

MALAYSIAN TVET LECTURER AND INDUSTRIAL TRAINING THROUGH NATIONAL OCCUPATIONAL STANDARD SKILLS

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Abstract

Purpose of the study: The aim of this study is to provide a reflective thinking on the NOSS for TVET lecturers which have been developed by the faculty members of engineering and technology across Malaysia through DSD's accreditation and to provide an exposure about NOSS for TVET lecturers or educators in higher learning institution in Malaysia.

Methodology: A participatory collaborative research between MTUN universities and DSD has been performed. The research has been conducted using multiple techniques such as content analysis to gain general idea of TVET lecturer core competencies, focus group interview and coffee table workshop session with 21 specialist TVET practitioners and educationists.

Main Findings: The minimum requirements and other characteristics for higher TVET lecturers were identified, which led to the acknowledgment of nine core competencies for NOSS TVET lecturer. Furthermore, a proposal on Master of Technology (MTVET) for TVET Lecturer and Instructor in Malaysia embedded with NOSS for TVET Lecturer has also been proposed.

Applications of this study: This study can be useful to higher TVET lecturers, educators and teaching engineers in MTUN and also industry's trainers to pursue accreditation on TVET teaching and learning.

Novelty/Originality of this study: The implementation of "NOSS TVET Implementation and Development" – NOSS Level 5 has been accredited and has been used as a substance in developing Malaysian TVET educators standard by the Malaysian Ministry of Higher Education. Moreover, NOSS Level 5 evaluation and Master of Technology (TVET) will be a medium in the bridging process and provide vast opportunity for TVET lecturers to lead their future careers.

Keywords: Higher TVET, NOSS Lecturer Level-5, Industrial Standard, Lecturer Competency, Malaysian TVET Educator Standard

INTRODUCTION

Driven by industrial demands and the significance of quality and skills of human resources for the success of economic transformation (Yunos, Chee, and Hamdan, 2017) and in order to promote and have a high-skilled worker, Ismail et al. (2016) stressed out that Technical Vocational Education and Training (TVET) lecturers need to be equipped with skills and knowledge on a specific field, though teaching skills and competencies of a lecturer become major concern. Therefore, TVET institutions nowadays are given wide autonomy to develop their own course of studies based on the occupational standardized syllabus content and industrial-led curriculum that outlines the skills demands of an occupation named NOSS. The problem statement for this study is to address the needs of TVET lecturers who are not aware of the industry-led curriculum and its requirement to teach on a specific field. The Rancangan Malaysia Ke 11 in Strategy 9 highlighted that TVET lecturers in public institutions lacked skills and industry exposure, which was stated as one of the reasons that hinder the effectiveness of preparation in meeting industry demands. According to Che Rus et al. (2017), TVET teachers/ instructors who are highly knowledgeable and skillful are demanding in the accentuation on the development of high-quality TVET graduates. Furthermore, a study by Affero et al. (2017) stated that the standard of the vocational teacher must follow the standard of TVET teachers, including pedagogical approaches for social competency, is crucial for TVET. They agreed that the existence of NOSS for TVET teachers on a particular profession will foster teaching and learning including training in TVET institutions. This paper provides reflective thinking on the National Occupational Standard Skills (NOSS) for TVET lecturers which have been developed by the engineering technologies

faculty members all across Malaysia through DSD's accreditation. Therefore, the objective of this paper is to provide an exposure about NOSS for TVET lecturers or educators in higher learning institution in Malaysia.

Statutory body requirements for employment

Malaysian Qualifications Agency (MQA) spells out the definition of academic staff. The academic staff is likely to contribute and participate in joint activities at the academic unit he is attached with, will undertake administrative duties relating to his teaching, engage with his department's research agenda in the contribution to scholarly activities such as publications, collaborative research and also their development, development of subject and coordination, undertake professional activities outside the institution with the professional expertise relevant to his profession (MQA, 2014). Hence, the core interrelated academic activities are teaching, doing research, consultancy services, and community engagement. As a recognized experienced staff, a master's degree or an appropriate higher qualification in any one of the related fields or discipline areas is considered. Thus, technical based academic staff needs to improve and strengthen their pedagogical approaches and technological instrument ([Hussin et al., 2016a](#)) in order to be an experienced staff.

