td>LIST OF ABBREVIATIONS</td>
<td>xiv</td>
</tr>
<tr>
<td>LIST OF APPENDICES</td>
<td>xv</td>
</tr>
<tr>
<td>ABSTRAK</td>
<td>xvi</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>xviii</td>
</tr>
</tbody>
</table>

## CHAPTER 1 - INTRODUCTION

1.1 Introduction                              | 1    |
1.2 Background of the Study                  | 3    |
1.3 Problem Statements                        | 9    |
1.4 Research Objectives                       | 14   |
1.5 Research Questions                        | 15   |
1.6 Research Hypotheses                       | 17   |
1.7 Significant of the Study                 | 19   |
1.8 Limitation of the Study                  | 21   |
1.9 Operational Definitions                  | 22   |
1.10 Summary                                  | 25   |

## CHAPTER 2 - LITERATURE REVIEW

2.1 Introduction                              | 26   |
2.2 Technical and Vocational Education and Training (TVET) | 27   |
2.2.1 Technical and Vocational Education and Training (TVET) in Malaysia  28
2.2.2 Types of polytechnics in Malaysia  29
2.3 Previous research  31
2.3.1 Research on Skills in World of Work: Issues on Skill Gaps  31
2.4 Employability Skills  32
2.5 21st Century Skills  34
2.5.1 Research on 21st Century Skills  34
2.6 Overview of 21st Century Learners and Environment  36
2.7 TVET towards 21st century skills: Current Issues  36
2.8 Frameworks of 21st Century Skills  40
2.9 Instruments to Measure 21st Century Skills  43
2.10 Framing the Theoretical Framework  44
2.10.1 Theories and Models  47
2.10.2 Pedagogical Paradigm Shift  47
2.10.3 The New Learning Paradigm  50
2.10.4 21st Century Life and Career skills Elements in The Partnership of 21st Century Skills  51
2.10.5 The Life and Career Skills Domain in The New Learning Paradigm  55
2.11 Theoretical framework  57
2.12 Summary  58

CHAPTER 3 - RESEARCH METHODOLOGY
3.1 Introduction  59
3.2 Research Design  59
3.3 Population and Sampling  60
3.3.1 Selection of sample  60
### CHAPTER 4 - ANALYSIS AND FINDINGS

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Introduction</td>
<td>77</td>
</tr>
<tr>
<td>4.2</td>
<td>Demographic Profile of Respondents</td>
<td>77</td>
</tr>
<tr>
<td>4.3</td>
<td>Life and Career Skills and its Elements</td>
<td>83</td>
</tr>
<tr>
<td>4.4</td>
<td>Life and Career Skills among TVET Students in different types of Polytechnics in Malaysia</td>
<td>85</td>
</tr>
<tr>
<td>4.5</td>
<td>Comparison between the Life and Career Skills among TVET Students based on Different Types of Polytechnics in Malaysia</td>
<td>87</td>
</tr>
<tr>
<td>4.5.1</td>
<td>Comparison between the Flexibility and Adaptability Skills among TVET Students based on Different Types of Polytechnics in Malaysia</td>
<td>88</td>
</tr>
<tr>
<td>4.5.2</td>
<td>Comparison between the Initiative and Self-direction Skills among TVET Students based on Different Types of Polytechnics in Malaysia</td>
<td>90</td>
</tr>
<tr>
<td>4.5.3</td>
<td>Comparison between the Social and Cross-cultural Skills among TVET Students based on Different Types of Polytechnics in Malaysia</td>
<td>91</td>
</tr>
</tbody>
</table>
4.5.4 Comparison between the Productivity and Accountability Skills among TVET Students based on Different Types of Polytechnics in Malaysia

4.5.5 Comparison between the Responsibility and Leadership Skills among TVET Students Based on Different Types of Polytechnics in Malaysia

4.6 Comparison between the Life and Career Skills among TVET Students in Polytechnics Based on Student Gender

4.6.1 Comparison between the Flexibility and Adaptability Skills among TVET Students in Polytechnics Based on Student Gender

4.6.2 Comparison between the Initiative and Self-direction Skills among TVET Students in Polytechnics Based on Student Gender

4.6.3 Comparison between the Social and Cross-cultural Skills among TVET Students in Polytechnics Based on Student Gender

4.6.4 Comparison between the Productivity and Accountability Skills among TVET Students in Polytechnics Based on Student Gender

4.6.5 Comparison between the Responsibility and Leadership Skills among TVET Students in Polytechnics Based on Student Gender

4.7 Comparison between the Life and Career Skills among TVET Students in Polytechnics Based on Different Courses under Different Department enrolled by students

4.7.1 Comparison between the Flexibility and Adaptability Skills among TVET Students in Polytechnics Based on Different Courses under different departments enrolled by students

4.7.2 Comparison between the Initiative and Self-direction Skills among TVET Students in Polytechnics Based on Different Courses under different departments enrolled by students

4.7.3 Comparison between the Social and Cross-cultural Skills among TVET Students in Polytechnics Based on Different Courses under enrolled by students

4.7.4 Comparison between the Productivity and Accountability Skills among TVET Students in Polytechnics Based on
Different Courses under different departments enrolled by students

4.7.5 Comparison between the Responsibility and Leadership Skills among TVET Students in Polytechnics Based on Different Courses under different departments enrolled by students

