Higher TVET Educational Model as Basis for Global Curriculum:

The UniKL Experience

Azanam Shah Hashim, Ruzainah Ali, Kamaruzzaman Ismail

(Centre for Instructional Technology and Curriculum Development, Universiti Kuala Lumpur, Malaysia)

Abstract: The tertiary education landscape in most parts of the world is undergoing a period of significant change following globalization, knowledge economy and technological advances. These have affected the DNA of graduates especially in universities' curricular approaches and outcomes to meet the demands of shifting competencies and employability. Malaysia is no exception to this transformation as proven by the recent 2015 Ministry of Education Blueprint which highlights the critical need for global, balanced, holistic, entrepreneurial graduates cum life-long learners. Most importantly, the blueprint has elevated Technical and Vocational Education and Training (TVET) programmes to be at par with traditional academic offerings. For technical universities like Universiti Kuala Lumpur, the move is an opportune catalyst to its value-based higher TVET educational model as part of its transformation strategy as a globalized higher education provider.

Key words: higher TVET, global curriculum, UniKL

1. Introduction

In the last quarter century the size and dynamic of the graduate talent pool has changed dramatically. The so-called "massification" of Higher Education continues and the global appetite for graduates is increasing apace. Multinational employers, and increasingly employers of all kinds, require their workforce to work readily and confidently across worldwide operations, using a global outlook to consider new opportunities and challenges. At the same time, they need employees who can assimilate organizational values and operate comfortably with the technological and cultural demands of the 21st century workplace (Forbes & King, 2011).

"Global graduates" can be a key driver for achieving business success, whether through achieving shareholder value, building sustainability or entering new markets. Through their attitudes, skills and knowledge, global graduates can tackle the myriad of challenges and opportunities that globalization is presenting, in a way that graduates with a narrower national focus simply cannot. Leading businesses have realized this already and are beginning to provide global graduate development programs to grow the global leaders of the future (CIHE, 2014).

Often global success depends on the same competencies that engender success at a national or local level. Core requirements valued by most graduate employers include familiar competencies such as team working, communication, presentation and self-management, as well as work experience, professionalism and industry

Rasyiqah Khairul Anuar, Executive, Centre for Instructional Technology and Curriculum Development, Universiti Kuala Lumpur; E-mail: rasyiqah@unikl.edu.my.

knowledge. All of these are vital for graduates whether or not they are engaging on a global basis (CIHE, 2014).

Employability and core ability skills are among popular terms used to refer to the required competencies. These competencies were previously known under a broader concept of generic skills (Bekri et al., 2011) or as generic capabilities, enabling skills or key skills (Berntson, Näaswall & Sverke 2011). The use and popularity of the generic skills concept has increased throughout the world and particularly in Australia since the 1980s. Regardless of the origin of the term used, the objective of discussing these skills is the same, e.g., to find the basis for a set of skills that are important for workers to find and maintain gainful employment (Cassidy, 2006; Mohd Yusof et al., 2010).

The Malaysian higher education system has grown from strength to strength over the past few decades. Over the last ten years alone, the system has made significant gains in student enrolment, risen in global recognition on key dimensions such as research publications, patents, and institutional quality, as well as become a top destination for international students. These achievements are a testament to the drive and innovation of the Malaysian academic community, the support of the private sector, as well as the deep investment the Government has made.

Malaysia aspires to reach the status of a developed nation by 2020. To reach that goal, the Government has launched a number of initiatives, e.g., the New Economic Model (NEM), Economic Transformation Programme (ETP), Government Transformation Programme (GTP) and the 10th Malaysia Plan (10MP). As part of the 10th Malaysian Plan, the Government is planning to transform Malaysia into a developed and high-income country over the next five years (Malaysia 2010).

In October 2011, the Ministry of Education launched a comprehensive review of the education system in Malaysia in order to develop a new National Education Blueprint. The decision was made in the context of raising international education standards, the Government's aspiration of better preparing Malaysia's children for the needs of the 21st century, and increased public and parental expectations of education policy.

