



Criteria for Sustainable Curriculum of TVET Teacher Education Programme in Malaysia

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Abstract: The purpose of a Teacher Education programme is to produce quality teachers, especially teachers that can perform the task of teaching effectively and deliver the purpose of the National Education Philosophy, consequently leading to a sustainable TVET Teacher Education programme. One aspect that contributes to the sustainability of a programme is the curriculum. The curriculum has to be able to react with the changes took place in the workplace especially for a developing country like Malaysia. Hence, this study was carried out to explore the criteria for the sustainable curriculum of TVET Teacher Education programmes in Malaysia. A qualitative research approach was used for this study, and semi-structured interviews were conducted with 10 experts. Utilising this approach allowed the researcher to focus on experts' knowledge and experiences based on the issues explored. Data were analysed using thematic analysis with pencil and paper, while Microsoft Excel was used as a tool for data keeping. The study identified five main criteria for sustainability which includes i) specialization; ii) work-based design; iii) dynamic; iv) interactive teaching and learning, and v) international syllabus. It is expected that the outcome of this study will contribute towards the sustainability of TVET Teacher Education programmes in Malaysia thus improving the quality of TVET graduates to achieve the national goal of becoming a high-income nation.,

Keywords: Longevity qualitative research, TVET teacher training

1. Introduction

The responsibility to produce a quality teacher rest on the shoulders of teacher training institutions. Hence, the government has highlighted the need to restructure the role of teacher training institution as well as teacher education programmes within the Malaysia Education Development Plan (PPPM) as contained in Chapter 5 of the document (Teacher and School Leadership). In this chapter, the government has proposed the reconstruction of teacher training institutions under seven categories including enhancing the teacher training curriculum (Ministry of Education Malaysia, 2013). This includes the TVET Teacher Education programme.

Unlike any other Teacher Education programme, TVET teachers have received special attention from the government through the Strategic Plan for Vocational Education Transformation. This strategic plan aims to re-engineer the current vocational education system into a new vocational education system that contributes to the Malaysian transformation agenda of becoming a high-income nation. The development of TVET teachers was highlighted under Action 10, which aims at enhancing the human resource of vocational education through training (Ministry of Education Malaysia, 2011). Meanwhile, under the PPPM-PT 2015-2015, the Government also emphasised the quality of TVET teachers and program delivery as one of the initiatives for producing quality TVET graduates (Ministry of Higher Education Malaysia, 2015)

The diversity in the educational field especially in general academic and TVET streams requires teachers who are tailored to the needs of the field and at the same time flexible with the changes that take place. According to Bohne, Eicker, & Haseloff (2017), TVET-based curriculum design has to be one that reflects a multidisciplinary approach in connection with the working process. TVET is closely related to the world of work, and this work based approach for TVET as mentioned by previous research constitutes the apprenticeship curriculum (Deissinger & Gonon, 2016; Fjellström & Kristmansson, 2016) as well as the re-skilling and up-skilling of teachers (Vaaland & Ishengoma, 2016). Therefore, it is uncommon to group academic and TVET teachers under the same basket. The difference between these two streams is evident in the type of graduates both streams produce. TVET particularly prepares the graduate to be career ready according to industrial demands. Furthermore, preparing TVET teachers with just a pedagogic knowledge-based approach may lead to teachers who lack theoretical knowledge and expertise in their fields (Ahmad & Latib, 2015).

As mentioned earlier, TVET is an academic stream that is closely related to the world of work, which is the industry. This fast-changing environment requires the TVET curriculum to be dynamic enough with the needs and demands of the surrounding. The present curriculum without any doubt may lead to unsustainable educational experiences since the future workplaces require knowledge and skills that are somewhat different owing to the challenges of the future. In fact, the sustainable development design for education also aims to contrast the existing paradigm of learning in public education settings with a more holistic and ecological model which emphasizes the importance and awareness of the human potential and the interdependence of social, economic and ecological wellbeing (Medrick, 2013). Therefore, this study explored the criteria for the sustainable curriculum of TVET teacher education programs to be sustainable and able to produce quality TVET teachers in the future.