TVET Systems

Both public institutions and private providers in Malaysia offer TVET system, starting from elementary skill training to one which involves high cognitive knowledge involving the applications of mathematics and the sciences (Md. Yunos, Wan Ahmad, Kaprawi, & Razally, 2012). Certificate, Diploma, Bachelor, Masters, and Doctoral are the five levels of qualification in the TVET systems. However, in order to fulfill the nature of the qualification, each level was further subdivided. Previously, there are three educational sectors in which qualifications are awarded under the Malaysian Qualification Framework (MQF). Skills sector offer training in skills that are technical and industry related, and the training centers are under the Ministry of Human Resources. Vocational, technical and professional sectors offer education and also covers a wider range of competencies and responsibilities with a vocation or occupation as the endpoint. They are provided by Polytechnics and Community Colleges under the Ministry of Higher Education and the last sector is academic and professional sector that provides intellectually challenging knowledge, skills, and attitudes that permits someone to assume responsibilities with vital autonomy in professional judgment (Md. Yunos et al., 2012). However, due to the 11th Malaysian Development Plans (2014-2020), the scope of MQF had been changed into two sectors, academic and TVET sectors and "The Framework," a single and unifying framework for all qualifications in Malaysia, describes the levels of learning, generic learning outcomes, level descriptors, credits and single qualification title for each level to be applied in both academic and TVET type qualifications ([Malaysian Qualification Agency, 2017](#)).

Higher TVET framework in Malaysian TVET

The expected revisions on the curriculum design and delivery to be undertaken by TVET lecturer/ instructors at the Malaysian university level will emphasis more on the practical and skills components. Based on this, it is hoped that TVET diploma graduates accredited by DSD will have better access to continue their studies at a degree level similar to the TVET graduates accredited by [MQA](#) whose curriculum is based on academic track. Furthermore, as stated in Malaysian Qualification Framework (MQF), "At levels 4 and 5, learners should be able to continue with their education, in a similar or related TVET field program, at a Higher Education Provider offering a higher technical/vocational program of study" ([Malaysian Qualification Agency, 2017](#)). Throughout the recent years, the Malaysian government gradually formulates, promotes and coordinates TVET strategies and programs which are parallel with Malaysia's economic, technological and societal needs. Embedded in the 10th Malaysia Plan 2010-2015, TVET has been chosen as a key component to achieve the country's goal as a high-income nation by the year 2020 ([Jabatan Perdana Menteri, 2010](#)). This is essential to ensure that there is a constant, adequate and timely supply of multi-skilled workers who will be able to meet the country's future development. In addition, DSD has accredited 1,068 skills training centers, with 101,450 certificates being awarded in the year 2012 including diploma and advanced diploma ([Jabatan Pembangunan Kemahiran, 2013](#)). At present, an increasing number of 1,221 skills training centers with 6850 programs have been certified and accredited by DSD ([Jabatan Pembangunan Kemahiran, 2015](#)). Thus, the inclining rate of accreditation by DSD for TVET education indicates the government's full commitment toward TVET development. Standards have been developed and revised according to the needs of industrial training purposes.

TVET Strategy

Technological development and economic changes have required the existing standards to be revised. In 1993, National Trade Skill Standard (NTSS) ([Rasul et al., 2015](#)) was replaced by the National Occupational Skills Standard (NOSS), resulting in the introduction of a new certification scheme known as Malaysia Skills Certificate (MSC) ([Ahmad, 2003](#)).