To achieve these outcomes, the Ministry will intensify industry involvement and partnerships, streamline qualifications, improve coordination across the Ministry's TVET providers and enhance branding efforts. Key initiatives include: (1) Enabling industry to lead curriculum design and delivery, (2) Enhancing coordination across the Ministry's various TVET providers and (3) Coordinating with other ministries and agencies (Ministry of Education Blueprint 2015–2025)

2. Literature Review

2.1 TVET Education

According to United Nations Educational, Scientific and Cultural Organization (UNESCO, 2015), TVET is a comprehensive term of a study of technologies and related fields of knowledge that is primarily concerned with the world of work. It involves the acquisition of practical skills, attitudes, comprehension, and knowledge which will be relevant to a variety of careers. It is a form of lifelong learning, at various levels of education, which must include work-based learning and other opportunities to develop a wide range of skills that are suitable for local as well national contexts. As it promotes sustainable social and economic development through education, it is considered a significant element that will facilitate poverty alleviation in a society.

A holistic TVET curriculum not only produces a technically-proficient workforce; it will also produce generations of people who are capable of working independently and innovatively, and are able to be more

themselves by being knowledgeable in related fields such as enterprising. In order to ensure the relevance of the products of this educational process, TVET must continually be in line with technological and economic developments of a society.

Under the Economic Transformation Programme (ETP), Malaysia will require a 2.5-fold increase in TVET enrolment by 2025. At present, however, there is an undersupply of TVET workers in 10 of the 12 National Key Economic Area (NKEA) sectors. Further, TVET is seen as a less attractive pathway than university education, thereby limiting the number of students, particularly high-performing ones, who apply for such courses. Malaysia needs to move from a higher education system with a primary focus on university education as the sole pathway to success, to one where academic and TVET pathways are equally valued and cultivated.

2.2 HTVET

HTVET is an innovative education model which embodies the spirit of democratization of knowledge and champions the continuous advancement of science, technology and trades. It is designed to produce graduates who are needed globally and educated in a ways to maintain a humane society. Driven by conviction that a sustainable education system needs to be flexible and to adapt to the needs of society, this model emphasizes strong connections with relevant industries and organizations.

This symbiotic and dynamic relationship between academia and industry adds value to our integrated application-oriented curricula, which provides a fertile ground to produce independent, creative and innovative graduates who are able to contribute to and reap the multiple benefits of being part of an innovation — driven and high income nation situated in the world's fastest growing continent for this century.

2.2.1 The HTVET Educational Model - UniKL Experience

UniKL Value-Based HTVET Educational Model was developed to ensure the quality and excellence in learning and teaching in UniKL. It emphasizes two important components:

- Innovative Teaching and Learning
- Quality Curriculum

These 2 important components in the model are supported by UniKL's shared values of Commitment, Integrity, Teamwork, Innovativeness and Excellence which guide the culture and practices of UniKL academic staff and students.

The UniKL Value-Based HTVET Educational Model also supports the 5 Programme Educational Objectives (PEOs) and UniKL Educational Goal, which are in line with the University's Vision and Mission.

2.3 The Two Components of UniKL Value-Based HTVET Educational Model

2.3.1 Innovative Teaching and Learning

A quality delivery of teaching and learning is crucial in any educational institution to ensure students' success, and this contributes to the institution's success as well.

There are seven features of Innovative Teaching and Learning, which are:

(1) Teaching Factory

The teaching factory concept is based on the knowledge triangle notion aiming to become a new paradigm of both academic and industrial learning. The mission is to provide engineering activities and hands-on practice under industrial conditions for university students, while taking up research results and industrial learning activities for engineers and blue-collar workers (Rentzos L. et al., 2014).

This teaching factory concept is actually creating duplication of actual industrial factories related to

programmes offered. Students are exposed to the authentic environment of a simulated manufacturing plant or workshop hence gaining real industrial experiences. Some examples of teaching factory at UniKL have been developed such as manufacturing and ship building, food processing, aircraft MRO, animation, warehouse, automotive and solar technology.

Besides teaching factory, UniKL also offers a variety of industrial-based programs to cater to the different needs of students, for example: Industrialmanship, Apprenticeship, Sandwich programme, and Edu Biz Park.

