

E-Learning in TVET Institution : A Survey

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Abstract: Information and Communication Technologies (ICT) are increasingly viewed as a vital infrastructure for all sectors. ICT in education and training introduce various e-learning platform for the educators and students to access knowledge both in theoretical and technical training. Technical Vocational Education Training (TVET) who plays an important role in producing the human capital with respective skills for industries also not excluded and may improve educational practices, technical quality and research into pedagogy; facilitate technical improvements and improve mechanisms for accreditation and external endorsement. . The adaptation of e-learning in TVET education provide anytime access to course materials and related resources. This creates a major impact on students and lecturers in TVET institutions. The purpose of this paper is to identify the technology acceptance in integrate IT tools and experience in applying these tools in the teaching and learning process. The importance of ICT facilities provided in TVET institution is also been reviewed to ensure the teaching and learning quality, contextual relevance and longer operational life to sustain the educational process. The approach was very effective for assessing and evaluating various functions and suitability of the digital tools for teaching and learning. The findings were proposed to further improve the management and quality of the training program.

Key words: *ICT Infrastructure, Learning Strategies, Problem based Learning, Computer and System, Web Based Learning*

INTRODUCTION

In recent years, there has been a renewed interest in TVET as a direct contributor and an alternative pathway for national skills development and capacity building in developed and less developed countries. Changes in the global market, the nature and content of work and advances in technology have caused employers in the labor market to demand complex skills of employees and potential labor market entrants [1]. Consequently, countries have begun to systematically investigate their educational systems and how such systems can be modified to meet the social and economic development needs. These changes have further challenged TVET to adapt to new and emerging competencies at a faster rate than general education, as TVET is directly responsible for equipping individuals for the world of work.

The emerging trend of e learning as one of the important medium of Teaching and Learning in today's knowledge

society motivate the TVET institutions to develop ICT facilities and creating their own moodle platform [2]. E-learning digital tools provides instructional services in synchronous as well as asynchronous modes that can be made available at anytime, anywhere and for belonging to disparate social backgrounds and age groups [3]. In order to enhance learners engagement, effectiveness and human touch, web based online pedagogy is usually supplemented by "face-to-face" teaching methods. The combination of web based with some of face-to face facilitations is recognized as "blended learning" approach.

Despite potential benefits of an e-Learning, this new pedagogy has its limitations. These include lack of learner engagement, quality of delivery mechanisms and useful life of the provided digital contents. Therefore, e-learning need to be assessed and evaluated for its effectiveness, overall quality assurance and the sustainability [4]. The main objective is to enable e-

learning mode to spread into larger population across the geographical boundaries in order to achieve enhanced learning quality and efficiency through achieving the economy of scale.

In 1991, Malaysia's then Prime Minister laid out a strategic vision to transform Malaysia into a knowledge-based, sophisticated, united, and developed country by the 2020. This vision would be realised through the development of a highly skilled and talented workforce operating in an environment of economic and political freedom [5]. This ambitious goal was motivated by two decades of heady economic growth that gave Malaysia membership of a group of countries the World Bank called High-Performing Asian Economies (HPAEs). Therefore, in order to achieve this goal, the quality assurance of teaching and learning method where very important.

This paper attempted to draw together the e-learning impact with the provided facilities development for better approach of TVET system and thereby bring into focus a potentially important education subsector that has been much neglected by the community and officialdom. The specific objective is to: review and examine the TVET teaching and learning performance by adapting e-learning strategies.

The rest of this paper is structured as follows. Education and skills development in TVET is proposed in Section 2. In section 3, we describe the methodology used in collecting the data; section 4 presenting the results obtained and, finally, section 5 outlines some conclusions and future work.

EDUCATION & SKILLS DEVELOPMENT IN TVET

The TVET subsystem could augment the country's human capital. After all, this subsystem is made up of two as of the three pillars of the Malaysian education system since the third pillar being academic education. The pillars are stated below:

1. Technical and vocational education offered by polytechnics, technical institutes or colleges, and community colleges. Graduates from these institutions fill supervisory occupations, including as technical assistants, and supervisors.