In order to improve the quality of skills training, the government through DSD embarked on the NOSS development with a new format in 2005 ([Rasul et al., 2015](#)). In July 2005, the National Dual Training System (NDTS); a German-based system was introduced as an alternative system to strengthen the training delivery and to develop the excellent quality of human capital that produce Holistic K-Workers ([Hasmori et al., 2015](#)). The main characteristic of the NDTS is the cooperation between training institutions and private companies such as Mercedes, Toyota, and Tesco. The proportion of the training that was carried out was 70%-80% at the industry and 20%-30% at the training institutions. It referred to the National Occupational Core Curricula (NOCC) as a foundation which was different from the NOSS. Until 2012, about 138 companies were involved in NDTS ([Jabatan Pembangunan Kemahiran, 2013](#)). In the same year, about 1439 NOSS has been developed based on the occupational analysis done by DSD and 20 skills in TVET sectors were then covered by the year 2013 ([Jabatan Pembangunan Kemahiran, 2013](#)).

TVET has been selected as a key component in the 10th Malaysia Plan 2010-2015 to achieve the country's goal as a high-income nation by the year 2020 ([Jabatan Perdana Menteri, 2010](#)). Thus, at present, policies have been made to support the TVET agenda that have been stated in the Malaysia Education Blueprint 2013-2025 (Preschool to Post-Secondary Education) that indicates System Structure through enhancing the Vocational Education Transformation Plan and Malaysia Education Blueprint 2015-2025 (Higher Education) that is Quality TVET Graduates ([Ministry of Education, 2015](#)). Therefore, a revised educational system structure for Vocational Education Transformation Plan was constructed in collaboration with the public and private sectors in Malaysia in order to provide ample training, particularly skill training for the TVET students.

Malaysian's TVET Providers and Programs

In Malaysia, TVET was put under different ministries and agencies that target different groups of the vocational program due to the emphasis on their workforce productivity ([Mohd Zain, 2008](#)). Therefore, different agencies in every ministry provide different entry points to TVET program access. This tends to create a high possibility of overlapping in their implementation at a certain point. Ministry of Education (MoE) focus on further education and training. Ministry of Youth and Sport prepare the basic TVET skills programs for groups ranging from 18-40 years ([Alias and Hasan, 2013](#)) and for unemployed youth. However, the Ministry of Women, Family and Community development focus on programs that provide basic household management and home-science skills to teenagers and single parents. In contrast, [Alias and Hassan \(2013\)](#) added that for the Ministry of Women, Family and Community Development, the programs under the Ministry of Human Resources are not particularly gender-oriented and aim at preparing the trainees to be skilled workers and their target groups consist largely of school leavers.

TVET distribution is fragmented as the number of government ministries and their agencies, universities, state skills development centers, and privately owned institutions offer TVET programs with varying quality and standards to meet the diverse needs of the people in order to build a world-class human capital ([Alias and Hasan, 2013](#); [Mohd Amin, 2016](#); [Che Rus et al. 2017](#)). However, for the purpose of the study, only TVET programs and collaborations undertaken by the agencies directly under the MoE were scrutinized.

Related Works of Malaysian TVET Lecturers' Requirement to Teach

In order to achieve a high-income economy that is both inclusive and sustainable, TVET lecturers need to play a major role in producing an extremely skilled, inventive and innovative workforce. Therefore, the TVET lecturers need to prepare themselves with skill training and development, attend industrial attachment, acquire professional or industrial certification, Training of Trainer (TOT) upskilling and reskilling, and sharing knowledge and skills with others. Thus, most of the researches in the TVET area ([Mohamad, Saud, & Ahmad, 2009](#); [Leong, 2011](#); Siti Nur Hidayah & Siti Norain, 2015; Zool Hilmi, Mohamad Sattar, & Norzaini, 2015; Hanipah, Aliza, [Mohd Ariff, et al., 2016](#); [Ismail et al., 2016](#)) were carried out on the identified matters such as upskill training, industrial attachment, and lack of industry-led curriculum and requirement to teach among the TVET lecturers.