(2) E-learning

In this new century, internet has become an important medium in human life. Widely used of internet throughout the world, Information and Communication Technology (ICT) has been a driving force that transforms economic, business, commercial activities and socio-political changes in a borderless world. The changes has affected education sector thoroughly for the last few years. Nowadays, E-learning plays important roles in education sector (Nursyahidah, 2011).

UniKL firmly believes in a learning environment that is flexible according to the current needs of 21st century students. In order to fulfil those needs, UniKL also implements its T&L through E-Learning. This enables students to have access to knowledge no matter where they are, providing them with the flexibility to suit their professional and personal lives.

Kamaruzzaman (2015) found that 85% of academic staff have highly agreed that e-learning had facilitated their teaching materials as well as they felt high confident in using e-contents rather than old-fashioned methods such as white papers or overhead projector. In this study, he also found that 95% of academic staff have highly agreed e-learning has motivated them and they were satisfied with the activities and resources available in the system.

The study conducted by Norazah, Mohamed Amin, and Zaidan (2011) into e-learning shows that 11 HEIs in Malaysia offers more than 50% of their courses online. The data also shows that 13.8% lecturers provide more than 80% online learning materials and that 44.6% of students prefer to read materials uploaded by their lecturers. The findings also show that students' preference for online courses is very encouraging. In fact, lecturers also agree that the integration of e-learning into their courses has benefited students. In general, it clearly shows that the application of e-learning is accepted by lecturers and students of HEIs as an effective means of communication.

(3) Online assessments

Online assessment is the process used to measure certain aspects of information for a set purpose where the assessment is delivered via a computer connected to a network. Most often the assessment is some type of educational test. Several researchers (Amal Oraifige, 2009; Zakrzewski & Bull, 1999; Buchanan, 2000) have noted that online formative assessment have many advantages over traditional classroom assessment. Students can take the assessment at any time, they can take it repeatedly and it can provide instant feedback that helps remedy weaknesses in their learning abilities. Student anxiety could be reduced if they take the formative assessment before summative tests.

In catering to the needs of 21st century students, UniKL also emphasizes on implementing online assessment. This will not only make it easier for the students to be assessed on their learning, it also makes it more efficient and provides flexibility for the academic staff as they can still assess their students anywhere they are.

(4) Experiential Learning

One of the strengths of UniKL is that in addition to learning by theory, it also provides students with a hands-on approach that gives students the opportunity to experience learning by doing. This exposes students to real life situations and how to deal with them. Furthermore, students are also assessed using hands-on based assessment.

Experiential learning is the process of learning through experience, and is more specifically defined as "learning through reflection on doing". Experiential learning is distinct from rote or didactic learning, in which the learner plays a comparatively passive role. It is related to but not synonymous with other forms of active learning such as action learning, adventure learning, free choice learning, cooperative learning, and service learning (Wikipedia).

In UniKL, the emphasize is given to learning by doing through effective use of latest technology and industry standard equipment. UniKL campuses are well-equipped with industry standard equipment allowing students to have hands-on practice. (Abdul Hakim, 2006).

(5) Active learning — Problem-Based Learning (PBL), Project-Oriented Problem-Based Learning (POPBL) & Cooperative Learning (CL)

UniKL ensures a stimulating learning environment for its students through active learning teaching methods such as PBL, POPBL and CL. It is a requirement for all UniKL academic staff to undergo Pedagogy Training that covers creative and innovative teaching methods within 6 months after their employment.

Problem based learning have been proved to be a success in the enhancement and development of critical thinking ability, leadership qualities, self-directed learning, professional and interpersonal skills, team working skills, management skills, collaborative learning, English speaking qualities, practicing empathy and many more as implemented by Faculty of Pharmacy UniKL RCMP (Mohammed Tahir et al., 2015).

Nor Aida et al. (2015) found that PBL promotes self-motivation and self-responsibility to learn, facilitates more enjoyable and more effective learning, encourages learning from experience, allowing students to use and organize what has been learnt to understand problems, integrates knowledge with practice, PBLnurtures the ability to analyze problems and to identify and acquire knowledge and skills needed to deal with real-life situations.

