Development of a New Empirical Based Competency Profile for Malaysian Technical Vocational Education and Training Instructors

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ABSTRACT

Building the knowledge-based human resources was the major thrusts of the knowledge-based economy development plan for Malaysia. In order to provide excellent qualities of knowledge worker for Malaysia, several issues and problems regarding vocational and technical education must be resolved. The main issues and problems found; (i) Many instructor lack competency, there is no framework (or competency profile) being developed for the Technical Vocational Education and Training (TVET) instructors, (ii) the study course at university do not provide practical pedagogical skills as required by the instructor during their real job, (iii) and there is no framework or path in training being developed for the instructors. The focus of this study is developing empirical based competency profile for Electrical Instructor and validating that profile. For the first stage, 42 general competencies and 72 technical were identified. Further to the second stage, Ninety-eight competencies listed in the survey form were considered as important for TVET instructors in Malaysia. Finally for the 3rd stage, 112 competencies were found to be required by Electrical Instructors. The questionnaires were send to 619 instructors throughout Malaysia. Mean score of each competencies found in the range 3.69-3.89(technical), 3.79-3.86(learning and methodological), and 3.59-3.82(human and social). The results showed that the majority of Malaysian Vocational Education and Training instructors score above the moderate (competence) level of each competencies. The competencies level range from Level 1 to Level 5 where Level 1 refer to Very Low (Entry) Level, Level 2 refer to Low (Basic) Level, Level 3 refer to Moderate (Competence) Level, Level 4 refer to High (Proficient) Level, and Level 5 refer to Very High (Expert) Level. This research also develop a new empirical based competency profile for Malaysian Vocational Education and Training Instuctors particularly for electrical Instructor. It is recommended that the concept of profiling be extended to other field of training instructor.
CHAPTER 1

INTRODUCTION

1.1 Overview of chapter

This research employed a quantitative methodology for answering research questions. The aim of this study is to develop an empirical based competency profile for Malaysia Technical Vocational Education and Training Instructors focused only on Electrical Instructors, validated the profile and measurement of their competency for technical, learning and methodological, and human and social competencies. In this study, primary data obtains directly from electrical instructors as respondents through written questionnaire. The literature contains numerous comparison studies in this field but researchers have only focus on three competencies. The competencies were technical competency, learning and methodological competency, and human and social competency. These three clusters are basic components of holistic k-worker produced in Malaysia and was adopted from the German Occupational Competence Model. This model was use in German Technical Vocational Education and Training’s (TVET) sector in more than 20 years. The Standing Conference of the Ministries of Education and Cultural Affairs (KMK) in Germany is using this model in their curricular for TVET schools. For this study, researcher decided to use the model as a reference in developing teacher’s competency profile.

This chapter introduces the context, nature and purpose of the study. The background to the research described followed by a discussion of the research problems, research questions, research design, and significance of study.
1.2 Background to the study

The process of globalisation is a "worldwide trend" and Malaysia must prepare for the inevitable changes it brings in education and training. According to Chinnammain (2005), education is undergoing constant changes under the effects of globalization. The effects of Globalization on education bring rapid developments in technology and communications are foreseeing changes within school systems across the world as ideas, values and knowledge, changing the roles of students and teachers, and producing a shift in society from industrialization towards an information-based society. To meet the challenges of globalization, it would in fact appear necessary to prepare teachers who can adopt such changes. Therefore, researcher believed the investment in human capital was very important factor in the new worldwide trend.

Malaysia recognizes the importance of investment in human capital (including TVET teachers) focusing on the increase knowledge content of education and training (Eighth Malaysia Plan, 2000). Government's initiative for upgrading competency-based human resources (Byham, 2004) for Malaysia was as follow:

- developed special policy of human resource (Eight Malaysia Plan, 1995), approved the Human Resource Development Fund Act (Cabinet Committee, 2001);
- launched Skills Development Fund (Department Skill Development-DSD, 2001), approved more training providers¹;
- introduced more vocational and technical subjects in secondary schools (Hashim, Jan 2005), approved new National Dual Training System (Cabinet Committee, 2004) and
- Introduced the Third Industrial Master Plan-IMP3 (Malaysia Economy Planning Unit-EPU, 2006).