Authors and Title	Description	Approach
The Need in Training and Retraining for TVET Teachers in Malaysia (Mohamad, Saud, & Ahmad, 2009)	Stressed on improving the quality of teachers in TVET, discussed issues related to training and retraining needs, introduced strategies to ensure curriculum relevancy and to raise the quality of technical and vocational	Training for providing new skills to fulfill the school level TVE needs and retraining for upgrading the existing skills or acquiring a new one

Authors and Title	Description	Approach
TVET Teacher Professionalism in Leadership Personality Formation (Muhammad & Jafaar, 2015)	education. Looked at the professionalism of teachers in Technical and Vocational Education and their role as teachers in order to help the TVET teachers build basic knowledge with respect to the leadership personality.	Applying leadership personality skills to the teachers who can produce students who are multi-tasking and have a high level of readiness in career fields.
The Conceptual Framework of Knowledge Attributes and Professionalism Practices Among Malaysian Polytechnic Lecturers (Noor Rosmawati, Abdul Razaq, & Mohd Mahzan, 2016)	Identified staff quality in terms of academic and professional qualifications, quality of teaching, quality of research and innovation, and citation to publication in the expertise community. Listed out the driving factors identified contributing to individual professionalism that supports the improvement of the profession such as professional development, social interaction both inside and outside of polytechnic institutions and physical environment.	Learning ecology as a driving factor to promote professionalism and professional practice in order to become an excellent lecturer.
Implementation of Vocational Training in TVET's Teacher Program For National Core Standard (Ismail et al. , 2017)	Scrutinized the TVET teachers' competencies or standards that need to have compiled as a requirement to teach. The findings presented here will enhance the current teacher development program, particularly in training and re-training.	'Vocational Training Operation (VTO)' certification program in educating the TVET teachers
The Factors of Influence towards Knowledge Sharing among TVET Educators: A Study on TVET Educators within Hulu Langat District (Hashim et al., 2017)	Adapted knowledge sharing among highly skilled instructors and other instructors, understood the influencing factors of knowledge sharing activities in TVET institutions and identified the factors that influence knowledge sharing activities among instructors in TVET institutions and proposed a framework for knowledge sharing activities to be used among the lecturers.	Adapted knowledge sharing activities by using information technology to improve the quality of training and skills development in the TVET institutions

METHODOLOGY

For the purpose of the study, participatory collaborative research has been carried out to gather information in the field of TVET system in Malaysia by focusing on the transformation program of Higher TVET. Firstly, a collection of related documents including federal government reports, proceedings, papers, journals and electronic references were collected. For a strategic search of the articles that were published in terms of governance in TVET, three journal databases were considered which are Scopus, ProQuest, and Web of Science. The search was conducted using some keywords: DACUM, DASCUM and NOSS Level 5 Act 652, technical and vocational education, skilled workforce, governance, TVET policy, and transformation. General idea and perspective for this study were acquired using the content analysis technique. Skimming, detailed investigation, and explanation on reading content are the important methods adopted, which in turn makes the findings to be analyzed and summarized in a comprehensive way. [Silverman \(2016\)](#) states that one of the strategies to gather and analyze the data is through reviewing and evaluating the documents. A similar method was adopted by [Mohamed Ashari, Rasul, and Azman \(2015\)](#) in exploring the student career choice in Malaysia and issues in Malaysian TVET. This method has also been used by [Che Mohamad Zahid et al. \(2017\)](#) for the purpose of obtaining data in their research to analyze student's ability level using Instructional Rubrics.

