

## Malaysian Teacher/Lecturer Education Development in TVET: A Fundamental Framework for Human Capital Development

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**Abstract:** This is a review study on new paradigm in teacher education in TVET from policy maker perspective for some issues on how teacher/lecturer education development strategies the challenges of knowledge society and global economy. There are four objectives reflects on this study, first to appreciate the significance of global challenges in TVET educators' development second to examine the emerging issues and challenges in TVET in training and developing educators (teacher or lecturers). Third is to share innovative concepts and models in TVET educator's training and development and fourth is to promote best practices around the world in TVET educators training and development through sharing experiences. This review focus on some delegate interested studys from international and regional organizations, the government and private sectors, non-government organizations to work together in preparing TVET educators for the 21st century generation. This review found that the amalgamation experiences in TVET's from international and regional organizations are focus on fundamental frameworks which is enhancing some roles of TVET educators from insufficient transmitter of knowledge to more on development on knowledge society such learning to be reflective educator, facilitator, mentor, manager and coaching and realize the importance of generic skills, Higher Order Thinking (HOT) skills as well as green skills as fundamental components in the development of next generation TVET graduates. This review suggest that every training organization have to recognizes the growing concern for shortage of qualified or well-trained TVET teachers or lecturers and to give priority in fundamental framework in teacher/lecturer education development in TVET sector for 21st century economy.

**Key words:** Knowledge society, HOTs, generic skills, pedagogical based, information technology, mentoring and fundamental frameworks

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### INTRODUCTION

Malaysian technical universities are exposed to rapid globalization, emergence of Information and Communication Technology (ICT) and international, regional competitions. The significant challenges are faced by the education systems in the changing world of work. There for this study review is express for the reorientation of Teacher/Lecturers Education Development (T/LED) especially in the technical and vocational education and training (TVET) sector. The reorientation of TED in technical university such as Malaysian Technical University Networks (MTUN-UTeM, UTHM, UNiMEP and UTP) have to

reflect some questions on developing a fundamental framework in quality teaching and learning in technical faculties.

The objectives of this study review are to draw attention to some questions in TVET problem statements in Malaysian universities technical. Does Center for Teaching and Learning (CTL) in every Malaysian technical university have been strategies their training model and module towards global challenges in TVET educators' development? Or do the CTL examine the emerging issues and challenges in TVET in training and developing educators in differences faculties? Or does the university realize that their TVET educator's in every faculty have to have strong fundamental framework in

technical concepts and model in TVET education for global economy demand? Does learning delight in campus? Does teaching satisfaction become a matter among faculty members? Do the lecturers still trying promoting best practice and sharing of experiences? If this is occurring in faculties at technical universities in Malaysia, the Y generation can claim that technical field is number one university to be registered for 21st century in Malaysia. There for this review aim to designed to convene policy makers, senior administrators, decision makers, educators, lecturers/teachers, representatives of NGOs and civil society to exchange and share their experiences, research results, creative ideas, innovations and new initiatives about aspects of TVET Educators' training and development and discuss practical models, frameworks and best practices including recommendations and solutions adopted.

#### **EMERGING TRENDS IN TVET TEACHER/LECTURER EDUCATORS' DEVELOPMENT (T/LED)**

Majumdar (2008) at the Plenary Session 1, begin the issue with emerging trends in TVET Educator's development is recognizing the challenges that lay in 21st century, the pursuit of relevant teacher education approaches is of paramount importance. These approaches build upon general theories and perspectives, as laid out in this study, to enhance student learning at all levels of education, with particular focus on Technical and Vocational Education and Training (TVET). This been discuss about transformation of Malaysian's polytechnic into university college in 2015. They discuss clearly about issues and challenges for Malaysian technical and vocational education. Polytechnic produced >300,000 semi-professional workforce and middle executives in variety sectors in 42 years of operation in technical and vocational education training TVET. Phenomenon of globalization in conventional TVET education to served demands towards country's high-income depend on innovation and creativity this triggered by the direction and transformation agenda of polytechnic.