2. Vocational skills training, undertaken by institutions, both public and private. The graduates from these institutions would take up employment in skilled and semi-skilled occupations. This respective pillar is likely to contain providers outside the formal system and not licensed by, or registered with, the government. Furthermore, this sub-system should play an important role in economic development because it should be closely linked to the labour market.

The structure of Malaysia's TVET subsystem within the education system is shown in Figure 1. There are multiple avenues for movement between tracks. Students' selection of tracks can occur on completion of primary education, during secondary education,

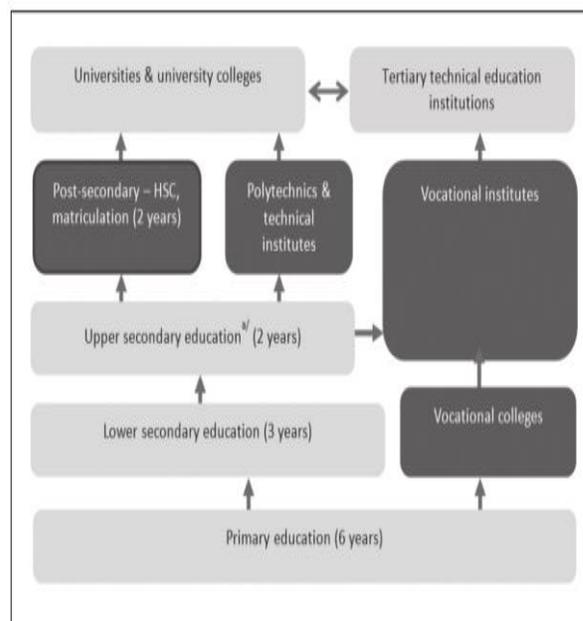


Figure 1 : Malaysia's Education System [6]

As mentioned by Ministry of Education, 2016, a total of 434,535 students sat for the secondary level examination (Malaysian Certificate of Education) in 2016. This examination serves as a qualifier for entry into colleges and universities. Of these, approximately 21 percent gained entry to the public and private universities at the diploma level and 14 percent at the bachelor degree level. In total, only 35 percent of secondary students gained entry into the public and private universities while the remainder either entered directly into the job

market or sought alternative education pathways such as TVET as mentioned by [7].

Meanwhile, among rigorous move had been taken by developing the ICT facilities and enforce the implementation of e-learning concept for T&L in the TVET institution. However, the accessibility of digital technologies could not be guaranteed due to a host of factors including connectivity issues, compatibility of ICT operational systems and ICT utilisation levels competencies among the organisations and the individual respondents [8].

Advances in technology have led to the proliferation of research devices, tools and applications. This development presents problems in selecting and managing the tools, devices, applications, related processes and procedures to apply. Specialised skills and competencies are needed and yet difficult to ascertain given the proliferation of technologies. Although the digital revolution is now gripping business research only time will tell the velocity and intensity of this revolution.

There is a possibility the methodological opportunities created by digital revolution remain underutilised. Problematizing the innovative use of digital methodologies is necessary in this respect. The challenge is how to develop this innovative capacity within research communities of practice? The answer could lie in the collaborative research initiatives that run across digital development generations from generation X to Y and digital migrants to digital natives. [9]

The changing of TVET environment in the educational paradigm and development of information technologies determine the need for innovation- driven educators with high-level of communication competence. Contemporary teaching and learning trends reflect the transition from conventional to the non- conventional innovative teaching methods promoting interactive learning forms, active engagement of students and integrative thinking methods, the application of which requires ICT and e-learning environment.

In the other hand, educators apply and realise only separate parts of teaching and learning in the virtual environment in their planning. Teaching and learning in the virtual environment is occasionally organised due to the priority given to direct communication and due to

the lack of ICT competence. Educators and TVET institution do not deny the benefits of ICT tools, yet, due to the lack of ICT competence necessary for an efficient use of technical tools in the teaching and learning process, they mostly use computers, overhead projectors, mobile phones and the internet. The purpose of ICT usage during the studies is directed toward the organisation of process (attractiveness of study material, student activation) rather than to the curriculum studies as stated by [10].