Secondly, a focus group interview and workshops were conducted in order to identify the core competency and competency unit work activities of NOSS for TVET lecturers and generates information for a proposal of Master TVET program for UTeM. The interview and workshops involved 21 specialist TVET practitioners and educationists from different types of learning institutions and agencies. They represented every TVET organization involved; Universiti Teknikal Malaysia Melaka (UTeM) -10 practitioners from the *Pusat Sumber Teknologi Pengajaran (PSTP)* to represent their faculty; the other practitioners were involved as a benchmark to UTeM based on their TVET program, Universiti Tun Hussein Onn (UTHM)-2, UNiMAP-1, Universiti Malaysia Pahang (UMP)-1, Polytechnic-1, Community College-1, Universiti Kuala Lumpur (UniKL)-2 officers with high-level quality in curriculum NOSS development from an authoritative body, Skills Development Department-2. In addition, one of the representatives was a professional fellow from the Academy Science of Malaysia.

RESULTS AND DISCUSSION

Minimum Requirement for Higher TVET Lecturer

Based on the outcome from the workshops and interview session, it was found that a TVET lecturer or trainer shall have the following four prerequisite characteristics of competency for unit work activities to fulfill NOSS content:-

- i. Independent
- ii. Adapt to challenges
- iii. Visionary and
- iv. Possesses high leadership qualities

However, the minimum requirement for those interested to take up this profession is as follows: -

- i. TVET Instructor + 3 years working experience + Sijil Kemahiran Malaysia (SKM)/ Vocational Training Officer (VTO)/ Level3 or
- ii. Degree + 3 years of working experience/ currently in services (industry/subject matter TVET).

Apart from that, the study also found other characteristics which are similar to those stated by [Yusuf, Ahmad and Awang \(2016\)](#) and affirmed by [Hussin, Che Amran, Mat Hanafiah et al. \(2016b\)](#). These characteristics of a high-level TVET lecturer are as follows:-

- i. Leading successful implementation of any collaboration with industries
- ii. Active in research, innovations, and commercialization
- iii. Supervise industrial training and internships for students
- iv. Apply for work-based learning programs and
- v. Implement traineeship programs basics of financial management

As a result, core competencies and core competency units were identified. There are nine core competencies in NOSS TVET Lecturer ([NOSS, 2017](#)). Table 1 provides an illustration of NOSS for TVET Lecturer Competency Unit accredited by DSD. Based on the illustration, the TVET lecturer competencies unit basically reflects the matrix between the competency unit and learning domain outcomes for the technical lecturer. Competent in this level reflects the ability to refine and use relevant understanding, methods, and skills to address complex problems that have limited definition. It means, lecturer in TVET have the autonomy to create, a new way of doing, such as new Standard of Procedures (SoP), a new concept, a new framework, or even a new model in order to solve the problem or create a new environment that reflects their work area. It includes taking responsibility for planning and developing courses of action that are able to underpin substantial change or transformational development, as well as exercising broad autonomy and judgment. This reflects reflective thinking, reflective writing and understanding of different perspectives and approaches of schools of thought and the theories that underpin them ([Hussin, 2004](#); [Hussin et al., 2015](#)).

Table 1: NOSS TVET Lecturer Competency Unit accredited by DSD

Curriculum Unit	NOSS TVET Lecturer Core Competencies
CU1	Technical Curriculum Planning & Development
CU2	Technical Curriculum Delivery
CU3	Technical Curriculum Evaluation
CU4	Academic Advisory
CU5	Training and Project Supervision
CU6	Technical Research and Innovation
CU7	Technical Professional Services
CU8	Workshop and Laboratory Management
CU9	Faculty Leadership & Management

Source: *Department of Skills Development (2017)*

(NOSS Code: P853-001-5:2017: TVET Implementation & Development)

A Proposal on Master of Technology (MTVET) for TVET Lecturer and Instructor in Malaysia