4.8 Summary of Findings

4.9 Summary

CHAPTER 5 - DISCUSSIONS AND CONCLUSION

5.1 Introduction

5.2 Summary of the Study

5.3 Discussion of Main Findings

  5.3.1 Research Question 1
  5.3.2 Research Question 2
  5.3.3 Research Question 3
  5.3.4 Research Question 4

5.4 Contributions of the Study

5.5 Recommendations for Future Studies

5.6 Conclusion of the Study

5.7 Summary

REFERENCES

APPENDICES
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table 2.1</th>
<th>Name of Conventional Polytechnics in Malaysia</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 2.2</td>
<td>Summary of the difference of 20th century and 21st century</td>
<td>35</td>
</tr>
<tr>
<td>Table 2.3</td>
<td>Anomalies, Strategies, and Changes in TVE system to improve TVE</td>
<td>38</td>
</tr>
<tr>
<td>Table 2.4</td>
<td>Identified 21st century skills for strengthening TVET teachers and students</td>
<td>40</td>
</tr>
<tr>
<td>Table 2.5</td>
<td>Summary of paradigms of learning before 21st century</td>
<td>49</td>
</tr>
<tr>
<td>Table 2.6</td>
<td>Example of every element in each domain the New Learning Paradigm</td>
<td>51</td>
</tr>
<tr>
<td>Table 2.7</td>
<td>Summary of ways to teach life and career skills to students</td>
<td>56</td>
</tr>
<tr>
<td>Table 3.1</td>
<td>Sample size according to the chosen stratification using Krejcie and Morgan (1970)</td>
<td>63</td>
</tr>
<tr>
<td>Table 3.2</td>
<td>List of polytechnics chosen for sampling procedure</td>
<td>65</td>
</tr>
<tr>
<td>Table 3.3</td>
<td>Six-point Likert scale format style format (Oppenheim, 1992)</td>
<td>69</td>
</tr>
<tr>
<td>Table 3.4</td>
<td>Summary of Reliability Test from the Pilot Study Data</td>
<td>72</td>
</tr>
<tr>
<td>Table 3.5</td>
<td>Research questions and data analysis method</td>
<td>73</td>
</tr>
<tr>
<td>Table 4.1</td>
<td>Total respondent according to Types and Names of Polytechnics</td>
<td>78</td>
</tr>
<tr>
<td>Table 4.2</td>
<td>Demographic profile of students</td>
<td>79</td>
</tr>
<tr>
<td>Table 4.3</td>
<td>Distribution of respondents from various departments based on type of polytechnic</td>
<td>81</td>
</tr>
<tr>
<td>Table 4.4</td>
<td>Respondents’ reasons to choose polytechnic</td>
<td>82</td>
</tr>
<tr>
<td>Table 4.5</td>
<td>Main elements and sub-elements of Life and Career Skills</td>
<td>83</td>
</tr>
<tr>
<td>Table 4.6</td>
<td>Mean value and standard deviation for life and career skills elements</td>
<td>84</td>
</tr>
<tr>
<td>Table 4.7</td>
<td>Mean score of Life and career skills based on types of polytechnics</td>
<td>85</td>
</tr>
<tr>
<td>Table 4.8</td>
<td>Descriptive Table for Flexibility and Adaptability skills</td>
<td>88</td>
</tr>
</tbody>
</table>
Table 4.30  Mean score of Gender on Productivity and Accountability skills

Table 4.31  Independent Samples Test for Productivity and Accountability skills

Table 4.32  Mean score of Gender on Responsibility and Leadership skills

Table 4.33  Independent Samples Test for Responsibility and Leadership skills

Table 4.34  Descriptives table for Flexibility and Adaptability skills

Table 4.35  Test of Homogeneity of Variances for Flexibility and Adaptability skills

Table 4.36  ANOVA table for Flexibility and Adaptability skills

Table 4.37  Post-hoc test using Tukey HSD for Flexibility and Adaptability skills

Table 4.38  Descriptives table for Initiative and Self-direction skills

Table 4.39  Test of Homogeneity of Variances for Initiative and Self-direction skills

Table 4.40  ANOVA table for Initiative and Self-direction skills

Table 4.41  Robust test of Equality means for Initiative and Self-direction Skills

Table 4.42  Post-hoc test using Tamhane Multiple Comparison for Initiative and Self-direction skills

Table 4.43  Descriptives table for cross-cultural skills among TVET students

Table 4.44  Test of Homogeneity of Variances for Social and Cross-cultural skills

Table 4.45  ANOVA table for Social and Cross-cultural skills

Table 4.46  Post-hoc test using Tukey HSD for social and cross-cultural skills

Table 4.47  Descriptive table for productivity and accountability among TVET students

Table 4.48  Test of Homogeneity of Variances for Productivity and Accountability skills
Table 4.49  ANOVA table for Productivity and Accountability skills  113
Table 4.50  Robust Test of Equality of means for Productivity and Accountability  113
Table 4.51  Descriptives table for Responsibility and Leadership skills  114
Table 4.52  Test of Homogeneity of Variances for Responsibility and Leadership skills  115
Table 4.53  ANOVA table for Responsibility and Leadership skills  115
Table 4.54  Robust Test of Equality of means for Responsibility and Leadership skills  115
Table 4.55  Post-hoc test using Tamhane Multiple Comparisons for Responsibility and Leadership skills  116
Table 4.56  Summary of Analysis and Findings for Research Question One  120
Table 4.57  Summary Table of Analysis and Findings for Research Question Two  121
Table 4.58  Summary Table of Analysis and Findings for Research Question Three  123
Table 4.59  Summary Table of Analysis and Findings for Research Question Four  125
Table 5.1  Research Questions and Hypotheses  131
LIST OF FIGURES

Figure 2.1  Malaysian Qualification Framework  28
Figure 2.2  21st century skills and support system (The partnership of 21st century skills)  42
Figure 2.3  Life and Career skills in the Partnership of 21st Century skills  52
Figure 3.1  Sampling Design  66
Figure 3.2  Research framework of this study  75
Figure 4.1  Mean score of Life and Career skills elements for three types of polytechnics  86
LIST OF ABBREVIATIONS