(6) Blended Learning

Blended learning is a formal education program in which a student learns at least in part through delivery of content and instruction via digital and online media with some element of student control over time, place, path, or pace. While still attending a "brick-and-mortar" school structure, face-to-face classroom methods are combined with computer-mediated activities. Blended learning is also used in professional development and training settings, as it can be used to translate knowledge into a particular skill that is useful and practical for a specific job.

In keeping up with the latest development in teaching and learning, UniKL also offers Blended Learning. Blended learning is a mixture of face-to-face class combined with e-learning. For example, students learn through mobile learning where they can access what they learn through computers, smartphones, etc. and learning using IPTV, in addition to what they learn in face-to-face class.

Farah Idayu et al. (2015) found that the blended courses can be part of a strategy to compensate for limited classroom space, as well as a way to think differently about encouraging faculty collaboration. For faculty, blended courses can be a method to infuse new engagement opportunities into established courses or, for some, provide a transitional opportunity between fully face-to-face and fully online instruction. The overall findings of this research shows that English lecturers are ready to embrace e-learning in their teaching process due to few constrains. The study revealed a positive relationship between the facilities of e-learning at the University of

Kuala Lumpur and English lecturers' acceptance of using e-learning in their teaching process.

2.3.2 Quality Curriculum

The second component of UniKL Educational Model is Quality Curriculum. UniKL puts great importance in ensuring a quality curriculum is delivered to the students to ensure knowledgeable graduates with high employability potentials. This is done by having:

(1) Technical subjects embedded with entrepreneurial elements

In line with its mission and vision, UniKL technical subjects are embedded with entrepreneurial elements to produce students who are innovative and entrepreneurial, and in return contributing to Malaysia's aspiration to become a high-income nation.

Entrepreneurial elements must be embedded in at least three of the technical courses for diploma programmes, and at least five for the Bachelor programmes. Entrepreneurial elements are divided into three levels which are awareness, intermediate and advanced level.

Recently, UniKL introduced a new holistic and integrated entrepreneurship/technopreneurship development program namely as Genesis[TM]to increase the number of entrepreneurs/technopreneurs among UniKL graduates towards 2020.

(2) One programme One Professional Certificate

One of the strengths of UniKL's curriculum is it ensures that each programme at least offers one professional certificate from professional bodies or industry.

For example; professional certificate from Malaysian Institute of Accountants (MIA), Association of Chartered Certified Accountants (ACCA), Board of Engineering Malaysia (BEM), Department of Civil Aviation (DCA), Malaysian Medical Council (MMC), Pharmacy Board, and Nursing Board of Malaysia (Lembaga Jururawat Malaysia).

(3) Academicians with industrial background

UniKL is committed in strategically reviewing the staff development policies in order to ensure that the people grow together with the company. Besides upgrading academic qualifications, the academic group must also have the technical background in order to support the teaching and learning of students. The initiative is to ensure the UniKL programme curricula are constantly updated and align with industry standard and also by incorporating industrial relevant input into curricula. As such, hands-on experience in the industry will expose them to the latest development and advances in the specific field needed. Therefore, academicians have been given a chance to undergo short industrial placements. Knowledge and experience gained by lecturers would be beneficial to students. Apart from that, the university employs those from the industry to become lecturers.

(4) Industrialmanship

Industrialmanship is a concept to enhance and increase the industry environment exposure of UniKL students from semester one up to final semester and upon graduation. UniKL students also have the opportunity to be attached to industry, exposing them to the real professional world, at early phase of academic value chain. This concept of industrialmanship will enhance student employability challenges in producing and meeting the industrial expectations and job market as well as attained high-income. By doing so, UniKL is to build effective partnership and collaboration with various industries and companies. Among the programmes introduced in industrialmanship frameworks are career clarification, career exploration, career portfolio development and industrial training.

(5) Research and Innovation

UniKL ensures that the University is current with the latest research and innovation of industrial relevance by recruiting the best research talents, collaborating with other partners, universities, research institutes, businesses and community, creating Centre of Excellence, investing in professional development activities that will enhance the quality and quantity of research performance in UniKL and increasing the participation in Innovation Competitions.