The TVET lecturers and instructors are a specialized group of academic staff in public and private higher institutions of learning who are technically trained and experienced in the industry employing hands-on, practical and industry-based learning in the design and delivery of industry-relevant academic programs (KPT, 2017). Consequently, to establish standardization and continuity of TVET education across skills, vocational and technical academic pillars, it is vital for the TVET lecturers/instructors to have their own occupational standards. TVET lecturers/instructors in Malaysia serve at public and private Institutions of Higher Learning (IHL) which offer technical program and courses such as UTHM, UTeM, Universiti Malaysia Pahang (UMP), UniKL and also German-Malaysia Institute (GMi). Other TVET institutions are polytechnics, community colleges, vocational colleges as well as public training institutions under seven Malaysia Ministries. Master of Technology (TVET) is a program embedded with NOSS for TVET Lecturer. This program allows for an effective combination of job, experiences, and continuing education. It is a unique program that smartly combines engineering or engineering technology or technical or vocational or business or health or social care and pedagogy disciplines. For those who graduated in this program will be granted two certificates which will enable them to be appointed as a Certified TVET Trainer for respective industries.

CONCLUSION

In order for a nation to succeed in economic transformation and growth, the quality and skills of human resources need to be empowered (Yunos, Chee, and Hamdan, 2017). Besides Malaysia, the agenda in the development of the human resources in TVET structure had called attention to the national policies and strategic planning of every nation around the globe (Yunos, Chee, and Hamdan, 2017). Therefore, it was identified that the need for a highly skilled manpower could be achieved through the involvement of all stakeholders in TVET education. Recent transformations have enhanced the collaboration between industry and tertiary educators to adjust the curricula specific to industry and universally perceived qualifications, while also expanding the doors for work amid and after the fulfillment of studies (Asada, Nixon, and Koen 2017). Hence, as Alias and Hasan (2013) concluded, collaborations between TVET agencies and industries are happening at different levels of educational areas in Malaysia and pre-employment skills development; whereas, research and innovation fill in as a second main objective in the higher TVET areas. However, the continuity of governance, a better understanding of multiple collaborators' needs and ensuring commitment in collaborative programs are the issues in the sustainability of the collaboration initiatives (Alias and Hasan, 2013). Furthermore, there should be a scope for an active ongoing industry engagement with their key responsibilities in ensuring the relevance of TVET education (Mohamed Ashari, Rasul, and Azman, 2015).

This study also states that NOSS TVET Implementation and Development should be recognized as a medium in universities-industries successful partnership and collaboration. Secondly, this study was also able to reflect the cooperation among all the ministries and their TVET lecturers, educators and training providers to be exposed and assessed by DSD NOSS Level 5. In addition, NOSS Level 5 evaluation and Master of Technology (TVET) will be a medium in the bridging process and provide vast opportunity for TVET lecturers to lead their future careers. Expertise in Master of Technology (TVET) and Ph.D. in Technology and Educational Training program embedded with NOSS of TVET implementation and management can be used to establish a new higher level TVET program called Industrial Ph.D. At present, NOSS for higher TVET lecturer and industrial training standard has been used as a substance in developing Malaysian TVET Educators Standard by Malaysian Ministry of Education. Therefore this study verified that

NOSS is applicable as a legal instrument and as a medium for universities-industries partnership and collaboration for higher TVET in Malaysia.

LIMITATIONS AND STUDY FORWARD

Nonetheless, there are a few limitations in the implementation of this NOSS TVET Lecturer. The limitations include lack of collaboration with industries and other institutions, and the gap between teaching and learning approaches, learning and teaching resources that are not fully developed, managing the training resources that are to be embedded with professional module and enhance their implementation with technology. In a nutshell, this study suggests that NOSS TVET Lecturer (level 5) accredited by DSD should be implemented as a guideline curriculum in strengthening higher TVET efforts and activities for partnership and collaboration between industries and universities. A higher level of TVET certification for TVET lecturers should be aligned and standardized by the NOSS Level 5 (Act 652) in DSD. As study forward, the implementation of this NOSS TVET Lecturer would be a medium for researchers to investigate deeper into the TVET lecturer's requirement to teach either as a pre-service or in-service lecturer.

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