LCS - Life and Career Skills
F&A - Flexibility and Adaptability
I&SD - Initiative and Self-direction
S&CC - Social and Cross-cultural
P&A - Productivity and Accountability
R&L - Responsibility and Leadership
EE - Electrical Engineering Department
ME - Mechanical Engineering Department
CE - Civil Engineering Department
COMM - Department of Commerce
TH - Tourism and Hospitality Department
LIST OF APPENDICES

APPENDIX A - Instrument Content Validation
APPENDIX B - Finalized Questionnaire For Survey
APPENDIX C - Letter of Authorization to Undertake Research
APPENDIX D - Letter of Authorization from Department of Polytechnic Education
KEMAHIRAN KEHIDUPAN DAN KERJAYA DALAM KALANGAN PELAJAR TVET DI POLITEKNIK DI MALAYSIA

ABSTRAK

pelajar terhadap jenis politeknik, jantina pelajar dan program yang diikuti oleh pelajardi pelbagai jabatan. Dapatan kajian menunjukkan terdapat perbezaan yang signifikan antara jenis politeknik, jantina pelajar dan kursus yang diikuti oleh pelajar terhadap kemahiran kehidupan dan kerjaya.
LIFE AND CAREER SKILLS AMONG TVET STUDENTS IN POLYTECHNICS IN MALAYSIA

ABSTRACT

Unemployment is one of the problems faced by many countries. A gap between the skills required by employers and the skills possessed by graduates are one of the factors of unemployment. Employers nowadays seek for employees who possess appropriate skills to be employed. Life and career skills are essential to both learning and work in the 21st century. It is important both in the local and international careers. As in local context, polytechnics are one of the main technical and vocational education and training (TVET) institutions in Malaysia that aim to produce workforce to meet industrial needs. Therefore, this study aims to investigate the life and career skills among TVET students in polytechnic institutions in Malaysia. This study uses a quantitative survey approach. Data were collected using a set of questionnaire developed based on the research objectives and literature review. A total of 821 diploma students from three types of polytechnics (Premier, conventional and METrO) were selected using disproportionate sampling method. The elements of 21st century life and career skills investigated were namely flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability and leadership and responsibility. Data gathered were analysed using descriptive statistics and inferential statistics involving t-test and ANOVA using IBM SPSS version 21. This study also compared the students’ life and career skills against types of polytechnics, students’ gender and courses enrolled in different departments. Findings show that there were significant differences between types of polytechnics, students’ gender and different courses enrolled by the students on the life and career skills.
CHAPTER 1
INTRODUCTION

1.1 Introduction

The need for appropriate characteristics of human resources are one of the big issues in the uncertain and fast changing environment (Ministry of Higher Education Malaysia, 2012) especially in the rapid development of the country. Preparing skillful and competence workforce is important for the development of the country. This is the role of the higher education institutions and therefore in producing workforce for the future, higher educational institutions need to recognize these issues since they are the agent of providing human resource of the future (N. M. Triki, 2010).

To encounter the challenges especially, our future human resource are supposed to be nurtured with 21st century skills especially the life and career skills. Janet, Kimberly and Ken (2010) emphasized that students should be groomed for careers by incorporating 21st century skills and career as well as technical education into the entire system. Students should be exposed to academic skills or the employability and technical knowledge and skills that are equally valued in creative and innovative society. Therefore, several frameworks have been developed to incorporate elements of career and life skills as a very important element for 21st century skills. 21st century skills are defined as the set of skills students need to succeed in learning, work and life in this in this century, which comprise of a variety of skills, including learning and innovation skills, digital literacy skills and life and career skills (Trilling & Fadel, 2009).

Some of the 21st century skills frameworks are proposed by the Partnership for 21st century skills (P21), En Gauge, Assessment and Teaching of 21st Century Skills
(ATCS), National Educational Technology Standards (NETS), and the Organization for Economic Co-operation and Development (OECD). These frameworks provide common skills such as collaboration, communication, ICT literacy, creativity, critical thinking, problem solving and social or cultural competencies including citizenship. However, the framework proposed by the Partnership for 21st century provides a very detailed specification of the life and career skills and has been indicated as one of the important skills by Ministry of Higher Education in the National Graduate Employability Blueprint 2012-2017. Therefore, this study focused on the life and career skills proposed by the Partnership for 21st century skills (P21).

Life and career skills have several components such as flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, and leadership and responsibility. The issue here is whether the students gain these skills during their studies in higher education institutions, especially in Technical and Vocational Education and Training (TVET) institution such as Malaysian polytechnic institutions.

In Malaysia, there are many levels of education, namely primary, secondary and also tertiary education. Polytechnic education is one of the tertiary education that highlight TVET to the community. Holding to the vision of the polytechnic education that is “to be Malaysian’s main provider of innovative human capital through transformational education and training for the global workforce by 2015” (Jabatan Pengajian Politeknik, 2013b), it shows that polytechnic play important role in preparing students with appropriate education towards providing future workforce for the country. Therefore, this study is aimed at investigating the 21st century life and career skills of TVET students in polytechnics and investigate the extent of life and career skills being implemented in the polytechnic education.
1.2 Background of the Study

The global economic growth and the rapid development of nations impacted the educational institutions of the world. As the development occurs, education systems too are moving towards 21st century skills development where there are increasing needs for educators and students to survive in this era. The 21st century skills are crucial to many educational fields and many countries had streamlined their educational systems towards 21st century skills. There are a number of reports and studies regarding 21st century skills emphasized on 21st century skills. These reports and studies emphasize the importance of 21st century skills that need to be nurtured in education in order to produce graduates who are ready to be workers of tomorrow (Bybee & Fuchs, 2006; Janet, Kimberly, & Ken, 2010).

