

PERSPECTIVE OF PRE-SERVICE TVET TEACHERS ON INSTRUCTIONAL TECHNOLOGY IN TEACHING AND LEARNING PROCESS IN VOCATIONAL COLLEGE

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ABSTRACT

In this digital era, there are specific skills required to meet demand on Industrial 4.0 and it is much needed in Education 4.0 to enhance these skills in higher education institutions. Align with the scenario, the Faculty of Technical and Vocational Education (FPTV), Universiti Tun Hussein Onn Malaysia (UTHM) has merged them in the curriculum of Teacher Training – Technical and Vocational Education and Training (TT-TVET) on the uses of instructional technology. Therefore, the aim of this study was to discover the perceptions of pre-service TVET teachers on the uses of instructional technology in the teaching and learning process in Vocational Colleges in Malaysia. This study uses a quantitative approach and the instrument used was a set of questionnaires. A simple random sampling had been used and the questionnaires were distributed and received by about 116 out of 162 TT-TVET students from FPTV, UTHM. Data were analyzed using descriptive and T-test method in SPSS and the findings indicate high-level perceptions of pre-service TVET teachers towards the uses of instructional technology in teaching and learning at vocational colleges in terms of awareness and skills. Furthermore, there were no significant differences between male and female teachers for perceptions of aspects awareness and skills in the use of instructional technology in teaching and learning at vocational colleges. These demonstrate an important result to fulfill the 21st-century education skills requirements.

Field of Research: TT-TVET, Teacher perception, vocational college, instructional technology.

1. Introduction

According to Supramaniam (2015), the modernization of a country and society is often associated with the application of modern technology in various fields, especially in the field of education. Technology has always brought about the greatest change in any country. To enhance Education 4.0 required skills in higher education institutions, there are to meet demand on Industrial 4.0 technology. In terms of Education 4.0, there are aspects of development and integration of computers and applications. According to Borhan and Maat (2015), teachers can use several learning strategies to apply technology in the teaching and learning process. These include the use of multimedia displays, the internet and even interactive software rich in the latest technology. This computer- based technology can also make the learning process more interesting in the classroom. Surif, Ibrahim and Hassan (2014) states that a teacher needs to have awareness and skills towards the technology that will be used to make the learning

environment more meaningful by using technology in the teaching process. The use of technology as teaching aids can also encourage learning by experimentation.

TVET students have more skills than knowledge. This finding is supported by Hassan (2005), whose role models of violent or personality-flawed teachers will make the new generation vulnerable. Thus, Ahmad, Jalani and Hasmori (2015) raised the question of whether teaching and learning process and teachers provide an overview of student behaviour in TVET schools? This article is an attempt to study the formation of TVET teachers to develop TVET student leadership personalities that can be developed according to the needs of the industrial sector. TVET teachers should theoretical and practical skills as a unit task will integrate technical knowledge, skills and attitudes in the use of tools, materials, safety and methods or techniques to complete work-related tasks. This is in line with the government's demand for increased human capital and the quality of TVET teachers' professionalism. According to Ismail *et al.* (2016) in the study Implementation of Vocational Training in TVET's Teacher Program for National Core found that the job skills required by the industry are honest, timely, neat, independent, ambitious, creative and capable of customizing, communicating effective, the ability to work in a team also has a good work ethic. Thus, personalities play an important role in the formation of TVET's professionalism and outstanding dedication.

In the study of teachers' attitudes towards the use of teaching technology during teaching and learning in vocational colleges of stone scaffolding studied by Shukor (2015), it was found that most teachers were less focused on disseminating and communicating information effectively to students. Traditionally, many teachers may assume that every student is capable of accepting only what the teacher has to say. In fact, each student has their own differences in their ability to process information and how to learn, focus and so on. Many teachers consider the uses of technology in their teaching process to be a burden on them as they need to prepare early in class. In addition, teachers feel that they will be forced to continue learning new methods (Shukor, 2015). Therefore, this study was conducted to examine the perceptions of pre-service TVET teachers who have undergone teaching practicum 1 on the use of teaching technology in teaching and learning in vocational colleges in terms of awareness and skills. Furthermore, is to identify significant differences between genders in perceptions of the level of uses of instructional technology in teaching and learning in vocational colleges in terms of awareness and skills.

2. Technological Development in Malaysia

Seman *et al.* (2011) technological advances have contributed to improving the management and administration of the country in a more systematic and orderly manner. The existence of technology has facilitated everything in all areas of administration, management, broadcasting and media, telecommunications, communications and all fields. The education field is not missed. Currently, there are 1369 TVET institutions in Malaysia, including universities, polytechnics, community colleges, vocational colleges, technical schools, and public and private institutions, for development skills (Esa, Yunos & Ali, 2011). Therefore, teachers play an important role in ensuring the quality of teaching and learning processes in TVET Malaysia institutions.