METHODOLOGY

The survey was performed in January - April 2018. The respondents could use different ways of answering: they could provide answers by email or face-to-face during an interview. The set of question was taken of respondents' personal experience and their individuality providing a detailed and extensive picture of the situation. Ten lecturers of Institution W (Faculty X,Y, and Z) were selected by applying a targeted random sampling. Since there were multiple informative population units, several options have been chosen, and a smaller sample established.

During the data collection period, the scientific literature and documents regulating management, control and changes were analysed. The empirical data was collected by applying a semi-structured interview method. The research was based on the notion that respondents can use their concepts (words) instead of specific categories which are usually provided in advance.

When selecting the research method it was decided (by anticipating the topics or problems to be discussed during interviews) not to get attached to the sequence of questions or anticipated words, and to freely change their order. Besides, the method of a semi-structured interview induced a more relaxed communication scenario, better adjustment to the research environment, and provided information contributing to an in-depth discussion of the problem of analysis. Selection of this method was determined by the possibility to get a detailed picture of the educator's readiness and acceptance of ICT facilities during implementation of digital tools for e-learning. It's also reveal subjective respondents' views and experiences.

The survey of educator's skills and their acceptance to apply ICTs in the study process was based on the humanistic personality theory. It served as the basis for the analysis of the educators' role in the process of ICT implementation taking the firm view that every human being is a unique, organised and ever-changing personality aimed to create the future and realise own powers. In order to highlight a special nature of the above phenomenon and interpret it as a subject of conscientious individuals' experience, the reference was made to phenomenology.

In the context of this study, phenomenological research design allowed to analyse personal respondents' experience and get acquainted with the educators' evaluation of the situation. A quantitative expression of answers, i.e. the number of educators attributed to one or another category or sub-category was not estimated. It was considered that the opinion of each respondent was unique and valuable. The following ethical principles were applied during the research: voluntary approach, goodwill, privacy and respect. In order to ensure confidentiality of respondents,

RESULT AND DISCUSSION

Figure 2 reports the comparison of learning approach in TVET education sector in terms of frequency of use (number of respondents reporting their use). Results are grouped into four main categories of learning approach types as depicted in Table 1: interactive tools such as Kahoot; learn without boundaries; internet connection, immediate evaluation. Results about the types of learning approach can be related directly to the type of activities performed under each teaching & learning process, depending on the educator's preference.

Types of Learning Approach
1. Interactive Tools
2. Learn Without Boundaries
3. Internet Connection
4. Immediate Evaluation

Table 1 : Types of Learning Approach

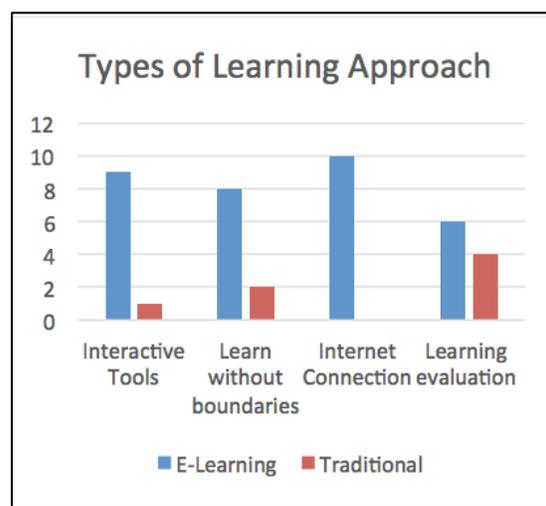


Figure 2 : Comparison of Learning Approach between E-learning and Conventional Learning

Figure 3 presents the communication devices that been chosen by the educators. It shows that 84% of the participants preferred the comfort and design while 81% of the participants choose the configurations, and auto adjustment. Regarding the device preferences and connectivity. Participants preferred an e-learning system that can connect to the smartphone 92% than a dedicated system, only 39%.