In transforming Malaysian educational systems for the 21st century, Ministry of Education Malaysia plays the role in preparing educators, learners, schools, higher educational institution towards first class mentality which is the main aim of The National Higher Education Strategic Plan (NHESP) and the first class mentality workers is characterized as a of human capital that can meet the needs of individual, family, community, nation and the world (Ministry of Higher Education, 2012). Therefore, educational institutions should recognize the important aim of the Ministry of Education Malaysia in order to produce semi-skilled and highly skilled workforce. Technical and Vocational Education and Training (TVET) worldwide also has taken steps to produce a high quality skilled workforce for the future. This is not exceptional for the TVET in Malaysia and 21st century skills are being looked into for that particular reason (Aring, 2011; Bybee & Fuchs, 2006; Daniel & Hultin, 2002; Kechik, 2011; Nwogu, 2011; Ministry of Higher Education, 2012).
Worldwide reports regarding 21\textsuperscript{st} century skills were looking at the issue of developing competent workforce for the future and they are pointing to education systems, particularly at the higher education institutions since they are the providers of the human capital. Higher education institution held important roles and responsibilities to prepare students to be workforce for the future especially in surviving the dynamic economic environment (N. M. Triki, 2010). As for TVET, to prepare for 21\textsuperscript{st} century skills, all parties involved in the organization must look at the history behind technical and vocational education to create a better future for the direction of TVET in the 21\textsuperscript{st} century.

There are many researches, studies and conferences related to transforming TVET for 21\textsuperscript{st} century education being done worldwide. The topics raised revolved around the problems and issues faced by TVET institutions such as appropriate skills required to produce successful graduates, the transformation of education, suitable TVET programs, employability, and workforce to fit global market. Dason, Hamzah and Udin (2010) have reviewed the paths gone through by TVE in Malaysia. Some of the major problems faced by TVET in Malaysia, including lack of engagement with related industries, lack of educators who have experience in the industries, lack of funds and policy to support TVE, negative impression in TVE, and curriculum is not effective and flexible were the major problems being discussed.

Theoretical knowledge alone is insufficient for individuals to be able to become competent or proficient in hands-on skills (Bridgstock, 2009; Winch, 2013). In general, the most practical work in real working environment is different from the theories learnt. Industries demand for skilled workers that can master not only theories alone, but importantly workers that can master practical work as well (Kayan, Hamzah, & Udin, 2010). In addition, instructors will be seen as a leader when they are able to
produce skilled employees for the relevant industries (Kayan et al., 2010). Thus it is the role of TVET institutions to develop the manpower needed by the industries.

Further studies concern with transforming TVET towards 21st century. The main concern is the challenges faced by students and teachers in the 21st century education. Hassan (2010) suggested that the great challenge to the TVET should be addressed is to ensure to achieve developed nation status in 2020. It can be seen that the foundation of vocational education in Malaysia has been built up to enable educators to plan and move towards the goal. However, the challenge in the coming years, especially in the economic crisis facing the country, vocational educator should have the competitive and sensitive to the changes occurring around it (Hassan, 2010). This shows that TVET are facing great challenge in moving towards 21st century because of the dynamic economic growth. To overcome these challenges, previous studies and reports regarding TVET also have appointed several appropriate 21st century skills that focused on strengthening TVET. The skills comprised of accountability and adaptability, communication skills, creativity and intellectual curiosity, critical thinking and systems thinking, information and media literacy skills, and interpersonal and collaborative skills, flexibility, lifelong learning, practical skills, and employability (Hassan, 2010; Maclean & Pavlova, 2011; Wang, 2012b).

Aring (2011) revealed major issues that being raised regarding youth development in TVET which first highlighted young peoples’ biggest concern are access to jobs and physical security. Second, young people are afraid of being unemployed because of their lacking of skills that are valued in global and local economic which will lead to problems to economic growth, jobs and income. Third, perception of the term vocational in different language and culture, where vocational tends to have negative connotations. This issue also supported by Dason, Hamzah, &
Udin (2010) which also highlighted that some people show negative impression for TVET and to blue collar jobs. Fourth, collaboration between industries and education that little history of collaboration among employers or between employers and education in most developing countries. This is supported by Triki (2010). Finally, Aring (2011) suggested that which also supported by Dason et. al. (2010) highlighted that the curricular are often out of date, narrow, not effective and not flexible. Furthermore, skills standards that reflect the industrial sector’s current and future skill needs was not available between industries and education sectors. These issues of workforce of today and in the past should not be taken easily since the economic growth and demands are ever changing (Judy & D'Amico, 1997; Ministry of Higher Education Malaysia, 2012).

As one way to address the issues mentioned earlier, Ministry of Higher Education has adopted a study done by (Mohamad & Hamzah, 2011) regarding the Generic Student Attributes (GSA). There are four attributes that students should have; Academic attributes, Personality Management attributes, Exploration attributes and finally Connectivity attributes. These four attributes have their own elements. The Academic attributed consist of four elements that are academic performance, good degree classification, college experiences and job knowledge on the discipline of study. The Personality Management attributes comprise of positive attitude, responsibility, adaptability, leadership, and altruism as the elements of the attribute. Imaginative, innovative and critical and creative thinking are the elements for the Exploration attributes. The Connectivity attributes is the final attributes that consist of four elements of attributes which are communication, technology integration, team-working and commercial awareness. The ministry has adopted the attributes as Employability Attributes Framework (EAF) in the National Graduate Employability
Blueprint 2012-2017 (Ministry of Higher Education Malaysia, 2012). The blueprint recommends that the graduate employability attribute are important for all graduates to secure and should be nurtured and developed across the higher learning institutions experience (Ministry of Higher Education Malaysia, 2012).