This has been highlighted by many development organizations such as CPSC and UNESCO-UNEVOC, arising from discussions on the need for innovations and quality improvement in teacher education in the field of TVET to meet the challenges of the knowledge-based society (Majumdar, 2009). UNESCO's former Director General Mr. Koichiro Matsuura at the opening of the World Conference on Education for Sustainable Development in 2009 stated that "There are over 60 million teachers in the world today and countless numbers of

non-formal educators. They work at the 'local' level but are called upon to deal with 'global' issues. To make education relevant and real to learners, they must draw upon local inputs, contexts and values (Majumdar, 2013).

Nor Bin Yusof (2013) the former director general, department of polytechnic education, ministry of higher education, in 2011 affirmed that Malaysia facing the challenge of improving human resource to respond to sustainable socio-economic development needs, social and cultural issues, unprecedented changes in the world of work, technology as well as global competition. He also make a close research on some scholar works on TVET field. According to him Majumdar (2010), Ball and Forzani (2009) and Desimone (2009) at the global front, changes and innovation in education call for competent educators who are able to adapt themselves to these changes as well as deliver quality education. Training and development activities for Teacher Educator Development (TED) are considered expensive, nevertheless, they are vital elements to accommodate and shape TVET.

#### **FEATURES OF GLOBALIZATION AND KNOWLEDGE SOCIETY**

The 21st century presents a radically different economy and society which is likely to have profound implications on Technical and Vocational Education and Training (TVET). TVET systems must adapt to these key features which include Globalization and Knowledge Society, ICT Revolution and Climatic Changes and Sustainable Development the Second International Congress in TVET organized by UNESCO pointed out that from economic growth to human development, a bridge has to be built through the teachers who are well trained. The most important 'agent of change' in 'knowledge society' is the teacher or a lecturer.

As part of economic transformations, the knowledge society has emphasized the value of knowledge rather than material products. Increased value on "intellectual capital" reinforces skilling and creation of workers for knowledge-intensive jobs. The phenomenon is caused by the sudden shift from mere manufacturing economy to service economy in many developed and developing countries around the world. Figure 1 shows a changing paradigm in a knowledge society. Here, dramatic changes take place in the valuing of output, since the economy has changed from manufacturing to knowledge-based while technology has moved from manual to cognitive in terms of technical orientation. They are seen as positive developments that take advantage of the shift in focus to raise the bar of

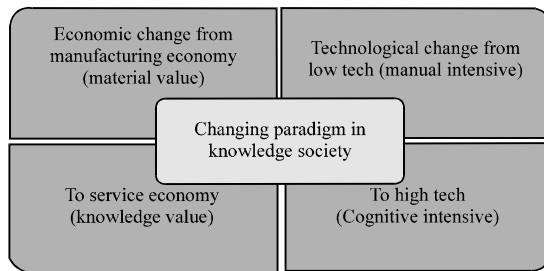


Fig. 1: Changing paradigm in knowledge society  
Majumdar (2013)

demands and work output. Malaysia is a rapid development country. All TVET educators are exposed to new technological trends because there are sweeping across Asia and the Pacific region. They are virtually reshaping all aspects of work, at all levels and in all types of industries. Obsolescence and technological advancements are happening at a rapid pace. For example, the major shift in technology is dominated by the move from petroleum-based to bio-based; divergent to convergent. The century now features integrated technologies such as Information and Communication Technology (ICT), bio technology, nano technology, energy technology, space technology, embedded technology and mechatronics system. These technologies possess common characteristics of being interdisciplinary, oriented to Research and Development (R&D), information-intensive. They usually have shorter life cycles and are globalized (Majumdar, 2000). The fundamental question is how Malaysian educators train their instructors or teachers or how can TVET lecturers prepare under graduates students for the technology that has not yet been invented the country? What are the teaching strategies or any methodology to address classroom TVET dilemma in Malaysia?