- Technical and Vocational Training Transformation (Ministry of Education, 2012)

¹ Included MARA Vocational Institutes (IKM) under the Ministry of Regional and Rural Development (formerly Ministry of Entrepreneurial Development and Cooperatives), the Youth Training Centres under the Ministry of Youth and Sports, the Agricultural Institutes under Ministry of Agriculture and Agro based Industries, and the Industrial Training Centre under Ministry of Human Resources.
Besides that, Malaysia also plan to raise capacity for knowledge and innovation thus nurture “first class mentality” (Ninth Malaysian Plan, 2000) whereby all training institutions has urged to benchmark the ‘world best’ and move to create a world class education system (Prime Minister, 2004). Furthermore, government has established policies for staff training and development so that it will equip them with appropriate skills, knowledge, and attitude\(^2\) (Government Circular, 2005). Lastly, government has established the Malaysian Qualifications Agency (MQA), which responsible for assuring the quality of higher education programs and qualification based on the standard in the Malaysian Qualifications Framework (MQF) and Quality Assurance Code of Practice\(^3\).

The skill shortage in Malaysia, leading to the establishment of the cabinet committee on training that recommended sixteen broad policy directions in order to reform and strengthen the training delivery system. The proposed measures are grouped under three main policy objectives; improving the responsiveness of public training to market demands, expanding the role of the private sector, and strengthening linkages between training and technological changes (Cabinet Report, 1991).

The general objective of this study is to develop an empirical based competence profile for Malaysian Technical Vocational Education and Training Instructors and measure their competency level. To be more specific in this study the researcher wants to:

1. develop a model for competency profile;
2. verify the competency profile being developed;
3. measure the level of competency among the teacher and
4. establish an empirical based competency profile for Malaysian Technical Vocational Education and Training Instructors.

\(^2\) Staff development and training policies in public sector-Government Circular

\(^3\) Approved by Cabinet on 21\(^{st}\) December 2005
1.3 Statement of problem

In order to supply Malaysia with excellent qualities of knowledge based human resource, the universities and training institutions are not only concentrating on knowledge and technical skills training, but to include generic skills required by industry in their curriculum. Graduates cannot merely possess knowledge and skills but the capability to apply them with confidence within varied and changing situations and continue to develop their specialist and skills long after they left formal education and training (Ismail, 2005). In order to provide excellent qualities of knowledge worker for Malaysia, several issues and problems regarding Technical Vocational Education and Training must be resolved. The main issues and problems were as followed:

1. According to various researches, many teachers (or instructors) lack competency (nzherald, 2004) in the subjects they teach. In addition, most of new instructor felt unprepared in the classroom during their training programs. New instructors employed identified to have a lacking of teaching competency. Previous research done by Northwest Policy Centre (Report, 2002) found that competency among employer (in our case we refer to instructors) is a major issue; about 60% of them lack academic skills, one third lack communication skills, one quarter lack occupational skills. This statement was support by Bauer & Gollmann (2008) who believe the lack of any interlinking of the educational/sociological studies with the concrete professional and teaching situations also main problem of Technical Vocational Education and Training (TVET) Instructor. Another authors, Nanci & David (2006) also concern with teacher (or instructor) quality with related to competency because teacher quality has a stronger impact on achievement than others school resources (Darling, 2002). One researcher, Lauglo (2006) on the other hand believes that qualifier teacher (he call them as VET human resources) are chronically lacking in many country. He also argues that there is also the problem of ensuring the recruitment

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4 Agriculture & Food Processing Industry Skill Gap Analysis- Northwest Policy Centre, University of Washington, Evans School of Public Affairs.
of prospective. Majority of them are fresh graduates and they do not have working experience either in teaching or related technical area. As a result, they cannot deliver the teaching process effectively and not capable to perform a practical job.

2. There is no framework (or competency profile) being developed for the instructors who are teaching technical vocational education in Malaysia. Bauer (2007) believe the number of literature regarding this field is not countable. However, a precise theoretically founded and empirically based professional profile of Technical Vocational Education and Training instructors does not exist. Bauer & Gollmann (2008) said until today there is neither a requirements profile that is sufficiently well substantiated by theory and is supported on a basis of empirical investigations for vocational school instructor, nor have any comprehensive (empirical) audits of the current position been carried out with regard to the quality and the effects of the learning processes initiated by vocational school instructors. Therefore, the level of competencies among them cannot be measure and competencies gap cannot be identify. Even though many standard or profiles were available, Malaysia should have their own standard for Technical Vocational Education and Training Instructor to suite their own needs.

3. According to previous studies, Nickolaus (1996), cited by Bauer (2007), there are weak practical orientation of study of subject matter and a missing connection between studies of educational and social science and concrete teaching practice. It was found that, the study course at university do not provide practical pedagogical skills as required by the instructors during their real job.