All the matters being discussed has shown the way to the importance of applying 21st century skills in order to produce workers of the 21st century. The students attribute shows the indication that 21st century skills are needed in producing competent workforce. 21st century skills are commonly being discussed especially in educational institutions. The rationale for formulating 21st century skills has been summarized based on Dede’s (2010) comparison between the 20th century and 21st century skills.

There are similarities and differences living in 20th and 21st century. The similarities of these two centuries lies in the capabilities people need for work, citizenship, and self-actualization. However, the difference lies in the emergence of every sophisticated information and communication technologies, and knowledge communicated in schools. In the 21st century, ICT is widely being used and people take advantage of this technology to do their works for example using technologies to help completing task faster. As oppose to 20th century, people do most of the work themselves. Learning in the 21st century is by building contextual skills that is unique to millennium work and citizenship which is different in the learning in the 20th century (Dede, 2010).

With the concern of career and life education preparation for the 21st century, Janet et al. (2010) reported that by integrating 21st century skills and technical education into education system can prepare students for college and careers. Moreover, the report stressed some challenges for the education including skills
shortages and high need for applied skills. The skills being mentioned needed for applied skills has been translated into percentage of requirement were; critical thinking or problem solving (92%), ethics or social responsibility (71%), professionalism or work ethic (70%), creativity or innovation (69%) and lifelong learning or self-direction (64%). As being concerned, life and career skills seems to be important to students’ development. Thus, this has proved the importance of integrating 21st century skills in education system to nurture the life and career skills towards students in facing global market by the time they graduated from their education institution.

There are several 21st century skills framework being developed by several organizations in order to educate people regarding 21st century skills. Even though the frameworks are from different organization, there are still common element that being stressed by each of the 21st century skills frameworks and one of the major elements is work and life skills other than ICT literacy skills. This study focused on the framework from the Partnership of 21st century skills specifically in the life and career skills. The brief specification of every elements of the life and career skills in the P21 framework of 21st century skills are as follows (Partnership for 21st century skills, 2009):

1. Flexibility and Adaptability: the features of elements are adapt to change and be flexible
2. Initiative and Self-direction: the features of elements are Manage goals and time, Work independently and Be self-directed learners
3. Social and cross-cultural skills: the features of elements are Interact effectively with others and Work effectively in diverse teams
4. Productivity and accountability: the features of elements are Manage projects and Produce results
5. Leadership and responsibility: the features of elements are Guide and lead others and Be responsible to others.

After analyzing all the matters discussed, this study focused on the 21st century life and career skills as these skills are important to be embedded into students’ learning process. This is to help the graduates to survive being workforce of 21st century in the dynamic economic environment.

In the big picture, it involves Malaysian economy that is open economy which comprises of foreign direct investment and export growth (Ministry of Higher Education Malaysia, 2012). This shows the ever changing demand conditions that need to be recognised by the institution of higher learning since they are the one that will produce graduates with high rates of employability which is actually facing with several important issues to overcome.

1.3 Problem Statements

Unemployment is one of the problem faced by many countries. The International Labour Organization reported that there were about 6.67% unemployment rate in United States, 5.24% in Germany, 7.3% in United Kingdom and 5.72% in Australia. Meanwhile in Malaysia, the unemployment rate was about 3.22%. This report was based on unemployment rate in 2014 (International Labour Organization, 2014). According to Department of Statistics Malaysia, the unemployment rate in Malaysia has increased 0.3 percent in October 2014 compared to September the same year. This percentage involved 378,200 labour force that were unemployed during the Labour Force Survey conducted by Department of Statistics Malaysia (The Office of Chief Statistician Malaysia, 2014). The report define ‘labour force’ as people aged between
15 to 64 years and are either employed or unemployed during the survey being conducted and the ‘unemployment rate’ as the proportion of unemployed population to the total population in labour force which measures the percentage of unemployed population in the labour force (The Office of Chief Statistician Malaysia, 2014).

Furthermore, report of tracer study done by Department of Polytechnic Education Malaysia in 2012 shows that there were 23.7 percent which are 6,500 from 27,424 polytechnic graduates were still unemployed after their of graduation. In 2011, the percentage of unemployment graduates was 29 percent which involved 7,998 graduates from 27,600 graduates that responds to the survey (Pusat Penyelidikan dan Pembangunan Politeknik, 2012; Pusat Penyelidikan dan Pembangunan Politeknik, 2013). The unemployment issue may due to important factors such as the readiness of the graduates to enter working environment and lack of skills to face the challenges in the working life (Janet et al., 2010; Pauw, Oosthuizen, & van Der Westhuizen, 2008). The global economic recession also affected the unemployment rate (Wu, 2011). This issue cannot be ignored because graduates are the human workforce and the core innovative and productive towards making Malaysia as a country with high-income economy (Hanapi & Nordin, 2014).

Graduates are having tough time to get job or to be employed. A study by Hamzah, Mohamed, and Abdullah, (2012) found that employers are very choosy and they want graduates that are ready to work. Ready to work or work readiness is referred as possession of skills, knowledge, attitudes, and commercial understanding that will enable new graduates to make productive contributions to organizational objectives (Archer & Davison, 2008). As for the scenario in Malaysia with its vision to become a developed country by year 2020, Malaysia has practiced open economy that stressed
on foreign direct investment and export growth. Due to the open economy, getting a job is more challenging for the graduates.