1.1 Sustainability of TVET Teacher Education programme

Based on all the sustainable development issues of teacher education programmes, it is questionable whether TVET Teacher Education programmes require a different sustainable development element than those of general Teacher Education. Goodine (2010) answer this question in his paper when he stated that

“Where TVET requires special consideration is for faculty members teaching in the technical specialties to have **appropriate technical qualifications and skills, and they need to remain current in developments in their field of specialization and keep pace with changing technology.** They must stay alive in their field of specialization, and this presents a challenge that can sometimes be met by industrial attachments or updating programs.” pg 248-249

This indicates that for the TVET field, specialization in related skills must be a unique trait for TVET teachers. Moreover, with the rapid development of technologies, the role of TVET teachers has become more complicated. Gone are the days when teachers are regarded as the primary source of information for learning in the classroom. Nowadays, student-teachers have unlimited access to knowledge via several resources due to technological development and advancement. Therefore, TVET teachers especially are required to guide student-teachers in accessing all the required knowledge rather than just providing it. The benefit of these technologies provides flexibility for the teachers in delivering the contents of lessons efficiently. In addition, several other benefits of the technologies include the enhancement of independent learning, customized learning, and reduction in the limitations of time and place of learning (Zozimo, 2016). Contrary to this, the traditional teaching and learning process have been reported to limit active student participation in the classroom. This consequently affects the application of acquired knowledge and competencies in real working situations (Yusof, Roddin, & Awang, 2015).

TVET teachers are required to take on the roles of being a coach in the classroom to enable them to communicate with student-teachers effectively. White & White (2009) identified four elements for TVET teachers to become a coach that is capable of encouraging student-teachers to be proactive, these elements include effective listening, positive body language, empathy, and understanding. According to Ahmad & Ab (2015), student prefers a small group monitoring by teachers while performing a task and do not prefer having the teacher guiding them during the teaching sessions. This shows that students are comfortable with having teachers as facilitators allowing them to express their ideas and thoughts more easily.

Furthermore, the sustainability of technical skills and qualifications requires TVET teachers to go through a different preparation to facilitate learning more efficiently. This is the reason why most TVET Teacher Education programme sustainability initiative requires partnership with industries and international collaboration (Andrews & Playfoot, 2015; Dyer & Dyer, 2017; Ratnavadivel, Hoon, Salih, & Low, 2014; Simona, 2015; World Economic Forum, 2016)The knowledge transferred among all stakeholders in TVET Teacher Education programme will eventually help in maintaining the dynamics of the programme must be in MS Word only and should be formatted for direct printing, using the CRC MS Word provided. Figures and tables should be embedded and not supplied separately.

2. Methodology

To explore the criteria for the sustainable curriculum of TVET teacher education in the country, a qualitative approach seemed acceptable. The details of the methods were discussed in the following subchapter.

2.1 Procedure and Sample

The data were obtained using semi-structured in-depth interviews. There were 10 experts involved in this study. They were chosen through purposive sampling technique selected from public universities, government agencies, and industries with following criteria. Table 1 shows the expert professional profile.

- To have experience in teaching and learning with research publications and professional network.
- To be described as subject matter experts by their superiors
- Involved in training of TVET teachers in industry or institutions
- To have at least 7 years' experience in the field of teacher training

Table 1- Experts Professional Profile.

Participants	Field	Year of experience	Workplace
P01	TVET	17	University Tun Hussein Onn Malaysia
P02	TVET	11	University Tun Hussein Onn Malaysia
P03	TVET	15	Ministry of Human Resource
P04	TVET	10	University of Malaysia
P05	TVET	12	Federal of Manufacturer Malaysia
P06	TVET	14	Department of Community College Education Malaysia
P07	TVET	15	Open University Malaysia
P08	TVET	13	University Putra Malaysia
P09	TVET	11	Sultan Idris Education University
P10	TVET	12	Department of Polytechnic Education

All The interview protocol for the interview was design based on the literature review on sustainable teacher education framework worldwide. This protocol was test for the ability to get targeted input and the time consumed. It was then ready for the interview session. Several of the key questions are as follow:

- Can you explain the meaning of sustainability in education from your perspectives?
- What is the requirement to sustain the TVET TE programme in Malaysia that is crucial for 21st Century?
- In your opinion, what are the aspects that will enhance the sustainability of TVET TE programme?

The interview session took place for about an hour for each expert. The researcher has contact the identified experts beforehand for permission and agreement to participate in the study. Upon agreement, the interview session was set up based on the appointed time and venue. Together with the invitation as participant in the study, the experts were also given with a cover letter explaining the brief objectives and background of the study. This is to provide the expert with the gist of the study thus making them familiar with the topic and provide relevant input. After the interview session, researcher had transcribed the interview and the transcription were send to the experts for them to check the content of the interview and were allowed to delete or alter any of their answers. Overall, the interview process was successfully done within three months.