4. Currently, no training path developed for Malaysian Technical Vocational Education and Training Instructors in Malaysia. Formal teacher training are for secondary education teacher under Ministry of Education only. For Malaysia Technical Vocational Education and Training instructor, there is no formal training for them. Training programmed is not planned well, and depends on the officers in charge. There are cases whereby the teachers do not apply what they have learned because the trainings provided are not relevant to their job tasks. For example, they were sending to attend courses related to the development of curriculum, but their current job is industries liaison. Trowe (2006) believe that in-service education and training is necessary for their sustainable development.
1.4 Research questions

Based on the issues and problems regarding vocational and technical education mentioned earlier, the researcher had established six research questions. They were:

1. What are the elements of competency required for Malaysian Technical Vocational Education and Training Instructors?

2. How the empirical based competency profile for Malaysian Vocational Education and Training Instructors being developed and validated?

3. How do we measure the level of competency among the electrical instructors in Malaysia?

4. What is the competency profile for Malaysian Technical Vocational Education and training Instructors?

1.4.1 Research question 1
What are the elements of competency required for Malaysian Technical Vocational Education and Training Instructors?

ILO provides a good categorization of competency, which allows to access definitions in a better way, is the one that distinguishes between three approaches. The first one regards competency as the ability to carry out tasks; the second one concentrates on personal attributes (attitudes, abilities) and the third one, called "holistic", includes the two previous ones. In Malaysia, the Department of Skill Development (DSD) use the German Occupational Competence Model as shown in figure 1.1, which comprised three components; technical, human and social, and learning and methodology.
OC = TC + LMC + HSC

Figure 1.1: ITB-University Bremen Occupational Competency Model (Source: Bader; Spottl, ITB-University Bremen)

This model was use in German TVET’s sector in more than 20 years. The Standing Conference of the Ministries of Education and Cultural Affairs (KMK) is using this model in their curricular for TVET schools. For this study, researcher decided to use the model as a reference for developing the competency profile for Vocational Education and Training Instructors in Malaysia.

1.4.2 Research question 2
How the empirical based competency profile for Malaysian Technical Vocational Education and Training Instructors, being developed and validated?

Process for developing this competency profile is divided into five phases, namely through reading from several literature, first expert panel discussion meeting, feedback from training provider, second expert panel discussion meeting and also pilot test of each item to find the reliability of the instruments. Few models been developed recently, but all the models had focused only on either general competency or technical competency separately. None of them was suitable for TVET instructors that cover the three components; technical competency, human and social competency, and learning and methodology competency. Therefore, researcher has decided to use available models from literature reading as a basic for developing the competency profile.
1.4.3 Research question 3
How do we measure the level of competency among the electrical instructors in Malaysia?

The level of competency among the electrical instructors was measured using self-evaluation questionnaires send to electrical instructors as respondents. Lacking literature-derived consensus on the best instrument, the researcher developed a 112-item rating form based on twelve available models and panel discussion group. The instructor evaluation's use 5-point rubric scale for measuring their competency.

For this study, researcher decided to use rubric scale (Young et al, 2000; CHEA, 2000; Paul & Elder, 2005) for measuring teacher competency (TSE, SVE & CSM) because of many advantages. The advantage of using this scale because set of criteria was clearly defines in the range of acceptable/unacceptable performance and this will reduce bias. Besides that, the criteria provide descriptions of each level of performance in terms of what teacher are able to do. Thus, we could assign labels (e.g., expert/mastery, proficient, moderate, basic and entry/novice) to these levels. Rubric scale is a systematic scoring guideline to evaluate performance (in this case teacher competencies) through the uses of a detailed description of performance standards thus it will provide consistent scores across all instructors (Zimmero, 2004), and allows assessors to be more aware of the expectations for performance and consequently improve their performance (Zimmero, 2004).

1.4.4 Research question 4
What is the competency profile for Malaysian Technical Vocational Education and training Instructors?

The profile will reflect what are competencies required by Malaysian Technical Vocational Education and Training Instructor. The profile Prove a complete picture of the instructor's attribute and competencies that cover seven clusters of Technical Competency, five clusters of Learning and Methodological Competency, and five clusters of Human and Social Competency. It also show the level of each competencies cluster ranging from the lowest level 1 (Entry) to highest level 5 (Expert / Mastery).
1.5 Research design

In this study, primary data obtains directly from respondents through self-written questionnaire send to electrical instructor. In this research, a quantitative methodology is used. Quantitative research easily defined as the collection of numerical and statistical data. It built upon the 'positivism' paradigm, and perceived as the scientific approach to research employing 'experimental' and 'quasi-experimental' strategies. Harvey (2002) describes quantitative data as 'data which can be sorted, classified, measured in a strictly "objective" way -they are capable of being accurately described by a set of rules or formulae or strict procedures which then make their definition (if not always their interpretation) unambiguous and independent of individual judgments'. Quantitative methods designed to provide summaries of data that support generalizations about the phenomenon under study. In order to accomplish this, quantitative research usually involves few variables and many cases, and employs prescribed procedures to ensure validity and reliability. Kruger (2003) confirms that 'quantitative methods allow us to summarize vast sources of information and facilitate comparisons across categories and over time'.