Many employers claimed that graduates are lacking of skills for work. Knight and Yorke (2004) stressed that graduates now are lacking of technical knowledge and generic skills that are importantly needed by employers to encounter the challenges in business (Knight & Yorke, 2004). Examples of generic skills are creative thinking skill, teamwork skill, oral communication skill, decision making (Awang, 2010; A. Ibrahim, Mohamed, & Moubark, 2009), ability to manage workloads and knowledge of current issues (A. A. Ibrahim et al., 2009). Some of the major problems that being reported in the National Graduate Employability Blueprint 2012-2017 (Ministry of Higher Education Malaysia, 2012) are skills that do not match, unable to solve problem and lack of skill knowledge. This shows that educational institution need to seriously recognize the problem in enhancing the skills of their students (N. M. Triki, 2010). To be precise, academic qualification is not the only criterion in recruiting new employees considered by the employer. This unsolved problem need special attention from educational institution. Thus educational institution need to recognize the problem and equip their students with more than just high academic performance but also skills to prepare and survive for work.

From the perspective of curricular, employers claimed that graduates are not ready to work seriously due to unclear path of career during their studies. Reports and studies regarding employers perspectives on graduates advised that educational institution especially higher education to make more clear effort in developing the skills needed in many types of employment (Archer & Davison, 2008; Casner-Lotto & Barrington, 2006; J. Lim, Chong, Khairul, & Mohd, 2005). The reports were focused on the employers view in recruiting new entrants. One of the biggest concern
questioned in the report was whether the graduates are ready for work. The consequence from not being clear of their working path, the graduates may not be ready to work in the real working environment. Furthermore, these reports also emphasizes skills that new entrants need to succeed in the workplace and the most cited by the employers were professionalism or work ethic, oral and written communications, teamwork and collaboration and critical thinking and problem solving. Correspondingly, the Partnership of 21st century skills (2009), stressed that complex life and working environment in this 21st century need more than just thinking skills and content knowledge (The partnership for 21st century skills, 2009). In addition, Charles Kivunja (2014) stressed that in order to prepare student to be job ready with 21st century skills, paradigm shift is needed to change the curriculum, teaching and learning assessment. The use technology also important so that students can be more productive, creative citizen and workers in the knowledge economy in the 21st century (Charles Kivunja, 2014).

In addition to understand the real situation, the researcher have made an initial interview with two polytechnic students that was doing internship order to get the student’s overview of the skills gained throughout the learning process in the polytechnic. From the interview, the students reported that in the beginning, they are not given the task that are related to their field. This has made them feel a bit frustrated when they only have to do unrelated task such as photo copying documents and other simple tasks. They admitted that their supervisors do not want them to interfere with the company works.

Moreover, in order to seek the view of employers, an initial interview was conducted towards an engineer who was responsible to supervise polytechnic internship students for his company. From his point of view based in experience,
internship students have to strive for their own tasks. This was to test the student’s ability to communicate and be active during the period of training. However, not many students were able to start the communication and just wait for the orders from their supervisors. Another important point stressed was students cannot relate their learning to real life working situations. The students are having problem relating and understanding the theories, then applying them to the real working environment. He also suggested that educational institution should nurture important skills together with academic performance. The important skills mentioned were communication skills, creative thinking, problem solving, being independent and flexible when working individually or in a team.

Hence, it is the role of the higher education institution such as polytechnics in preparing the students with the life and career skills in order to help them to survive the global economic in this 21st century. Although research on 21st century skills has been increasing in number, and reports has been published many years, the studies reviewed were focused on information media (Arsad, Osman, & Soh, 2011; J. Voogt, 2003) and technology skills and learning and innovation skills (Abdullah & Osman, 2010).

Therefore in such situations, it is important to investigate whether the life and career skills are being embedded by the higher education institutions especially in the technical and vocational education since it provides semi-skilled and skilled workforce to compete in the global labor market. This study added on the body of knowledge and fill in the gap in the importance of 21st century life and career skills to be embedded in education for future workforce.
1.4 Research Objectives

The aim of this study is to profile the life and career skills among TVET diploma students in three different types of polytechnics in Malaysia namely Premier polytechnic Conventional and METRO polytechnic. The main objectives of this study are as follows:

1. To examine the level of life and career skills possessed by the students in different types of polytechnics (Premier, Conventional and METRO) in Malaysia.

2. To investigate the differences of life and career skills (a. Flexibility and Adaptability skills; b. Initiative and Self-direction skills; c. Social and Cross-cultural skills; d. Productivity and Accountability; e. Responsibility and Leadership skills) as perceived by the polytechnic students in different types of polytechnics in Malaysia:

3. To investigate the differences of life and career skills (a. Flexibility and Adaptability skills; b. Initiative and Self-direction skills; c. Social and Cross-cultural skills; d. Productivity and Accountability; e. Responsibility and Leadership skills) between male and female polytechnic students

4. To investigate the differences of life and career skills (a. Flexibility and Adaptability skills; b. Initiative and Self-direction skills; c. Social and Cross-cultural skills; d. Productivity and Accountability; e. Responsibility and Leadership skills) among students in different departments in polytechnics
1.5 Research Questions

To conduct this study, four research questions were developed as follows:

1. To what extent does the life and career skills possessed by the students in different types of polytechnics in Malaysia?