#### FUNDAMENTAL FRAMEWORK IN TEACHER/LECTURERS DEVELOPMENT IN TVET FOR 21st CENTURY

There are three major fundamental frameworks in TVET education for 21st Century. First is HOTS curriculum, second is generic skills and third is transition of media applications in Teaching TVET. TVET educators in 25 countries have been changing their entire strategy of teaching and learning methods. They no more equipped by the present day technology but prepare them for more complex and long-term technology projections and empower them with learning to learn skills. They promote self-paced learning through autonomous learning strategy and adapt to industrial

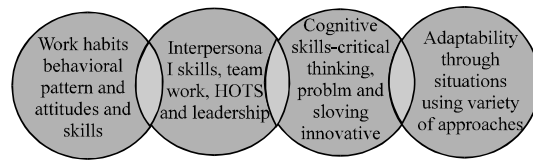


Fig. 2: Generic skills in the new workplace

needs. The core strategy for this model is learning to learn skills, adaptability skills and Higher Order Thinking skills (HOTS) in order to present day domain knowledge. HOTS skills occur in curriculum as Critical and Creative Thinking (CCT) and Critical and Problem Solving (CTPS) in Germany and Malaysian TVET classroom and it is central to generic skills demand to match the requirement of the knowledge society.

Under the changed context, teaching HOTS skills is most effective using the Constructivist Model, where learners construct meanings out of the old and new information through their own set of experiences and interactions (Majumdar, 2004) while teachers act as facilitators for providing the right conditions, tasks and situation. According to Hussin (2004) through her works on reflective practices, she claimed that as a facilitators, instructors or teachers were able to help students to identify critical incidents, evaluate and clarify situations using both their rational and emotional mind. Reflective thinking also can be a practice among Malaysian educators in TVET. For that reason, they simultaneously move their action to develop their students TVET in generic skills (Oheki, 2015) defines generic skills or key competencies as those competencies essential for effective participation in the emerging patterns of work and work organizations. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. Key competencies are generic in that they apply to work generally rather than being specific to work in particular occupations or industries. In German for example, clusters of generic skills in the new workplace are modeled in the succeeding Figure 2 to guide teachers in performing this role, namely work habits cluster, interpersonal cluster, cognitive cluster and adaptability cluster. Today, Malaysia teacher educator in TVET has been applying the transition of media applications in their teaching. Teachers are expected to create a new flexible and open learning environment in ICT era with interactive, experiential and multimedia-based delivery system. Multimedia combines media objects such as text, graphics, video, animation and sound to represent and convey information.

In line with generic skills, Malaysian polytechnic across the nation are striving towards obtaining

**Table 1: The paradigm shift learners at the centre of an interactive and constructive learning environment**

Variables	Computer-Assisted Learning (CAL) 1970's	Multimedia-Based Instructional Software 1990's	Web-Based instruction 21st Century 2015
Features	Interactivity, flexibility, learner-centered	Interactivity and multi model instruction	Interactivity and on-demand instruction
styles	Drill and practice, tutorials, simulation and instructional games self-paced instruction	Hypermedia, Hypertext; 2D/3D simulation and modeling	Computer-supported collaborative Learning environment
Pedagogical Base	Behavioral objectives (apparatus) follow good practice	Behavioral objectives and constructivism	Constructivism (co-inquiry and experiential learning)
		Single sense sensory single media application delivery of information monologue communication analogue	Stimulation multi stimulation multimedia application exchange of information dialogue and collaborative digital resources

Malaysian Qualification Accreditation (MQA) for their programmes. The MQA has come out with guidelines on eight domains of competencies that should be given emphasis by higher education providers. Of the eight domains, six refer to generic skills namely: social skills and responsibilities, values, attitudes and professionalism, communication, leadership and team skills, problem solving and scientific skills, information management and lifelong learning skills and managerial and entrepreneurial skills (Jaafar, 2013).

Malaysia want to produce graduates who are progressive, competitive and marketable and always looking to expand, move forward and striving to reach greater heights. These graduates are able to compete globally and be accepted immediately to act in accordance with the current market needs. Starting March 2009, a proof of concept project for e-learning using CIDOS has been implemented at polytechnics and 1,444 lecturers were trained to handle this e-learning application. Table 1 above show the paradigm shift of learners in interactive constructive and constructive learning environment and its continuum within 40 year time. The major emphasis of ICT infusion in pedagogy should be such that it tends to improve learning, motivate and engage learners, promote collaboration, foster enquiry and exploration and create a new learner centered learning culture: a bold response to knowledge explosion that has taken place and described above. It permits the move from reproductive model of teaching and learning to an independent, autonomous learning model that promotes initiation, creativity and critical thinking with independent research.