Even though the results of qualitative research are statistically reliable (Gessler, 2008), qualitative method helped us to validate the quantitative data obtained from the survey. Mullens (1966) believed qualitative method contributed more information than others to our analysis. Based on the discussion of the above methods, researcher believes quantitative method was appropriate for this research.

Measurement of competency for electrical instructors was based on competency-based approaches (Tillema & Smith, 2000) by instructor self-assessment. Self-assessment allows instructors to look at their own performance, form conclusions about performance level, and act upon those conclusions to create a development plan. Accurate self-assessment requires introspection and realistic self-perception (Wilson & Pearson, 1995). Instructor must also be able to reflect on their performance and determine where improvements are necessary (Braskamp & Ory, 1994). Self-assessment takes many forms. In many organizations, self-evaluation incorporated into the performance appraisal process. Sometime they will used in identifying the developmental needs (Atwater, 1998).
For this study, it allows Instructor to check compliance with stated requirements and standards (rubrics scale), and assess performance (Wilson & Pearson, 1995). A self-evaluation can be used by the instructor in identify their own opportunities for improvement, or can be combined with the feedback of others to create a more rounded view of performance (Braskamp & Ory, 1994; Atwater, 1998). Ross & Bruce (2007) believed self-evaluation contribute to instructor’ beliefs about their ability to bring about student learning.

1.6 Significant of the study

After the study, researcher should establish an empirical based competence profile for Malaysian Technical Vocational Education and Training Instructors. The competency profile develops for the instructor would provide a means by which they could gauge their own strengths and weaknesses. After the level of instructor competency has been analysed and their competency gap been identified, a compulsory training will be proposed based on their skill pathway (Leeuw & Seegert, 2007). Because of no similar product in TVET market, this profile was the useful and cheap solution for Human Resource Management (HRM). It is a multipurpose tool for HRM that measure the level of competency among the instructor or teacher, assess instructor’s competency gap compare to average score of all instructor (their current strength and weakness), perform training needs analysis (TNA), and prepare a career path development for instructor. The profile also are flexible and user friendly for HR practitioners.

1.7 Chapter summary

This chapter explores various models as a basis for the new development of empirical based competency profile for electrical instructor. This research focuses on three areas of competency such as technical, learning and methodological, and human and social competency that required by electrical instructor to support the implementation of National Dual Training System (NDTS) in Malaysia.
CHAPTER 2

REVIEW OF THE RELATED LITERATURE

2.1 Overview of chapter

This section listed the status of research related to strategies in developing K-worker, Technical Vocational Education and Training (TVET), problem in TVET, and direction of TVET in Malaysia. Any analysis of trends and issues in Europe faced with the wide diversity of historical developments that can be observe between European countries. This diversity was particularly striking in the area of vocational education and training, which closely related to the overall educational system. TVET systems expected to meet new requirements, which result from the combination of three interrelated factors such as the worldwide diffusion of information technologies, economic competition, and changes in work organization (Bertrand, 1998).

Malaysian government has establish special policy of human resource in Eight Malaysia Plan (8MP) that focused on expanding the supply of highly skills and knowledge human resource, increasing the accessibility to quality education, improving the quality of education delivery system, promoting life long learning, promoting Malaysia as a regional hub of educational excellence, and reinforce positive value (EPU, 1995). The government had approved the Human Resource Development Fund Act in year 2000. Malaysian government will ensure every worker was providing a continuous training to upgrade his or her skills and knowledge. In addition Malaysia had allocated RM144 millions to conduct skills and language training for unemployed graduates.
Increase delivery system to ensure education training reach target group (Education Minister, 2004). Institution has urged to benchmark the world's best and move to create a world class education system for the nation. (Prime Minister, 2004).

Establish policies for staff training and development that equip them with appropriate skills, knowledge, and attitude. This policies also emphasis all institutions in public sector should allocate special budget (1% from emolument cost) for staff development and training at least seven days yearly. (Staff development and training policies in public sector, 2005). Establish the Malaysian Qualifications Agency (MQA) that had a responsibility for assuring the quality of higher education programs and qualification based on the standard in the Malaysian Qualifications Framework (MQF) and Quality Assurance Code of Practice. (Approved by Cabinet on 21st December 2005).

Enhance the quality of TVET's institution by training the teachers first in the specific occupational area. Training institutions should develop competencies, and not just at acquiring a certificate / diploma (Federation of Malaysian Manufacturer, 2006). The need to establish a formal and continuous linkage between institutions and industries to collect information on training need, develop training products and services that meet the specific needs, and provide channel for R&D partnership (Ninth Malaysian Plan). Cabinet has approved the new National Dual Training Scheme (NDTS) based on self-reliant learning, action-oriented teaching, and learn and work based assignment.