2. Is there any difference between the life and career skills possessed by the students in different types of polytechnics in Malaysia?
   2(a) Is there any difference between the Flexibility and Adaptability skills possessed by the students in different types of polytechnics?
   2(b) Is there any difference between the Initiative and Self-direction skills possessed by the students in different types of polytechnics?
   2(c) Is there any difference between the Social and Cross-cultural skills possessed by the students in different types of polytechnics?
   2(d) Is there any difference between the Productivity and Accountability skills possessed by the students in different types of polytechnics?
   2(e) Is there any difference between the Responsibility and Leadership skills possessed by the students in different types of polytechnics?

3. Is there any difference between life and career skills possessed by male and female polytechnic students?
   3(a) Is there any difference between Flexibility and Adaptability skills possessed by male and female polytechnic students?
   3(b) Is there any difference between Initiative and Self-direction skills possessed by male and female polytechnic students?
3(c) Is there any difference between Social and Cross-cultural skills possessed by male and female polytechnic students?

3(d) Is there any difference between Productivity and Accountability skills possessed by male and female polytechnic students?

3(e) Is there any difference between Responsibility and Leadership skills possessed by male and female polytechnic students?

4. Is there any difference of life and career skills among TVET students enrolled in different courses under different departments in polytechnics?

4(a) Is there any difference of Flexibility and Adaptability skills among TVET students enrolled in different courses under different departments in polytechnics?

4(b) Is there any difference of Initiative and Self-direction skills among TVET students enrolled in different courses under different departments in polytechnics?

4(c) Is there any difference of Social and Cross-cultural skills among TVET students enrolled in different courses under different departments in polytechnics?

4(d) Is there any difference of Productivity and Accountability skills among TVET students enrolled in different courses under different departments in polytechnics?

4(e) Is there any difference of Responsibility and Leadership skills among TVET students in different courses under different departments in polytechnics?
1.6 Research Hypotheses

In order to answer the research questions, several hypothesis were determined:

**Hypotheses to address RQ2**

$H_{01}$: There is no significant difference between the life and career skills possessed by the students in different types of polytechnics in Malaysia.

$H_{01a}$: There is no significant difference between the Flexibility and Adaptability skills possessed by the students in different types of polytechnics in Malaysia.

$H_{01b}$: There is no significant difference between the Initiative and Self-direction skills possessed by the students in different types of polytechnics in Malaysia.

$H_{01c}$: There is no significant difference between the Social and Cross-cultural skills possessed by the students in different types of polytechnics in Malaysia.

$H_{01d}$: There is no significant difference between the Productivity and Accountability skills possessed by the students in different types of polytechnics in Malaysia.

$H_{01e}$: There is no significant difference between the Responsibility and Leadership skills possessed by the students in different types of polytechnics in Malaysia.
Hypotheses to address RQ3

$H_{02}^{'}$: There is no significant difference between the life and career skills possessed by male and female polytechnic students.

$H_{02a}^{'}$: There is no significant difference between the Flexibility and Adaptability skills possessed by male and female polytechnic students.

$H_{02b}^{'}$: There is no significant difference between the Initiative and Self-direction skills possessed by male and female polytechnic students.

$H_{02c}^{'}$: There is no significant difference between the Social and Cross-cultural skills possessed by male and female polytechnic students.

$H_{02d}^{'}$: There is no significant difference between the Productivity and Accountability skills possessed by male and female polytechnic students.

$H_{02e}^{'}$: There is no significant difference between the Responsibility and Leadership skills possessed by male and female polytechnic students.

Hypotheses to address RQ4

$H_{03}^{'}$: There is no significant difference between the life and career skills possessed by students enrolled in different courses in polytechnics.

$H_{03a}^{'}$: There is no significant difference between the Flexibility and Adaptability skills possessed by students enrolled in different courses under different departments in polytechnics.
H₀₃b: There is no significant difference between the Initiative and Self-direction skills possessed by students enrolled in different courses under different departments in polytechnics.

H₀₃c: There is no significant difference between the Social and Cross-cultural skills possessed by students enrolled in different courses under different departments in polytechnics.

H₀₃d: There is no significant difference between the Productivity and Accountability skills possessed by students enrolled in different courses under different departments in polytechnics.

H₀₃e: There is no significant difference between the Responsibility and Leadership skills possessed by students enrolled in different courses under different departments in polytechnics.

1.7 Significant of the Study

The study is important because the findings can help the Department of Polytechnic Education and the Ministry of Education Malaysia to formulate strategies enhancing the production of competent graduates that will be the future workforce, which is serious in the sense that producing 21st century workforce are considered important by many countries to excel in global market in the dynamic economical environments. As being mentioned earlier, this study is important for because of the reasons followed:

1. The literature of this study focuses on the issues faced by the employers regarding graduates entering working environment that shows the situations of workforce in Malaysia in the 21st century global economy. This can be the proof that importance of cooperation between TVET institution and industries
is crucial. They should realize their important roles to help producing competent workforce which will at the end contribute to win-win situation between educational institutions and industries.

2. The outcome of this study can be benefited as a guide in order to understand the issues in preparing TVET students with appropriate skills that is important that will contribute to the country’s development as mentioned in Vision 2020.

3. This study also may give some ideas and insight to other researchers to further dig the importance of life and career skills and resolve the issues of workforce of the future. Researchers can understand that there are gaps between what students should gain as their preparation to enter working world and what their educational institutions provide to them.

In addition, this study is in line with the National Higher Education Strategic Plan (NHESP) that consist of 23 critical agenda projects (CAPs). This was discussed further in the introduction of the next chapter.