Technological studies in education, it can be explained in terms of the use of advanced machines or equipment, such as the use of computers, the use of equipment such as LCD projectors as well as the use of additional teaching aids during teaching and learning sessions (Shukor, 2015). The word technology comes from the Greek word "techno" which means readiness, skills, knowledge of ways, rules, skills, tools and "logos" which means science, word, learning, mental state. There are also other terms for instructional technology. Different countries use different terms and synonyms as education

technology, education equipment, AV resources, teaching technology (Lowther *et al.*, 2012). The difference in terminology is largely due to the approach to technical features and the use of modern technical equipment, tools and machines, and not their actual application in teaching which is their actual pedagogical application. For this reason, there are differing opinions among teachers in the social and technical sciences (NAEYC, 2012).

The Microsoft Asia News Center (2016) survey study shows that nearly 200 educators in Asia Pacific agree that technology will play a bigger role in transforming and improving the education system in the future. Most schools in Malaysia have embraced teaching and learning through technology because many teachers are well-equipped and easy to develop into 21st century skills for students. Learning and overall, the way education is handled in the present age (Johan & Dinyati, 2011). Generally, technical teachers who are exposed to technological advances early on but who lack experience in pedagogy are individuals in their 20s or early 30s. However, in terms of age, there may be a decline in motivation as well as a few physical abilities that prevent them from making the best contribution. Although research shows that the level of skills of these teachers in visual literacy is high, it is possible that some of them are less skilled in some aspects of technology (Nor & Sharif, 2014).

The uses of technology as teaching aid tools (ABM) can also attract students and increase student motivation to focus more fully on the teaching of teachers. According to Uno (2010) using teaching aids makes students feel more comfortable and not bored with the learning process because every time teachers present their teaching there is something new. In fact, it is the use of students. As such, ABM in teaching is closely related as a teacher is strongly encouraged to use ABM in teaching so that it can attract students to focus on classroom learning.

3. Methodology

3.1 Sample and data collection method

This study was conducted at the Faculty of Technical and Vocational Education, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Johor. A set of questionnaires was distributed via Google Form platform and a total of 116 pre-service TVET teachers from 162 samples had responded who undergone teaching practicum 1 in 3rd semester of the 2018/2019 session from all fields of study. According to Raosoft calculator (2012), the sample analyzed must be no less than 116 from the total population. The Raosoft calculator is one of the methods used to determine a sample of a population (Wilson, 2016).

3.2 Instrumentation

The questionnaire was developed into three parts as shown in Table 1 based on literature Surif, Ibrahim and Hassan (2014), Ching & Badusah (2010), Ismail *et al.* (2017), and Inan & Lowther (2009). The first part consists of demographic of the respondent. The second and third part consists of 14 and 13 items respectively with 5-point Likert scale of 1 strongly disagree to 5 strongly agree.

Table 1: Instrumentation of the study variables

Study variables	No. of items	Source of scale	Type of scale
Awareness	14	Surif, Ibrahim & Hassan (2014), Ching & Badusah (2010)	5-points Likert scale

Skills

13

Ismail *et al.* (2017), Inan &
Lowther (2009)

5-points Likert scale

4. Results and Discussion

4.1 Reliability and data analysis

This study had been gone through piloting for 30 respondents and obtained reliability with a Cronbach's alpha coefficient value of 0.88, which is acceptable according to Pallant (2011), Piaw (2006), and Konting (2005). Data analysis with descriptive statistics thru calculation of mean and frequency, and inferential statistics thru independent sample t-test were analyzed using SPSS 19.0 software.

4.2 Descriptive statistics & analysis

The results as shown in Table 2 indicate that there were 68 female respondents and 48 male respondents with 59% and 41% respectively out of the total respondents. 50 respondents from year 3 representing 43 percent scored higher than from year 4 respondents with 28 respondents representing 24 percent of the total respondents. The respondents are majority Malay recorded the highest number of respondents of 82 people representing 71 percent of total respondents. The second highest rated race was the other race with 23 respondents representing 20 percent. Subsequently the Indian population was the third respondent with 10 respondents representing 8 percent and the lowest number of respondents were Chinese respondents representing one percent.