3. Methodology

This paper has investigated and reviewed the information in the field of TVET system in Malaysia with focus has been made to the UniKL Value-Based HTVET Educational Model and how UniKL has strategized to ensure the quality and excellence in learning and teaching in UniKL and the role of UniKL in providing the basic global curriculum in line with National agenda. This study includes proceeding papers, journals and electronic references as well as UniKL related documents. For a strategic search of the articles that were published in terms of TVET area, the search was conducted using some keywords such as challenges and issues in TVET, TVET in Malaysia, 11th Malaysia Plan and some terminologies in TVET. Merriam (2002) states that one of the strategies to gather and analyze the data can be built around documents which is the entire study can be performed through reviewing and evaluating the documents. Bowen (2009) mentioned that the document analysis should involve skimming (superficial examination), reading (through examination) and interpretation so that the finding can be analyzed and summarized in a comprehensive way. The similar method was also being used by Ashari, Rasul & Azman (2014) in exploring the student career choice in Malaysia.

4. Discussion

Universiti Kuala Lumpur, which is wholly owned by MARA, was established in 2002. The purpose of its establishment is to contribute towards the advancement of science and technology by training individuals to become knowledgeable, highly skilled and entrepreneur savvy with the capability to become a leader in the technological field Industry specific facilities provided during the learning process produce capable graduates who are ever ready for the local and international market. UniKL's uniqueness is in offering Engineering Technology courses which emphasize on hands-on or experiential learning.

At the National level, TVET transformation focuses on employability components of its future graduates. The success of this transformation can be seen when it provides a significant contribution to the government's agenda to make Malaysia a high-income country. Currently, the transformation of TVET under several agencies has been introduced in order to strengthen vocational and technical education system at par with others. To cope with the drastically change of several TVET institutions, UniKL has come out with its own model or framework: HTVET Educational Model that emphasizes on two main components; innovative in teaching and learning and quality curriculum.

The final expected outcome of the materialization of UniKL HTVET Educational Model is to produce a holistic graduate with global human capital characters. This is done by combining the concepts of Engage, Explore and Experience with UniKL core values Commitment, Integrity, Teamwork, Innovation, and Excellence to mould UniKL graduates to be Knowledgeable & Highly-Skilled as well as Deeply Spiritual, Altruistic Leaders who are Entrepreneurial and Noble Citizens who have the spirit of being Lifelong Learners.

Academic programmes at UniKL will evolve, grow and be supported byUniKL aims and endeavours to

produce students who are:

(1) **Knowledgeable and highly-skilled**: Students who are knowledgeable and equipped with industry-ready skills;

(2) **Deeply spiritual:** Students with good values who are honest, courageous, confident, humble and with a strong sense of integrity and responsibility;

(3) **Altruistic leaders:** Students who are proactive, resilient, visionary, innovative, collaborative and supportive in their environment;

(4) **Lifelong learners:** Students who are forward-looking and strive for excellence in their working environment as well as in their personal lives;

(5) **Noble citizens:** Students who are law-abiding, loyal, courteous, and compassionate citizens of Malaysia;

(6) **Entrepreneurial:** Students with creative, optimistic, and entrepreneurial mindsets.

Finally, the reinforcement of UniKL HTVET Educational Model will be carried out through all academic programmes offered by UniKL (undegraduates and postgraduates) as to produce excellent graduates in TVET who can compete globally.

5. Conclusion

Transformation of TVET is a determination of re-engineering the existing vocational education system to build a new system of TVET education, which can contribute to the high-income country. It was designed especially to produce a holistic human capital capable of facing any challenge, whether at the national or global and to provide a highly trained workforce to meet the country's needs in the job market. A holistic human capital can be achieved when individual self-actualization arises. This can be done by developing technical and cognitive element in TVET. In UniKL, HTVET Educational Model has been introduced as a framework that emphasize on knowledge and skill delivery through global curricula and programmes for students during the whole academic value chain, which eventually increase the competitiveness and marketability of as well as a part of its transformation strategy as a globalized higher education provider.

Lastly, this study also hopes to share certain measures for effective governance of the TVET sector so that the decisions and actions of multiple stakeholders towards driving the performance and quality of this sector can be harmonized.

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