As for the relationship between 21st century Life and Career skills can be seen specifically through the Generic Student Attributes (GSA) in Graduate Employability CAPs. The justification of the significance of this study can be viewed by understanding the missions and visions of the above mentioned critical development project of Malaysian government. This shows the connection of 21st century life and career skills towards Vision 2020 through the visions of every level of the country’s development. Consequently, this study is premised on the fact of the country's development, and improvement of higher education specifically technical and vocational education and training (TVET) to produce students who have life and career skills and later to success as workforce of the 21st century in the dynamic global
economic environment. In order to produce 21st century workforce, this study profiles the life and career skills of polytechnic students in Malaysia as to proof that Malaysian graduates have the potential to survive the 21st century dynamic working environments that fits the needs of employers and lessen the negative issues of workforce.

1.8 Limitation of the Study
This study is focusing on and limited to 21st century life and career skills of TVET students specifically in polytechnics that offers Diploma programs. There are some limitations to be addressed in order to conduct this study. The limitation can be summarised as follows:

1. Population used in this study is limited to TVET students who enrolled for diploma programs offered by the three types of polytechnics in Malaysia namely premiere, conventional and METRO polytechnics.

2. The data collected were based on a questionnaire developed in this study that measures life and career skills. The instrument was verified by the experts regarding the validity and was piloted to verify the reliability before the actual distribution was performed.

3. The New Learning Paradigm (C Kivunja, 2014) was used to support this study where the theory focused on job readiness with 21st century skills. The formulation of the learning paradigm is JR21CS = f(TCS + LIS + CLS + DLS) which means Job Readiness with 21st century skills (JR21CS) is equal to the total function of Traditional Core Skills (TCS), Learning and Innovation skills (LIS), Career and Life skills (CLS) and Digital Literacy skills (DLS). However, this study concentrate only on Career and Life skills.
4. The biggest limitation is the research findings are subjected truly on the answers of the respondents that cannot be controlled even though the answers given are differ from their real feelings.

1.9 Operational Definitions

This study focus on the life and career skills which comprises of five main variables namely (1) Flexibility and Adaptability skills, (2) Initiative and Self-direction skills, (3) Social and Cross-cultural skills, (4) Productivity and Accountability skills and (5) Responsibility and Leadership skills. The operational definition of the variables are as follows.

Flexibility and Adaptability skills

Flexibility and adaptability skills have two main skills namely (i) Being Flexible and (ii) Adapting to Change.

Being flexible is operationalized as the extent to which the polytechnic students are confident to act effectively upon criticism, feedbacks, diverse opinions and views by others in order to reach agreed solutions particularly in multi-cultural environments.

Adapting to Change is operationalized as the extent to which the polytechnic students perceived they are able to demonstrate the ability to adapt to changing environments including varied roles, jobs responsibilities, information and still can work even in uncertain priorities and unexpected situations without complaining, and quickly adjust to the new situations.
**Initiative and Self-direction skills**

This variable consist of three main skills namely (i) Manage Goals and Time, (2) Work Independently, and (3) Be Self-Directed Learners.

Manage Goals and Time is operationalized as the extent to which the polytechnic students perceived they are able to demonstrate their ability to set reasonable short term and long term goals with specific criteria along with the strategies to meet the goals in particularly dealing with time and managing workloads effectively.

Work Independently is operationalized as the extent to which the polytechnic students perceived they are able to demonstrate the ability to complete tasks without direct observation by others in order to be highly self-reliant.

Meanwhile, Be Self-Directed Learners is operationalized as the extent to which the polytechnic students perceived they are able to start or begin to learn new ideas, concepts, processes and applications involving efficiency and effectiveness in order to complete tasks as a commitment in lifelong learning process.

**Social and Cross-cultural skills**

Social and Cross-cultural skills comprise of two main skills namely (i) Interact effectively with others and (ii) Work effectively in diverse teams.

Interact effectively with others is operationalized as the extent to which the polytechnic students perceived they are able to interact effectively with people that they work with or come in contact with, and other than their environments including virtual community.
Work effectively in diverse teams is operationalized as the extent to which the polytechnic students perceived they are able to work collaboratively with people in diverse cultures, religious, beliefs and lifestyles in respect and trust.

**Productivity and Accountability Skills**

Productivity and Accountability Skills comprise of two main skills namely (i) Manage projects and (ii) Produce results.

Manage projects is operationalized as the extent to which the polytechnic students perceived they are able to demonstrate managerial skills including setting and meeting goals even in uncertain situations that involves pressures and competitiveness in order to achieve intended results.

Meanwhile Produce results is operationalized as the extent to which the polytechnic students perceived they are able to demonstrate extra attributes related to producing high quality products comprise of etiquette, time and project management, participation, reliability, collaborate and cooperate, respect, and accountable for results throughout the students commitment in their studies in polytechnic.

**Responsibility and Leadership Skills**

This final variable comprise of two main skills namely (i) Guide and lead others and (ii) Responsible to others.

Guide and lead others is operationalized as the extent to which the polytechnic students perceived they are able to demonstrate leadership skills among colleagues including using interpersonal skills to influence the behaviors and actions of other people throughout their studies in polytechnic as a practice to enter the world of work.
REFERENCES


Kivunja, C. (2014). Teaching students to learn and to work well with 21st century skills: unpacking the career and life skills domain of the new learning paradigm. International Journal of Higher Education. doi:10.5430/ijhe.v4n1p1


Muchinsky, P. (2006). *Psychology applied to work: An introduction to industrial and organizational psychology*. Retrieved from https://books.google.com/books?hl=en&lr=&id=hZOVO-1quO0C&oi=fnd&pg=PR7dq=psychology+applied+to+work&ots=QI341z6ku e&sig=8IY99Q0XTXeo0i7IBrzx_oZX3-I


Osman, K., Soh, T. M. T., & Arsad, N. M. (2010). Development and validation of the Malaysian 21st century skills instrument (M-21CSI) for science students.