The Third Industrial Master Plan (IMP3) 2006-2020 addresses issues related to balanced socio-economic development by identifying opportunities to reduce inter-ethnic disparities in entrepreneurship, ownership of productive assets and employment. "Developed nation status is only meaningful if wealth creation results in balanced socio-economic development. Prosperity with persistent inequalities is neither fair nor sustainable in the long run" (Malaysian Prime Minister, 2006).
2.2 Overview of TVET in Malaysia

There is no denying that Technical Vocational Education and Training (TVET) play a vital role in the socio-economic development of any nation. For governments, TVET is seen as crucial for enhancing economic competitiveness as well as a tool that contributes to social inclusion, poverty reduction and sustainable development. Young people and adults are also giving credence to the need to acquire some form of technical or vocational skills to stand them in better stead to meet the demands of an ever-increasing competitive marketplace. Given these developments, it is fitting that Malaysia as a society and nation ponder upon how best it should develop its technical and vocational education system to meet the challenges ahead.

Education as a whole is under the jurisdiction of the Ministry of Education, who is responsible for managing a comprehensive school system (ranging from primary to university level), regulating syllabi, controlling national examinations and supervising the development of education in the country. In Malaysia, the education started from primary level for a total period of six years, followed by three years of lower secondary. After the Lower Secondary Assessment (Penilaian Menengah Rendah, PMR), students were streamed to upper secondary (science, arts, technical or vocational stream). After two years of upper secondary, students sat for the Malaysian Certificate of Examination (Sijil Pelajaran Malaysia / Sijil Pelajaran Vokasional Malaysia, SPM/SPMV), which equivalent to O-Level Cambridge University Examinations.

TVET in Malaysia played important role in national development especially social development. There were several ministries, public agencies and private agencies involved in the vocational and technical training of youth in Malaysia to fulfil the human resources needs. Ministry of Education through ‘technical’ (or ‘vocational’) secondary schools was offered TVET at secondary level (age 16 to 17). After that TVET was offered in polytechnics and community colleges under the Ministry of Higher Education.

Besides that, the Department of Skills Development (DSD), formerly known as The National Vocational Training Council, is one of the agencies under the Human Resource Ministry, responsible for the co-ordination and control of skills training as well as career development in skills training, in line with the implementation of the
National Skills Development Act, 652 (2006) on September 1, 2006. The Department has established in year 2006. The objective was establishing a coordinated and comprehensive system of vocational and industrial training in line with Malaysia's economic development goals and technological development needs. Specifically, the department are responsible in promoting, developing and reviewing vocational and Industrial training programs at the skilled and semi-skilled level in public training institutes commensurate with the stage of technological development in the industry. DSD also has responsible for promoting and assisting the development of in-plant training programs, assessing and recommending the present and future skill needs for skilled and semi-skilled manpower commensurate with the stage of technological development, establishing national trade standards and developing the training syllabi (National Occupational Standard-NOSS), and organizing and implementing a national program for trade skills testing and certification. In line with the recommendations of the Cabinet Committee on Training, 1991, NVTC began overhauling the skills training system in Malaysia through a major review of the national Skill Certification system (Sijil Kemahiran Malaysia-SKM), and coordinating training and development programs for trainers in public skills training institutions. The department is liaising closely with Majlis Amanah Rakyat (MARA) under the Ministry of Rural and Regional Development (formerly under Ministry of Entrepreneurial and Cooperative Development), Ministry of Education (ME), and Ministry of Youth & Sports (MYS).

Because of its very important, government gave special attention to encourage people in TVET. In 2005, the Malaysian Government implements the National Dual Training System (NDTS), which aims to expose apprentices to actual situations in the industry. Apart from technical competencies, the NDTS also emphasizes human and social competencies such as teamwork, self-monitoring, shouldering common responsibilities, and the like. Approximately seventy to eighty percent of the training was in the industry, while the remaining twenty to thirty percent carried out in training institutions, utilizing curriculum developed by the National Occupational Core Curriculum (NOCC).
2.3 Problem in TVET in Malaysia

The problems and challenges in Technical Vocational Education and Training (TVET) in Malaysia include imbalance and mismatch in training. Malaysia need skilled knowledge worker required for developing film industry, textile, biotechnology and agriculture. In consequence, many graduates were chasing too few jobs (Education Quarterly, 2004). According to previous studies, Nickolaus (1996), cited by Bauer (2007), there are weak practical orientation of study of subject matter and a missing connection between studies of educational and social science and concrete teaching practice. It was found that, the study course at university do not provide practical pedagogical skills as required by the teacher during their real job.