In regards to relationships between variables are: expectancy of the users may be influenced by friends, age, gender, price, also by training, habit, comfort and design. Social influence may be influenced by expectancy and user characteristics. Training and habit may be influenced by expectancy, with an auto adjustment, social suitability and information overload. Price may be influenced by expectancy of the user and the user characteristics. Comfort and design may be influenced by the expectancy of the user, price, and may improve by training and habit. Custom settings and adjustment system may be influenced by training and habit. Information overload may be influenced by training and habit, and the user characteristics.

This survey base on the Technology Acceptance Model (TAM) [11] that can clearly be adapted for a study on characteristics to facilitate the ease of acceptance of an ICT technology. The e-learning features are important indicators that can be used, to perceive individuals' attitudes towards using a certain system.

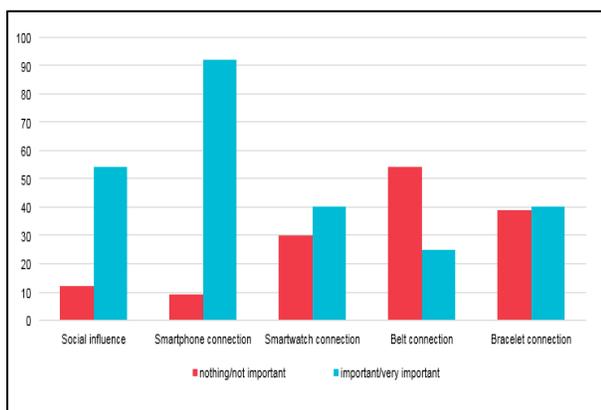


Figure 3: Digital Devices for e-learning

ICT technology in education enhance the technical skills training by utilizing the beneficial of digital devices. For example, it is interesting to see that the highest frequency of use of electronic tools (which include automation, robotics, sensors control and monitoring systems) can be recorded and replay for the student’s references. According to these results, smartphone is the most famous device that participants preferred to use during teaching & learning process as it is portable and can access to moodle platform anywhere and anytime.

Elements	Mean scores
Support System	4.84
Learning Material	4.62
Digital Tools	4.15
T&L process	4.67
Total	4.57

Table 2 : Elements of e-learning

Table 2 showed the mean scores for the elements of e-learning. In the view of the educators, the important elements for e-learning environment is the support system,4.84 and the teaching & learning process ,4.67. These follow by the learning material and digital tools. Total of the mean score for the elements is 4.57. From the results observation, the e-learning support system is like the heart of e-learning consistency.

The use of educational technologies and especially e-learning systems for Technical and Vocational Education and Training (TVET) offers some unique opportunities for innovation but also poses some special challenges for the system designers, developers, implementers and managers. Among the opportunities

are use of emerging technologies for enhancing interaction between the learners and the content as well as the educators and each other. The challenges, especially in the case of delivery of the training programme, include the provision of adequate and authentic practice opportunities of tasks that involve interaction with tools, equipment, people, plants, animals and organizational situations in real world localities where the real work is performed.

CONCLUSION

Most TVET institutions in developing countries apply traditional methods in teaching and learning delivery where a learner must be physically present in class and the teacher is mostly the source of the content while the learner is only a recipient. The current dynamic education and work environment force a shift from the norm. The role of ICT in the growth and development of the developing economies cannot be underestimated especially in the era of Industrial Revolution 4.0. The education sector stands out to be one of the greatest beneficiaries of the information communication technologies. Many developing countries including Malaysia greatly rely on skilled labour to enhance their development agenda and as pointed out by many professionals, TVET is the master key to development.

E-Learning is a very important resource to be drawn on to maximize on learning opportunities. The traditional modes of delivery are restrictive in accessibility of learning resources by the students. The conventional system of education and e-learning are considered to be quite different. E-learning provides a flexible system of information dissemination which is not confined to only regular day time activities but can also take place in a variety of locations including homes, schools, libraries internet cafes and open fields. The TVET educators will be able to reach students in different set-ups using the available e-learning platform. This will reduce the limitation of time, space and place that have become a great difficulty and challenge of education delivery. The students will also greatly benefit by having a variety of choices in course completion modes and a lot of flexibility in learning delivery leading to lifelong learning. However this only will be achieved with strong ICT support system.

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