Learners are expected to collect, select, analyze, organize, extend, transform and present knowledge using ICT in authentic and active learning paradigm. A basic principle is that the use of ICT changes the distribution and ownership of information resources in the space of teaching and learning and thus changes the relationship among educational participants. While designing any innovative teaching and learning environment using ICT, the teacher should always keep learning at the center of all activities. Pedagogical content knowledge should be at the heart and integration of student learning centered.

## **FEATURES AND IMPLICATION OF SUSTAINABLE DEVELOPMENT IN TVET**

The growing concern about sustainable development has led present day policy makers, administrators, educators and managers to call for a more holistic and integrated educational approach for sustainable development touching upon environment, social, technological and economic priorities altogether. These priority concerns and issues pose as need-based focus of future educational initiatives. Possessing certain skills set is not enough. Moving towards the goal of sustainable development also requires fundamental changes in human attitudes and behavior in our personal lives, in our community activities and in the work place. Such a fundamental change is only possible through education and training. In the mid-term draft review report on decade of education for sustainable development, one of the critical areas of concerns have been identified as priority is the re-orienting curricula, teaching and learning and capacity building. Education in general and TVET in particular takes on a complex and distinctive character with regard to sustainable development. This is because both directly and indirectly TVET produces and consumes resources as well as affects attitudes towards sustainability held by future workers.

TVET is currently not a mainstream education option and typically not a viable alternative to entering the workforce as it does not provide clear educational and professional pathways, TVET providers are somewhat confused with the fragmented TVET landscape with numerous providers from various ministries resulting in multiple qualifications systems and non-uniform curricula standards; and employers, at large, still do not fully recognize and give commensurate value to TVET qualifications. Uncertainty workspace and loss of a job such as in present economic crisis will adversely affect human capital and it best to develop on firm depend of TVET that provides a relatively secure medium of exchange in the world wide global labour market. As one of the sectors involved in transformation of resources, TVET has multiple concerns about sustainability and are considered directly related to social, economic and environmental

progressive or regressive developments in all parts of the world (Nagappan, 2009). To develop and produce good quality TVET in the school level the focus need specific to their teachers who are specialized in their field. Many of the teachers who work have the necessary technical skills but do not have more opportunities for training professionals. PTV in Malaysia, there is a shortage of teachers qualified technical and vocational education. Most teachers are recruited directly after they graduate from university and collage based on academic qualifications and no experience of industrial work. English Language learning in this process becomes a capital for improvement Technical vocational Education Training learners.

### IMPLICATION TO TVETTEACHERS' EDUCATION

There is a paradigm shift in teacher education and practices of teaching and learning in the digital revolution, climatic change and knowledge society (Sandholtz *et al.*, 1997). This paradigm shift gives learners a completely new role that was not earlier described in the transmission model of teaching. Where learning through facts, drill and practices, rules and procedures was more adaptive in earlier days, now learning through projects and problems, inquiry and design, discovery and invention, creativity and diversity, action and reflection (Hussin, 2004) is more fitting for the present times. So, there is a need to develop a conceptual framework on the pedagogical dimensions of new learning environment. For this purpose, desirable paradigm shift required in each of the pedagogical dimensions are presented in Table 2.