Government recognition for TVET graduates were at a low rating and minority of them working with government agency. TVET graduates sometimes treated as low class students because the perceptive engineering students were better. Research by Tilak (2002) revealed that, Malaysia was categorized a “fairly developed” in term of providing “Technical Vocational Education and Training”.

The social attitudes to TVET are not encouraging where negative attitudes to manual work severely dampen the demand for TVET. An important aspect of TVET refers to its high operating cost and financing, TVET is by definition costlier than general education. As a result, there were shortage institution offering TVET and sometime the equipment not be updated regularly as technology changed. Most institutions owned by government because of highly operating cost.

Lack of industrial relationship since every company has their own policies and regulations to follow. Some companies were resistance to take student for industrial training and some trainee were given general work rather than the actual work they were been trained. The public training institutions plays a minor role in meeting the need of industrial firms (World bank 1997, p.109, cited by Spöttl, 2000)

Lack of skilled acquired by the instructors in TVET institution found to be one of problem in Malaysia. According to various research, many instructors lack of competency (nzherald, 2004) in the subjects they teach. Research shows that most new instructor from training programs feeling unprepared for the classroom. The
lack of competency among new instructor e had been identified as a main problem. Previous research done by Northwest Policy Centre (Report, 2002)\(^6\) found that competency among employers (we refer to instructor in this research) is a major issue; about 60% of them lack academic skills, one third lack communication skills, one quarter lack occupational skills. Another authors, Nanci & David (2006) also concern with instructor quality with related to competency because their quality has a stronger impact on achievement than others school resources (Darling 2002). One researcher, Lauglo (2006) on the other hand believes that qualifyer teacher (he call them as TVET human resources) are chronically lacking in many country. He also argues that there is also the problem of ensuring the recruitment of prospective. Majority of them are fresh graduates and they do not have working experience either in teaching or related technical area. As a result, they cannot deliver the teaching process effectively and not capable to perform a practical job.

There is no framework (or competency profile) being developed for the instructors who are teaching Technical Vocational Education and Training in Malaysia. Bauer (2007) believe the number of literature regarding this field is not countable. However, a precise theoretically founded and empirically based professional profile of TVET instructor does not exist. Even though many standards were available, Malaysia should have their own standard for the TVET instructor to suite their own needs.

2.4 Direction of TVET in Malaysia

According Spottl & Davis (2008), the most effective TVET systems are those designed and organized to be in complete accord with the personnel requirements to modern economics. Figure 2.1 show the complementary relationship of practical knowledge and theoretical knowledge inherent on the notion of work-process knowledge.

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\(^6\) Agriculture & Food Processing Industry Skill Gap Analysis- Northwest Policy Centre, University of Washington, Evans School of Public Affairs.
The Malaysian Qualification Framework (MQF) is Malaysia’s declaration about its qualifications and their quality in relation to its education system. The MQF establishes a single, coherent, easily understood award system for academic, professional, vocational, technical and skills qualification. MQF is an instrument that develops and classifies qualifications based on a set of criteria approved nationally and benchmarked against international best practices. These criteria are accepted and used for all qualifications awarded by recognised higher education providers. Hence, MQF integrates with and links all national qualifications.

MQF also provides educational pathways through which it links qualifications systematically. These pathways will enable the individual to progress through credit transfers and accreditiation of prior experiential learning, in the context of lifelong learning. The new eight levels of qualification can be separated into four sectors; skill and training, vocational and technical (Industrial technology education), higher education and lifelong learning as shown in figure 2.2.
2.5 Review on Definition of Competency

The term competency defined in the literature from several different points of view. According to Strebler et al. (1997) and Jubb & Rowbotham (1997), the term competency has no widely accepted single definition. In the field of education, term competency used to describe teacher behaviours (Tovey, 1994) or teacher standard (Strebler et al, 1997; Spöttl, 2009). Competency sometime defines as observable performances or the outputs of learning processes. This focus on a person’s performance was concerned with whether they were competent as described in the written standards (Strebler et al., 1997). The second definition saw competency as a standard, or quality of outcome. Both definitions agreed by Hoffman (1999), the term competencies based on his literature review was defined either observable performance, or the standards or quality of the outcome of the person’s performance, or the underlying attributes of a person. Another writer, Wright & Geroy (1991) saw the competencies extend beyond skills and knowledge required for day-to-day job performance but they suggested that in addition to the traditional subject matter expert knowledge profile must be included.
Competencies are elements of competence (Kaslow et al., 2004) that involve the whole person, are teachable, observable, measurable, containable, and practical, derived by experts, flexible and transferable across settings, and continually re-evaluated and redefined (Alverno College Faculty, 1994; Stratford, 1994). Competencies are required for effective performance (Marrelli, Tondora, & Hoge, 2005). Competencies will correlate with performance, could be evaluated against well-accepted standards, and can be enhanced through training and development (Parry, 1996). Knowles (1975) uses the following typology for competencies: knowledge, understanding, skill, attitude, and value whereas Kooymann & Sargent (1998) argue that competency have two primary components: skill and knowledge. OSC (2002) use four attributes to describe competency. They are knowledge, skills, abilities, and personal attributes. Different definition by Bondar & Demina (no date) competency can be divided into three main groups: general, pedagogy + psychology, and subject-oriented. Miller (1990) on the other hand identified those competencies as personal, professional, and technical entities.