2.2 Coding and analysis

Using thematic analysis procedures, data analysis began with manual transcription of the interview facilitated on Microsoft Excel. The coding process began with open coding, axial coding and selective coding per se where researchers assign each important point based on researcher understanding and past researches. In open coding, the codes were selected based on the literature review and prior knowledge of researchers on the topic. These open codes were then group into the same categories, which later were group into the same theme. The output of the thematic analysis is a set of criteria for the sustainable curriculum of TVET Teacher Education programme.

3. Result and Discussion

Several criteria for the sustainable curriculum of TVET Teacher Education programme emerged from the thematic analysis conducted in this study. In general, the findings confirmed the notion that TVET Teacher Education programmes require different criteria than general Teacher Education programme. More particularly, the finding highlighted these specific criteria for TVET Teacher Education Programme as i) specialization; ii) work-based design; iii) dynamic; iv) interactive teaching and learning, and v) international syllabus.

The first criteria identified is specialization. This refers to the need for the curriculum to be specific to the programme offered. This finding is supported by Goodine (2010) who stated that specialization is crucial for TVET teachers to remain updated with the current development in technology. It is also essential for the curriculum to specialize in pedagogical areas according to the technical skills. Gómez, Núñez, & Gómez (2015) suggested that a specific design in-service programme would lead to the reconstruction of components that results in unaffected to unwanted practical knowledge. By being specialized, TVET Teacher Education programme will produce TVET teacher who is an expert in the related skill. As mentioned by an expert, TVET is not supposed to produce a generalist as quality graduates' due to the differences that take place in industrial technologies. Producing generalist may create a gap between in-school training and industrial needs. Therefore, it is crucial for TVET teachers to have specific skills to reduce this gap and prepare them to be industrial-ready. It is also important to be introduced at an earlier stage of the programme as specialization may also attract specific student-teachers to enrol in the programme according to their interest and passion. Several quotations from experts are stated to buttress the point.

“TVET just cannot produce generalist. Basically, we cannot just produce generalist. Because of what, a new cluster is evolving, specialization needs. Because if you didn't do that, people would say, from graduate to employee, they will take a long time to train.” –P01

The second criterion is work-based design. As TVET requires graduates to be career ready, TVET teachers must have a clear indication on how the industries work and are updated with industries need. By having a work-based design curriculum, TVET teachers not only are able to experience the working environment themselves, but they also have the opportunity to build rapport with the industries as early as possible. This will enable the development of soft skills with the industries including communication skills and negotiation skills. This dual education system has been implemented worldwide and considered as the backbone of a country's economic development (Mongkhonvanit, 2017). Therefore, the curriculum has to be simplified according to the real working environment and include the integration of both institutional and work-based learning. In doing this, TVET teachers will become more familiar with the training system, hence resulting in high quality of teaching and learning. Current research has indicated that there is still a mismatch between the current industry competencies need and graduates' competencies due to the gap between academia and industry (Perera, Babatunde, Pearson, & Ekundayo, 2017). This confirms the necessity of implementing a work-based design curriculum. Despite the importance of work-based design, Frick, Mckenna, & Muthama (2016) argued that the necessity for this approach to be applied at the higher level of TVET Teacher Education programme as a doctoral work, should be focused on research regarding industries and economic systems that are destructive to the ecosystem and finding better solutions. By having the program tailored by industries, such critique might hinder and close the door for improvement and development of the nation.

As mentioned earlier, high quality of teaching and learning (T&L) is important in producing a quality TVET teacher. The next criterion for the sustainable curriculum of TVET Teacher Education programme is interactive teaching and learning. Ever since the Industrial Revolution 4.0, the T&L for TVET system has evolved with the integration of digital elements including Internet of Things, World Wide Web, and virtual classroom. Zozimo (2016) in his study found that teachers and trainers believed the use of technology offered greater flexibility and mobility in the T&L process. He further expressed that it opens the possibility of informality, ownership and inter-weaving learning interactions during the T&L. However, since TVET involves both theory and practical applications, the integration of “learning” and “doing” is compulsory. An innovative pedagogy that involved both technologies for theories and practical may lead TVET teachers to be effective and productive in the T&L process. One of the experts suggested that for T&L to be interactive, a simulation demonstration should be done through the using of technology, followed by practical experiences (doing) through hands-on. This integration of ICT will allow students teacher to be more independent during the learning process. However, Ahmad & Ab (2015) reported that students do not prefer using video in inductive sessions. Instead, they prefer demonstrations that involve sketching diagrams with an explanation for the practical task. Nevertheless, students prefer a more flexible teaching experience without the full guidance of the teacher and dare instead more supportive of using modules and problem-solving methods.