Table 2: Desirable paradigm shift in TVET education

Dimensions	Unwanted	Desirable
Teaching model	Interactive Model	ICT Model based on constructivism
Learning focus	Content	Learning to learn
Learning trust	Rote	Higher order thinking
Development goal	Traditional curriculum	Sustainable curriculum

### SUGGESTION TO EDUCATION FOR TVET DEVELOPMENT

Shifting the emphasis from teaching to learning can create a more interactive and engaging learning environment for teachers and learners. This new environment also involves a change in the roles of both teachers and learners. The role of the teachers will change from knowledge transmitter to that of a facilitator, knowledge navigator and sometimes as co-learner. The new role of teachers demands a new way of thinking and understanding of the new vision of learning for being a reflective practice. According to Oheki (2015) and Nagappan (2009) learners as astudent teachers or new instructor in technical college or new lecturer in technical are or engineering faculties at universities will have more responsibilities of their own learning as teachers or lecturers in practicing reflective writing. Through that reflective experiences, they are going to close the loop by seek out, find, synthesize and share their knowledge with others (Hussin, 2004 ).

The ICT provides powerful tools to support the shift from teacher-centered to learner-centered paradigm and new roles of teacher, learner, curricula and new media. The major shifts have been described in Table 3.

Malaysian education for sustainable TVET development requires deep concentration in the understanding and practices of TVET development and survival in education. The challenges of education today are to reorient and redirect its curricula towards sustainable development. Unfortunately, TVET in Malaysia remain locked up into the role of being a mere supplier ofskilled labor to industry and is thereby unable to respond effectively to the needs of sustainable development strategies. TVET professionals need to be called upon to reorient the TVET curriculum towards sustainable while maintaining the principles of 6R that is Reduce, Reuse, Renew, Recycle, Repair and Rethink perspectives (Natarajan, 2009). In addition according to the Organization for Economic Cooperation and Development (OECD), it is about 44% of students

Table 3: Changers in lecturers roles, curricular or delivery and learners' roles

Lecturers roles	Curricular or delivery	Learners' roles
From transmitter of knowledge to guide and Facilitator of knowledge	From memorizing facts to inquiry based	From passive to active learner
From controller of learning to creator of learning environment	From artificial teaching exercises to authentic learning	From reproducer of knowledge to producer of knowledge
From always expert to collaborator and co-learner	From rigid delivery to open and flexible design delivery	From dependent learner to autonomous learner
From learning to use ICT to using ICT to enhance learning	From single path progression to multi path progression	From solitary learner to collaborative learner
From didactic to interactive, experiential and exploratory	From traditional based to competency based	From impulsive learner to reflective learner

continue their education in TVET but in Malaysia only 15% enrolment of upper-secondary students into Technical and Vocational Education and Training (TVET) institutions, reported by (Muhyiddin, 2013). There for this study suggest that Malaysian have to encourage more urban and rural students enroll TVET especially in entrepreneurship and ICT area. This argument relevant to the need of knowledge workers with entrepreneurship and ICT background in many SME and industries networking.

### CONCLUSION

Malaysian Teacher/Lecturer Education Development (T/LED) in TVET related to human capital development should also focus on how to build the capacities of teachers/ lecturers, managers and facilitators to initiate and enhance new culture and new environment in order inspired forms of learning in TVET, universities, workplaces and neighborhoods. Space needs to be created to develop and experiment with these new forms of teaching and learning such as collaborative learning (Razali *et al.*, 2014a, b) in campus environment. According to Resta (2002) such capacity-building is also needed in non-formal education and informal learning settings. Some of the innovative principles of pedagogical content knowledge includes) Methods for POPBL and PBL in TVET should promote human capital development such as critical thinking and problem solving skills, creativity and innovative skills. All techniques should be designed to suit learner characteristics, meet their needs and develop their interest and enthusiasm. Methods should focus on real-life problem-solving, i.e., application of principles of science, social science and technology to solve environmental problems. Problem or project-centered approach is usually more appropriate than subject or discipline approach for education and sustainability and development. Scientific and technological aspects of environmental issues should be supplemented with values and ethical aspects. Teaching approaches should shift away from lecturing towards group-work, self-study and methods which use active involvement in projects and community life. Team-teaching can effectively pool talents of specialist teachers to work in an inter-disciplinary way. Learners should have access to elective subjects suited to their own personal and professional needs, interests and job opportunities. If Malaysian TVET system teaching and learning are utilized this approach, strategies, methods and techniques in their teacher

/lecturer education development program in a processes to provide a quality educator, then TVET can be claim as a body of learning organization for 21st century.