The term competency profile used for this study refers to the same term used by many researchers or authors such as teacher professional competency (Hager, 1993; Ingvarson, 1998; Anggeli, 2004), teacher standard (Allett, et al., 1996; Christie, 2006), teacher quality (Scheetz & Martin, 2006), teacher profile (Koster, et al., 2005), competency standard (American Federation of Teachers, 1990; Wen & Shih, 2008), and skill standard. It was decided that the term competency profile (Canada, 2001, North Cost, 2005) used for this study because this term is commonly used in Malaysia and clearly understood by all the TVET instructors.

2.6 Review on teacher competency

Teachers in TVET play important role as main vectors for the creation, development, sharing and transfer of knowledge are playing a crucial role in this process.

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7 The State Comptroller is New York State's chief fiscal officer. The Comptroller is charged with auditing government operations and operating the Statewide Retirement Systems.

8 North Coast Tech Prep Consortium, Cuyahoga Community College, Cleveland, Ohio
Malaysian government has to make sure that teachers are highly competent, motivated and committed, in order to master their increasingly complex tasks. In addition, the professions of teacher have to be very attractive in order to attract enough young and talented people to become teacher or trainer (European Commission, 2005). According to Bauer (2007), TVET teacher professionals must have a profound knowledge of business, and work processes and know how to transform this knowledge into teaching practice. Imparting active, and not inert, knowledge depends on the situated and integrated theoretical and practical knowledge. On the other hand, Danielson (1996) believe teacher is a profession by itself. Spöttl (2009) coined the term teacher standard in the way that they describe teacher competencies. Teacher standard were more holistic as they refer to competencies and thus to the abilities, the skills and attitudes of teacher. Malaysian teachers of the next generation will need to be resilient and uphold the moral as well as professional values that in addition to being knowledgeable and competent. Hence, the development of competency profile in TVET is most crucial in achieving the desired mission of producing quality teachers for a developing country like Malaysia.

TVET teachers are increasingly involved in the shaping of TVET processes and the TVET system according to the needs of society and economy. They also have to assume a growing responsibility for the societal development. All available resources such as the academic excellence of universities in research and development, the knowledge and competence of the economic sectors, and the perspectives that lie in the international exchange of knowledge and experiences had to be used in order to develop the quality TVET instructors.

In Germany, a precise occupational profile or description of the tasks of TVET teachers does not exist (Bauer, 2007). The German Education Council (1965-1975) defined in its Structural Plan for the German Education System, the general tasks of all teachers, namely teaching, educating, advising, assessing and innovating (Deutscher Bildungsrat 1972, p. 217, cited by Bauer, 2007). There is still a consensus about this general description of teaching responsibilities. The KMK commission for teacher education stipulated the teachers’ responsibilities very similarly. The core task of a teacher is the intentional planning, organization, execution and reflection of teaching and learning processes, including the sub tasks teaching, educating,
diagnosing, assessing and developing competence (Terhart 2000, p. 15, cited by Bauer, 2007). Figure 2.3, shows the competency profile develop for Malaysian TVET instructors.

![Diagram showing the competency profile](image)

**Figure 2.3: Malaysian TVET Instructor's Competency Profile**

### 2.7 Review on teacher standard from available models

In this study, TVET teaching competencies are defined as *an integrated set of technical competency, learning and methodological competency, and human and social competency that are needed for effective performance in various teaching contexts and didactic approached.* These three clusters are basic components of holistic k-worker produced in Malaysia and was adopted from the German Occupational Competence Model. This model was use in German TVET sector in more than 20 years. According to this definition, TVET teaching competencies are integrated and should be viewed as a whole repertoire a teacher has at his or her disposal.