Table 2: Demographic statistic results

Items	Frequency	Percentage (%)
Male	48	41
Female	68	59
Year 3	88	76
Year 4	28	24
Malay	82	71
Indian	10	8
Chinese	1	1
Others	23	20
BBA	11	9
BBB	13	11
BBC	17	15
BBD	17	15
BBE	25	22
BBF	22	19
BBG	11	9

Based on Table 2, this study was carried out to the population in all field of program study which are BBE (electrical & electronic) program recorded the highest number with 25 respondents and represented 22 percent of the total number of respondents. The second highest program study was from BBF (Creative multimedia) with 22 respondents or 19 percent. Participation in BBC (catering) and

BBD (welding) programs has a similar value to 17 or 15 percent respondents. Subsequently, the BBB (building construction) program had 13 respondents representing 11 percent. The programs with the lowest respondents were from the BBA (general machining) and BBG (Refrigeration and Air Conditioning) programs with an average of 11 respondents representing 9 percent.

4.3 Inferential statistics & analysis

According to Table 3, overall, it shows that the means of these items in terms of awareness and skills are 4.33 and 4.06 respectively. Thus, it is clear that pre-service TVET teachers perceived positively towards awareness and skills on the use of instructional technology in teaching and learning process at Vocational colleges. This expresses the important and has an impact on facilitating student learning.

Table 3: Inferential statistic results

Study variables	Mean	Intrepretation	Source: Landell (1997)
Awareness	4.33	High/Positive	3.67-5.00 (High Level)
Skills	4.06	High/Positive	2.34-3.66 (Average Level) 1.00-2.33 (Low Level)

From the T-test results show in Table 4, the "p" value obtained was 0.675 with the significance level was set to 0.05. As the "p" value was higher than the alpha value, this indicates that there was no significant difference in the perception of pre-service TVET teachers towards the level of uses of instructional technology in teaching and learning process at vocational colleges in terms of awareness and skills by factor of gender.

Table 4: T-test results

Equal variances	Levene's test for equality of Variances		T-test for equality of means		
	F	p-value	T	df	p-value
	0.558	0.457	-0.42	114	0.675

4.3 Discussion

Pre-service TVET teachers' perceptions of teachers' awareness to use instructional technology in the teaching and learning process at Vocational College indicate that the overall mean value obtained high level shows positive awareness of the use of instructional technology in the teaching process at vocational college. Based on the findings, the frequency of use of teaching technology during in the classroom depends on the suitability and benefits of future TVET teachers. Having awareness within the future of TVET teachers will make it easier to encourage future TVET teachers to engage in the use of teaching technology during teaching and learning process in the classroom or workshops to make the learning process more effective. This agreed by Alazam *et al.* (2013).

Additionally, pre-service TVET teachers' perceptions of skills in the using instructional technology in teaching and learning process was also high. This shows that these future TVET teachers perceived positive that having skilled in using instructional technology as teaching aids in the teaching and learning process at Vocational College is very crucial. Inan and Lowther (2009) defined teacher

readiness as teachers' perceptions of their ability and skills needed to integrate technology into their classroom instruction, and teachers' readiness to integrate technology was the most important factor that had a direct impact on technology integration.

Furthermore, based on the T-test results with P value of 0.675, the study revealed that there were no significant differences in perceptions between male and female teachers. This reflects the perception of both genders over the use of instructional technology in the teaching process at Vocational College in terms of awareness and skills.

5. Conclusion and Future Recommendation

The greatest responsibility for improving students' knowledge of the skills of using equipment and machines lies with the student himself. This finding is relevant because the selected respondents are future TVET teachers who will teach in vocational colleges in the future. Therefore, researchers recommend that teachers focus more on teaching sessions related to using equipment and machines as teaching aids in classes or workshops. When the future teachers themselves are good at using equipment and machines, then they can safely and easily teach the students to use technology tools and understand the procedure.

The faculty plays a very important role in the process of improving the existing learning structure. This is particularly important in raising awareness of future TVET teachers on the using instructional technology and the improving skills to use technology such as equipment and machines (TVET skills) in the teaching process. The faculty has the authority to formulate a learning syllabus related to the use of equipment and machines. In addition, they must ensure that the syllabus used is effective and meets the standards required by prospective teachers to make a highly trained teacher in the use of tools and machines as teaching aids at vocational colleges during the learning process and to keep them informed of the importance of using the instructional technology at vocational colleges.

Further investigation will look onto other analysis such as ANOVA test with different field of study (specific program) and correlation test on the strength and direction of the relationship between awareness and skills. Also, the impact of TVET skills implemented in the curriculum of Teacher Training – Technical and Vocational Education and Training (TT-TVET) at FPTV, UTHM to relate the 21st-century education skills requirements.

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