### REFERENCES

- Ball, D.L. and F.M. Forzani, 2009. The work of teaching and the challenge for teacher education. *J. Teach. Edu.*, 60: 497-511.
- Desimone, L.M., 2009. Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Edu. Res.*, 38: 181-199.
- Hussin, H., 2004. Learning to be Reflective: Malaysia Experiences. Universiti of Pendidikan Sultan Idris Publication, Tanjung Malim, Malaysia.
- Jaafar, M., 2013. Generic skills development for 21st century learners: The Malaysian scenario. *Proceeding of the International Conference on Preparing TVET Educators for the Next Generation*, December 12-13, 2011, Kuala Lumpur, Malaysia.
- Kamaruddin, W.N.W. and M.S. Ibrahim, 2010. Enhancing malaysian polytechnic technical lecturer's competency through the identification of professional development programs. *Procedia Social Behav. Sci.*, 7: 446-454.
- Kamaruddin, W.N.W. and M.S. Ibrahim, 2010. Lecturer efficacy, professional and general competencies of Malaysian polytechnic technical lecturers. *Proceedings of the Regional Conference on Engineering Education and Research in Higher Education*, June 7-9, 2010, Kuching, Sarawak, pp: 27-32.
- Majumdar, S., 2000. Designing web based instruction to enhance creativity. *Proceedings of the International Conference on Technological Creativity Development (ICTCD)*, April 20-23, 2000, Taipei, Taiwan, pp: 160-165.
- Majumdar, S., 2004. Emerging generic skills for employability in the knowledge economy. *Proceedings of the 14th International Conference of IVETA*, August 24-27, 2004, Vienna, Austria.
- Majumdar, S., 2008. Emerging trends, issues and challenges in TVET in the Asia and Pacific region and CPSC response. *Proceedings of the International Round Table on Changing World of Work: The return of TVET to the International Development Agenda Organized by UNESCO-UNEVOC in Collaboration with Inwent (Germany) and CPSC*, August 27-28, 2008, Bonn, Germany -.

- Majumdar, S., 2009. Challenges in integrating sustainable development in TVET curriculum. Proceedings of the International Experts Meeting on Re-Orienting TVET Towards Education for Sustainable Development: A Building Block for EFA Organized by CPSC with UNESCOUNEVOC International Centre in TVET and InWEnt, August 26-28, 2009, EFA Berlin, Germany-.
- Majumdar, S., 2010. Emerging challenges in TVET in Colombo plan region cpssc's response. *J. Eng. Sci. Manage. Educ.*, 1: 10-16.
- Majumdar, S., 2013. New paradigm in teachers' education in TVET. Proceeding of the International Conference on Preparing TVET Educators for the Next Generation, December 12-13, 2011, Kuala Lumpur, Malaysia -.
- Nagappan, R., 2002. Using constructivist approach to teach higher order thinking skills: Transforming teaching practice to facilitate mindful learning. Proceedings of the 10th International Conference on Thinking, June 15-19, 2002, Harrogate, England.
- Oheki, J., 2015. Cultivation systems for human resources of entrepreneur implications for management and marketing of the education system. *Information*, 18: 2329-2350.
- Razali, S.N., F. Shahbodin, N. Bakar, H. Hussin and M.H. Ahmad, 2014. Perceptions towards the usage of collaborative learning in teaching and learning processes at Malaysia polytechnic. Proceedings of the International Conference on Advances in Computing, Communication and Information Technology, June 1-2, 2014, London.
- Razali, S.N., F. Shahbodin, N. Bakar, H. Hussin and M.H. Ahmad, 2014. The need of incorporating Cidos with Facebook to facilitate online collaborative learning. *WIT. Trans. Inform. Commun. Technol.*, 58: 1089-1097.
- Resta, P., 2002. Information and Communication Technologies in Teacher Education: A Planning Guide. UNESCO, Paris, France.
- Sandholtz, J., C. Ringtaff and D. Dwyer, 1997. Teaching with Technology. Teachers College Press, New York.