The purpose of this study is to develop and validate a model of teacher competencies profile framework for TVET in Malaysia. This framework can be used as a starting point for teacher evaluation in Malaysian TVET. Several frameworks of teaching competencies have already been defined but mainly focus for normal higher education and not suitable for TVET sector in Malaysia. Available standard had been studied and reviewed but for the purpose of this research only twelve models from eight countries namely Australia, United Kingdom, New Zealand, British Columbia, United States of America, Germany, Malaysia and Philippine will be used as a basic for competency profile development. The models are from Training and Development Agency for Schools, the Australian Institute for Teaching and School Leadership, the New Zealand Teacher Council, the Canada Teacher Standard,
the TT-TVET Trans-national Standards of Germany (Bandung Declaration), the Australian Competency Profile, the Energy Commission of Malaysia, the Engineering Council of United Kingdom (City & Guilds), the International Society for Technology in Education of United State America, the Missouri Centre for Career Education of United State America, the Thompson Institute of USA, and the Technical Education and Skills Development Authority of Philippine.

2.7.1 Australia

From Australia two models were studied and reviewed namely The National Professional Standards for Teachers developed by Institute for Teaching and School Leadership and General Electrician Competency Standard developed by National Training Information Service.

Australian Institute for Teaching and School Leadership had responsibility approving for The National Professional Standards for Teachers, obtained by the Australian. This teaching standards established in three main areas covering the content, how it's taught and a teacher's professional development and involvement with his or her school. This standard also provides the basis for agreement on and consistency around what constitutes quality teaching and facilitates the articulation of the knowledge, understandings, skills and values for effective teaching.


This framework enables and supports the development of standards that acknowledge the link between quality teaching and improved student learning outcomes; ensure consistency and enable recognition of quality teaching; reflect authentic and extensive knowledge about teaching and learning; encourage teachers to aspire to a higher level of performance; have regard for the future but are grounded in current effective professional practice; and reflect the theoretical knowledge of specific content and pedagogy and the practical application of that knowledge to improve student learning. It’s also an outcomes based to ensure strong links between
standards for teaching, their evaluation and professional learning, reflect teachers professional experience and growth on a continuum from undergraduate preparation to professional leadership, and promote, support, recognise and reward quality teaching in the full range of social and cultural contexts in which teaching occurs.

Beside that, the National Training Information Service (NTIS) has been developed by federal and state governments to provide access to current and emerging training market information and products in vocational education and training. Currently, the NTIS provide a database of TVET accredited courses in Australia, competency standards (competency profile), training packages, training providers, and text information on a range of complementary issues. The Australian competency profile for electrician is a collection of units of competency that represent common groups of tasks, skills and knowledge that are used to assess a competence electrician.

The breakdown of the competency groups were electrical installation work, electrical control, fault finding and repair, applied electrical knowledge, electrical work practice, electives competencies (such as electrical installation, electrical control, energy supply and distribution, and voice and data communication), and general employability skills (such as teamwork, communication, problem solving, planning & organising, learning, technology, self-management, initiative & enterprise). The assessment of their competency in such that it will ensure the electrician can select, install, set up, test, fault find, repair and maintain electrical system and equipment in the building and premises (ASCO 4311-11 Australian General Electrician, 2009).

2.7.2 United Kingdom

From United Kingdom, the Professional Standard for Teachers in England developed by Training and Development Agency for Schools (TDA) and the National Vocational Qualification (NVQ) in Electricity System Technology level 2 and 3 developed by Engineering Council (City & Guild) were studied and reviewed.
TDA is the national agency and recognized sector body responsible for the training and development of the school workforce. TDA defines professional standards for teachers are statements of a teacher's professional attributes, professional knowledge and understanding, and professional skills (Strategic Plan 2008-2013, 2008) & (Professional Standards for Teachers in England from September 2007, 2007).

The Engineering Council had responsibility to sets and maintains the internationally recognised, the UK Standard for N (UK-SPEC). UK-SPEC describes the value of becoming registered as an Engineering Technician (EngTech), Incorporated Engineer (IEng) or Chartered Engineer (CEng). It describes the requirements that have to be met in order to gain these qualifications, and gives examples of ways of doing this. The standard has been developed, and is regularly updated, by panels representing professional engineering institutions (PEIs), employers and engineering educators.

The awarding organization responsible for recognizing TVET electrician was the City & Guilds Group, UK. As for Standard for electrician in UK, they should have knowledge and understanding of health and safety legislation, regulations, working practices and procedures; work area restoration requirements; identification of materials and recognition of defects; waste disposal methods and procedures; and reporting lines and procedures. The standard cover three main occupational contexts of distribution and transmission of overhead line work, underground cable, and sub-station. They also should have a detailed knowledge of the specific operational characteristics of the plant, apparatus and equipment with which they work in order to be able to demonstrate, through its use, their achievement of occupational competence as demanded by the standards (Level 2 & 3 NVQs in Electricity System Technology Engineering(2353), 2006).

2.7.3 New Zealand

Later, Graduating Teacher Standard from New Zealand Teachers Council was also be studied and reviewed. In New Zealand, the New Zealand
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