‘You can use YouTube. You don't have to teach them. Everything in the virtual. You download the YouTube, ok, today I want to teach you how to install a door. And we refer to the video. The student do, watch, do. And refers [video] again. So, teachers become a facilitator.’ –P08

Other than that, with technology integration, the role of TVET teachers in the classroom is changing. The new generation of student-teachers are psychologically different from the TVET teacher generation that requires teaching and learning to be integrated with technology. It is important to have a good relationship between TVET teachers and student-teachers. This includes fostering a sense of belonging, trust, and togetherness. A positive relationship between teachers and students may help students to experience a feeling of success or difficulties in encountered issues, thus empowering them to do better (White & White, 2009). As for TVET, this good relationship is not necessarily developed in the classroom; rather it can also be developed during training in industries, as mentioned by an expert in this study.

‘You know in sense of belonging; the teacher will know how hard it is...the student also will know how hard it is. The thing is right, people must learn what it’s like in the factory.’ – P01

Agreed by most experts in this study, the next criterion for sustainable curriculum of TVET Teacher Education Programme is “dynamic” which refers to the ability of the curriculum to be flexible and able to react or respond to changes accordingly. Oviawe, Uwameiye, & Uddin (2017) in their study had conclude that for a TVET program to produce a quality TVET workers that fir with the 21st century world of work, the curriculum dynamic and synergic to the 21st Century workplace. For a curriculum to be dynamic, the content must be revised periodically. The input for revision may come from the stakeholders including the industries and graduates as well. One of the experts mentioned the criteria for dynamic, which is the effectiveness that looks into doing the right thing and meeting objectives as well as the efficiency of looking into value for money where TVET Teacher Education programme benefits from the resources. Ahmad & Latib (2015) agrees by describing effectiveness as a factor that encourages students to be productive, innovative and enterprising. Overall, a dynamic curriculum must consist of three main component that provide input and support, these are industry, institution and knowledge. Not only that, the curriculum must also be embedded with values to produce TVET teachers that are in line with the National Education Framework. Values may provide guidelines in formulating personal as well as collective goals or aims (Gómez et al., 2015). Several experts mentioned the dynamics of curriculum as a criterion as seen in the quotations from interview transcripts below:

“we need to revise, maybe faster than 5 years. Maybe 3, every 3 years need to look back at our curriculum and see whether this is relevant to the industry or not”. –P09

“...meaning that you run program based on actual demand, actual need. You respond, you make it dynamic so that so are always. You know what the demand and you is are already submitting the demand, you know. So, demand driven.” –P03

The last criterion is the international syllabus. This will allow not only mobility for inbound and outbound program initiatives but will also contribute to the popularity of the program. A TVET programme that is popular will increase student-teachers enrolment from an international level which will, in turn, lead to the program sustainability. UNESCO (2015) noted that transnational mobility could be achieved through an international framework or system. Nevertheless, in order to be popular, the programme has to be excellent in quality and performance. One way of having an excellent international quality is by adapting the programme for international level. It is undeniable that different setup and requirement must be implied for local implementation. International education according to Majumdar (2011) provides students with a global orientation that helps them understand how the local issues are influenced by world event. Furthermore, it builds mutual understanding at a global level thus allows for respect of diversity of cultures and national identity. Not to mention, according to World Economic Forum (2016), high local recruitment in the industry could cause the institutions less experience and knowledge transfer to the local from the international experts.

3. Conclusion

The aim of this study was to explore the criteria for the sustainable curriculum of TVET Teacher Education programmes. These criteria will result in sustaining TVET Teacher Education programme for an extended period with good quality and high performance. Findings from the study revealed five main criteria which include i) specialization; ii) work-based design; iii) dynamic; iv) interactive teaching and learning, and v) international syllabus. In conclusion, data from this study supported the government’s plan to improve the educational system holistically. It is hoped that the outcome of this study will contribute towards the sustainability of TVET Teacher Education programme in Malaysia thus improving the quality of TVET graduates to achieve the national plan of becoming a high-income nation.

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